Abstract Book

THE ECOSYSTEM OF EVIDENCE

Global challenges for the future

9th International Conference for EBHC Teachers and Developers
8th Conference of the International Society for EBHC
Taormina, 6th-9th November 2019

GIMBE
EVIDENCE FOR HEALTH

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1. Development of a contemporary EBP workshop teaching pre-appraised research evidence which focus on shared decision making for health professionals: a before-after pilot study

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BACKGROUND. Shared decision making (SDM) has emerged as a key skill to assist clinicians in applying evidence-based practice (EBP).

AIMS. To develop and pilot a new approach to teaching EBP, which commences with SDM and the use of pre-appraised evidence.

METHODS. We designed a half-day workshop, informed by an international consensus on EBP core competencies, and invited practicing clinicians to participate. Skills in SDM and communicating evidence were assessed by audio-recording consultations between clinicians and standardised patients (immediately pre- and post-workshop). These were rated by two independent assessors using the OPTION (Observing Patient Involvement, 0-100 points) and ACEPP (Assessing Communication about Evidence and Patient Preferences, 0-5 points) tools. Participants also completed a feedback questionnaire (9 Likert scale questions, 4 open-ended questions).

RESULTS. Fourteen clinicians participated. Skills in SDM and communicating research evidence improved from pre- to post- workshop (mean increase in OPTION score = 5.5, 95% CI 1.0 to 9.9; increase in ACEPP = 0.5, 95% CI, 0.02 to 1.06). Participant feedback was positive, with most indicating 'agree' or 'strongly agree' to the questions.

LIMITS. Results should be interpreted cautiously because of the small study size and pre-post design.

CONCLUSIONS. A contemporary approach to teaching clinicians EBP, with a focus on shared decision making and using pre-appraised evidence, was feasible, perceived as useful, and showed modest improvements in skills.

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2. Inappropriate hospital admission from emergency department: an intensity of care model for multi-dimensional patient evaluation

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BACKGROUND. Emergency Departments (EDs) overcrowding, where demand for services exceeds the ability of healthcare professionals to provide care within reasonable time, is a growing issue. ED overcrowding has been classified as a major global threat to patient safety and quality of care. Hospital health care quality and effectiveness depends upon the correct allocation of services, and within a modern cost rationalization context, this objective is of growing importance. Reducing acute hospital admissions in therefore viewed as a key method to reduce EDs overcrowding and to curb healthcare costs.

AIMS. The main objectives are to assess current hospital admissions from inappropriate ED access at the Azienda Socio Sanitaria Territoriale (ASST) of Mantova, Italy with the Tri-Co multi-dimensional scoring system.

METHODS. A retrospective, observational study was performed for all unplanned ED admissions between 1 January 2016 and 28 February 2017 registered at the ASST of Mantova, Italy. This acute hospital serves a population of 420,000 and the standard route for unplanned primary care is through 3 EDs within the area. Patients were assessed according to the Tri-Co intensity of care model, a tool that standardizes a patient's multidimensional analysis according to the patient's clinical condition and assistance needs. The score ranges from 1 (inappropriate hospital access) to 2-4 (appropriate hospital access, with increasing clinical and assistance requirement severity). Triage of Corridor (Tri-Co), a validated scoring system, includes the assessment of both patients' physiological and dependence status at ED presentation, combining the NEWS2 physiological scoring grid for routine vital signs and the Index of Welfare Dependency (IDA) and the Index of Welfare Complexity (ICA) to consider autonomy parameters.

RESULTS. A total of 1,377 patients, admitted to the ED were retrospectively classified according to Tri-Co. The average length of stay was 12.35 days. A total of 62.2 % of patients were appropriately admitted to hospital (Tri-Co 2-4), whereas 37.8% were classified as inappropriately admitted (Tri-Co 1). Inappropriate admission was significantly higher among the youngest age groups (

LIMITS. They were identified two limitations in this scoring system, it does not consider gastrointestinal bleeding and renal failure as a criteria for acute hospitalization, unless it causes clinical instability in the patients. This may be a reason for such a high percentage of inappropriateness in admission.

CONCLUSIONS. The multidimensional Tri-Co score identified 37.8% of patient admission from ED to the internal medicine department as inappropriate over the study period. This study also reports a long period of hospital bed occupancy for each admission group, also including the inappropriate admissions. This phenomenon is referred to as "bed-blockers," which contribute to ED overcrowding. The length of stay therefore is not only linked to clinical test or completing therapy, but to the difficulty of transferring patients to lower intensity care units. This is really clear in the Tri-Co1 sub-group, where the over 80 years patients' length of stay was significantly higher than the other groups'. Within the inappropriate admissions from ED to the internal medical ward according to age, most patients presented with the ambulance service. suggesting a high inappropriate use of this service. Most patients in this group were reported to live in a family environment, but in the elderly (>80 years) patients a low level of assistance dependency was recorded (IDA+ICA = 33). All these characteristics make us hypothesize serious errors in hospitalization and in managing the discharge of patients who should be redirected to lower intensity care units. Tri-Co applied to ED may guide the ED physician to allocate the correct level of care according to individual patients' clinical and assistance requirements, thereby increasing the quality and efficiency of hospital care to those most in need.

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3. Implementation of an experiential (hands on) component in EBN learning in a Norwegian bachelor nursing programme

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BACKGROUND. Nursing, like all health care professionals acts, must be evidence based in order to inform and provide high quality effective ethical patient care. Nursing students must develop the knowledge and skills needed to identify issues in nursing practice that are informed by best evidence.

AIMS. Nursing students have to be able to implement in-depth literature searches for the best evidence available, to address their knowledge needs and inform their practice. Furthermore, they must be able to critically appraise the quality of the best evidence, and determine whether the evidence is appropriate and can be adapted and applied to their practice setting.

METHODS. We developed an innovative approach to educate Bachelor Nursing Students the skills needed for evidence-based nursing (EBN) practice in somatic hospital. The course called "Critical Appraisal and Evidence Based Nursing" combined theoretical classroom learning, small group learning and an experiential (hands on) component, in which students apply their new knowledge on the process of evidence-based practice (EBP) to real patient care nursing issues identified by nurses in clinical university hospital wards. In preparation we contacted multiple clinical wards to invite them to identify clinical nursing issues they would like to have investigated by nursing students during the course. As research articles very often are written in English, a native English speaker gave lectures in English. The course focused on the theory underpinning EBN and the process of EBN. Content includes the steps in EBN, background and foreground questions, researchable qualitative and quantitative question development, the hierarchy of pre-appraised evidence (Di Censo), critical appraisal and introduction to critical appraisal tools (CASP) and applicability of evidence. The librarians taught sessions on systematic searching of multiple data bases for best evidence. The students were divided into small groups, assigned a faculty member and given the clinical issues and/or questions, and visited the wards. Together with the ward nurses they had the opportunity to reflect upon, explore and delineate the questions. After this meeting they develop focused researchable questions from the identified issues by using the PIO, PO, PS or PICOT model, found mesh terms and did searches in databases that could derive evidence to the specific research question they were given. The small groups worked together to search for and critically appraise the best evidence, and then returned to the clinical wards to present the results of their work. Finally, students submitted a small group assignment of the EBN process they undertook, and the results.

RESULTS. Students "found the process and theme interesting and educating, and have used the knowledge that we have acquired from the lectures to answer this assignment". "This project has been very informative. We have also gained a good insight into how we can achieve evidence-based information as nurses". Teacher's role was crucial in advocating the course in the hospital and in gathering clinically derived questions. We were also obliged to come with the students at the meetings with the wards, when discussing what was actually the clinically issue. Students had one mandatory meeting with the teacher, but could also mail eventual questions. The assignments were evaluated as passed/not passed. The fact that the course was taught in English was very well evaluated. The nurses at the wards had mixed experiences with the fact that the presentations were given in English. Students had to use their EBN skills in another assignment in practice and in their bachelors thesis later in the educational program. The nurses at the wards had mixed experiences with the fact that the presentations were given in English.

LIMITS. Research is often written in English, and reading English articles may be a challenge for our Norwegian students. That is why we chose to teach EBN in English, by a native English speaking teacher, for the students. In the beginning of the course the students were a little bit skeptical, but it was very well evaluated in the end.

CONCLUSIONS. Implementation of this experiential (hands on) component in EBN learning in our Bachelor Nursing Programmer helped the students gain a good insight into how nurses can achieve the knowledge and skills needed to identify issues in nursing practice that needs to be informed by best evidence. They learned how to address their knowledge needs, do in-depth literature searches to find the best evidence available. Furthermore, they learned how to critically appraise the quality of the evidence, and determine whether the evidence was appropriate and adaptable, and whether it could be applied to the practice setting.

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4. Clinical practice guidelines development: the first Tunisian experience

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BACKGROUND. A CPGs implementation strategy has been developed by the national instance for assessment and accreditation in healthcare in Tunisia "INEAS". First adaptation projects have been started with the Tunisian society of cardiology and other healthcare professionals to develop a guideline on the management of chronic heart failure.

AIMS. CPGs Adaptation methodology has been chosen by INEAS team, saving time, money and human resources; this approach aims to reduce variability in practice and inequities in the access to health care services in the same country. The Tunisian society of cardiology has made a request to INEAS for the adaptation of a clinical practice guideline on chronic heart. failure.

METHODS. INEAS team has relied on the ADAPTE toolkit to develop its first guidelines. A multidisciplinary working group involving more than 15 scientific society and health care associations has been constituted and the PIPOH question has been defined based on a consensus with the 35 participants. After putting together a working schedule, the literature search has been performed by a librarian from INEAS, covering the last 5 years, All the participants have declared their conflicts of interest. Several sources including GIN, Dynamed plus and Pubmed were consulted, then literature screening has been performed by INEAS methodologists who assessed the quality of CPGs using the Agree II toolkit. Five GPCs were thoroughly screened. SIGN Guideline has been selected as adaptation basis. After obtaining a SIGN agreement, the process has been launched.

RESULTS. A critical appraisal performed using the adapt Toolkit (tools 14,15) to analyse consistency, acceptability and applicability of the recommendations. 27 meetings were conducted with the expert panel to discuss and analyse the results. 12 recommendations have been adapted to the Tunisian context from 17 key questions by including local data and the availability of some medicines in Tunisia. 4 recommendations have been adopted from SIGN guideline, only one recommendation has been elaborated de novo. The final adapted guideline was a combination of relevant extracted data, recommendations from SIGN and the Tunisian context.

LIMITS. CPGs development is on its way to be considered as an important actor in the Tunisian healthcare system reform. INEAS has relied on ADAPTE toolkit for its first adaptation projects. Other CPGs adaptation tools and methodologies are available and INEAS team has started working with GRADE adolopment approach in 2018 for its ongoing projects.

CONCLUSIONS. INEAS started its first CPGs adaptation project on management of chronic heart failure in 2017. Nowadays, CPGs development has become a priority in Tunisia and great efforts have been devoted to its implementation. Considerable work has been done in Tunisia to implement CPGs via INEAS and its partners mainly the ministry of health, medical and scientific societies, patients' associations and the national medical insurance.

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5. The evolution of a collaboration for tailor-made knowledge services to welfare directorates: lessons learned from Norway

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BACKGROUND. Care and policy development should be informed by trustworthy research, but ensuring systematic reviews' relevance and utilization towards development can be problematic. This is often because research and related knowledge services are inadequately tailored and researchers and policy makers are inadequately connected. Collaboration has been proposed as a key strategy to close the research-policy gap.

AIMS. The evolution and characteristics of a collaborative partnership, between a review team and policymakers in Norway, for policy-oriented, horizontal knowledge services will be described, specifically sharing strategies to strengthen the research-policy linkages and thereby improving the production and uptake of evidence in policy contexts.

METHODS. Case-study method with the phenomenon of interest being the development of a collaborative partnership for a policy-oriented, horizontal knowledge service for decision-makers within social welfare. It is based on researchers' and clients' views, historical documents, surveys, interviews, and focus groups undertaken over several years.

RESULTS. Over the last eight years, our research team has continually worked to adapt and develop a policy-oriented, horizontal knowledge service for the social welfare directorates (clients/commissioners). We regularly assemble feedback on our services and in 2018 we undertook a qualitative study among 15 national directorates (48 informants). The results led to adjustments towards our knowledge services becoming increasingly comprehensive and customized to support the clients from the concept stage, to planning, to commissioning, to decision making. Our services are tailor-made to include e.g. pilot projects, literature searches, systematic reviews, qualitative evidence syntheses, workshops, and support for policy decisions. The team thus forms an accessible research group for the welfare directorates, with specific points of contact who have in-depth knowledge of the directorates' policy topic and ensure efficient research delivery. There are now more regular and frequent meetings, sharing of news and updates, and tailored workshops with the directorates, and we produce reviews (>100 completed) in more fields on a variety of topics, including education, policing, housing, child welfare, employment, immigration, health. The collaboration between the research team and commissioners includes prioritization of reviews, justification and design (iterative knowledge brokering process to formulate and refine the scope of and questions for the reviews), production (e.g., commissioners serve as advisory group members, comment on report drafts, provide guidance on readability) and dissemination of reviews, with events like shared launch and news briefs of completed reviews. A guide for engaging commissioners of reviews and structuring the collaboration has been developed, to help clarify expectations, facilitate dialogue, and further professionalize the collaboration. For first-line consumers, the commissioners and users of reviews, the close collaboration with the producers of reviews help ensure that the research is ethical, usable, relevant, and acceptable from a public perspective, and commissioners increase their capacity to access and use research.

LIMITS. Evaluation of a collaboration and package of knowledge services is challenging and the information is largely descriptive.

CONCLUSIONS. The collaboration we have established for tailor-made knowledge services to welfare directorates has evolved from nominal cooperation to true partnership. It focuses on knowledge for action in contrast to knowledge for understanding, thereby optimizing the reviews' value and uptake in policy contexts. Narrowing the research-policy gap, and ensuring use of policy-relevant reviews, can be achieved through close collaboration between research and policy worlds as well as customized services, but takes time and requires adaptations on both sides.

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6. Results from an EBM course implemented in an endoscopy residency program

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BACKGROUND. Gastrointestinal Endoscopy Residency Program takes two years in Brazil and it enables knowledge and skills acquisition to indicate and to perform accurate and safe endoscopic procedures. Data and results from published articles are presented to the residents in lectures, journal clubs, laboratory training and even in the endoscopy room, but critical concepts of the evidence-based medicine (EBM) and critical appraise of studies are not usually contemplated in program schedules. Besides, research produced during the endoscopy residency is mostly restricted to literature review, case or series reports and small clinical trials. In order to improve residents' critical, appraise of the literature and the quality of the academic formation during residency training, an evidence-based medicine course including systematic review and meta-analysis topics was implemented in the Endoscopy Residency Program at a medical school general hospital six years ago. The initial course's practical proposition of teaching evidence-based medicine for the residents was to make them conduct a systematic review and meta-analysis as it would demand to understand the different steps required for generating and interpreting evidence. As a direct result, the number and the impact of studies published by the Endoscopy Residency Program increased, but it produced many other consequences which shall be presented.

AIMS. To report the results from an evidence-based medicine course implemented six years ago in the Endoscopy residency program at a medical school general hospital in Brazil.

METHODS. An EBM course was implemented for the first-year residents in the Endoscopy residency program at a medical school general hospital in Brazil in 2013. It consisted of sixteen lectures, two per week, given by an EBM professor during the first three months. Lectures were about biostatistics, evidence-based medicine principles, systematic review, and meta-analysis methodologies. Then, small groups with four or five residents, with a senior GI doctor and the MBE professor were formed for two-hour weekly meetings over the next nine months. Each of the residents was made responsible for leading the conduction and publishing of a systematic review with meta-analysis. Queries, literature lacks, and daily problems in Gastroenterology and Gastrointestinal Endoscopy were addressed at the beginning of the meetings, and each theme for a systematic review built through PICOS strategy. Search and selection strategy, critical appraisal of studies, data extraction and synthesis of results were then carried out on the following meetings using validated frameworks, like Cochrane Collaboration Risk of Bias (RoB) and Grading of Recommendations, Assessment, Development, and Evaluations (GRADE). At the end of the period, each group lead by a resident wrote a systematic review and meta-analysis according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement and submitted it for publication.

RESULTS. Over the past six years, 58 endoscopy residents took part in the course. Twenty-eight systematic reviews with meta-analyses were published, and 27 of them are available in Medline. Other former residents have been conducted another ten meta-analyses which should be submit for publication in the next few months. The most cited meta-analysis has reached 38 citations in three years according to Google Scholar. The course also resulted in 8 master's degrees and in two PhDs for the former residents. The course model implemented in the GI residency was also disseminated to other residency programs which takes place at the same medical school general hospital (e.g., General Surgery and Gastrointestinal Surgery). The evidence-based medicine course and the evidence generated through the meta-analysis also changed clinical practice in the institution. Solid evidence-based routines were established for the Endoscopy Unit (e.g., use of carbonic gas for colonoscopy and therapeutic procedures instead of air and methods for detection of early oesophageal cancer) and were summarized in a book called "Evidence-Based Endoscopy" published in Brazil at the end of 2017.

LIMITS. Data for the report was retrospectively collected from Medline and unit research coordinator reports, and no formal instrument to access individual experience and personal gains from the course was used.

CONCLUSIONS. An evidence-based medicine course introduced in the endoscopy residency program positively impacted in the residents training, in the increasement of the scientific production, in better daily practice and in disseminating the evidence-based thinking through other residency programs.

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7. Maximising the value of peer review and decision making in research funding allocation

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BACKGROUND. Decision-making processes are used throughout the application life cycle and are essential to effectively allocate research funding. An integral part of this process is internal and external peer review for providing an independent assessment of the quality and impact of the proposed research. A recent systematic mapping and systematic review found that although evidence exists on the benefit of simplifying the peer review process, the evidence is methodologically weak and the effect on quality, cost and time cannot be predicted. There are therefore uncertainties around how to develop and sustain an efficient decision-making system to support the implementation of innovative approaches and alternatives to peer review.

AIMS. The National Institute for Health Research (NIHR) Research on Research programme aims to build an evidence base in this area for funders, reviewers and researchers. As peer review and decision-making in research funding is highly variable we will conduct a series of studies with the objective of enhancing the decision-making processes through better understanding the conduct and mechanisms of peer review. The purpose of the programme of research is to therefore identify the evidence available for modification or alternatives to traditional decision-making processes and whether the alternatives add value, enhance efficiency and/or improve the process of allocation of research funds.

METHODS. The programme of research outlining the design and theoretical approach / framework will be conducted using a staged approach. A realist synthesis will be conducted to identify elements of the peer review and decision-making process, a survey with international funders to obtain current opinion and practices, secondary data analysis of existing interview data from a previous NIHR research study and an analysis of feedback given to applicants from NIHR to determine what makes a good application. Additional studies under the programme of research will also be reported (e.g. observational study and the eDelphi). To ensure transparency and openness we will be engaging with all relevant stakeholders such as NIHR colleagues, Department of Health and Social Care representatives, academics (applicants and reviewer experience), public representative reviewers and representatives at all stages of the funding process. Engagement with stakeholders throughout the duration of the programme of research will be an important consideration not only to the relevance of the research but also to the preparation of any alternative decision-making approaches to be recommended for the allocation of funding.

RESULTS. The evidence and information collected from the first stages of the research will be used to inform an eDelphi (to gain consensus and the overall acceptance of the key elements that could be addressed in a feasibility study). Preliminary results and outcomes from the studies will be presented alongside the overarching purpose and value of the thematic approach taken by the NIHR RoR programme. The outcomes arising from the themed approach will be used to tailor a feasibility study that is relevant to a wide range and dispersed population.

LIMITS. Our findings may not be feasible or appropriate for some funding organisations given the complexities surrounding peer review and decision-making and the variations between grant funding and contracting of research. As yet little is known about the value of alternative approaches to peer review and decision-making and what the key features are for a more optimal system. However, until we identify novel and/or innovative approaches across the whole decision-making process we will not know whether they are suitable or feasible across funding organisations, or even, if the current system is indeed the best approach to a fair allocation of research funds.

CONCLUSIONS. Given the increased pressures and challenges involved in the allocation of research funds in terms of value for money, innovative approaches, lowering success rates, and increased accountability of public spending, there is greater focus and pressure to investigate the peer review system. To optimise the value of peer review and decision-making requires openness and transparency from funders to be able to test and validate alternative approaches.

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8. I FAIR program: the Sardinian way to support and fund independent clinical studies that want to be Findable Accessible Interoperable Reusable

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BACKGROUND. There is growing evidence that making data collected in clinical research available for secondary analysis can improve the impact of public funding on research quality and scientific productivity. At the same time, in biomedical research the quality and reproducibility of the dataset used is becoming an issue, both because the availability of data declines rapidly with the ages of articles and because several studies report has high prevalence of irreproducibility. Sardinia is well known in the international scientific community as an isolated genetic area. Its population has participated widely in research studies since the very beginning of the genetic revolution, and the value of data is well understood and recognized by the local community. Sardinia has also a strong vocation for research and innovation in biomedicine, also demonstrated by the active participation in initiatives like BBMRI-ERIC and ELIXIR. All these conditions paved the way to the creation of a regional practice of sharing, reusing, and repurposing data collected from clinical research, with the introduction of the Program I FAIR in the Sardinian Health System, to benefit both patients and researchers.

AIMS. The aim of the Program "I FAIR" is to create a common awareness of the importance of data quality and sharing, introducing the FAIR data principles in independent clinical studies conducted in Sardinia.

METHODS. Sardegna Ricerche is the innovation regional agency that provides infrastructure, funding, and multi-disciplinary support to the biomedical research community in the region. The Agency implements the Smart Specialization Strategy for the Biomedical sector as part of the Regional Operative Programme for the European Regional Development Fund. Collecting the needs of different stakeholders, from both the public and the private sector, Sardegna Ricerche set up a working group of international experts in ethics (Univ. Cagliari), statistics (Univ. Sassari) and health data management (CRS4) to design the first version of a regional platform supporting data sharing among different research studies and enabling the introduction of the FAIR data principles. These principles are guidelines to support researchers in designing studies and platforms which can support a good data management so that all components of the research process can be available to ensure transparency, reproducibility, and reusability. In the first year of the program, the working group has drafted a set of guidelines, designed a conceptual framework for the Regional Biomedical Research Registry and prepared the I FAIR call for funds to support the FAIRification of clinical independent studies.

RESULTS. The working group highlighted that effective data reuse and repurposing needs to take into account the research objectives of both primary investigators and secondary users, and to respect the welfare and rights of patients and participants. The benefits of this process become evident if a relationship of trust is established between the subjects involved (i.e., primary investigators, secondary users, and patients). The use of the FAIR data principles in the platform design is a powerful tool, once it has been shown to the clinical research community that the adoption of the FAIR data principles creates disruptive advantages despite the investments it requires. The educational aspect is therefore essential, and in the course of the first months of the program the experts of the working group will convene a series of seminars on the application of the FAIR data principles. Over the next 2 years, 20 independent clinical studies will be funded through the I FAIR call. These studies will receive technical and operative support since their design from the leading international experts in ethics, statistics and health data management belonging to the regional working group. During the studies, data will be collected, maintained, and stored under the responsibility of the principal investigators. Metadata and relevant documents (i.e., protocol, statistical plan, informed consent, and data management plan) will be stored in the Regional Biomedical Research Register and they will become findable by secondary users after the embargo periods agreed with the principal investigator. A committee formed of scientists and patient representatives will review the request of specific datasets for secondary analysis. Finally, a data sharing agreement will define rights and obligations for both the primary and secondary investigator.

LIMITS. The first version of the I FAIR Program will be focused on a specific type of clinical studies, the observational ones, to evaluate the program in a limited research area.

CONCLUSIONS. The I FAIR Program will promote data sharing, reuse and repurposing among researchers, inform and protect patients and participants in clinical studies, and provide a common system for storing and accessing metadata about the data and the specimens collected in clinical studies in Sardinia.

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9. A scale for measuring evidence-searching capability: a development and validation study

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BACKGROUND. The ability to acquire the best evidence efficiently is an important competency for busy healthcare professionals who must make decisions quickly.

AIMS. We aimed to develop and validate a scale for measuring evidence-searching capability.

METHODS. We first developed a scale for measuring evidence-searching capability by using the modified Delphi technique. Seven experts commented on a draft 33-item scale on a 5-point scale. All items rated < 3 by any expert were removed. The items were modified or merged considering experts' feedback. When all items were rated = 3 by all experts with an interquartile range (IQR) of = 1, a consensus on the scale was achieved with the content validity constructed. We validated the developed scale by performing a pilot test and a formal test, and evaluated the interrater, intra-rater, and internal reliability.

RESULTS. We developed a scale consisted of 15 items, with an average scale-content validity index of 0.98. In the pilot test, the overall inter-rater correlation coefficient was 0.911 (95% confidence interval 0.821-0.956) and the intra-rater correlation coefficient was 1. The Cronbach's a was 0.903. In the formal test, the inter-rater correlation coefficient ranged from 0.608 to 1, with a Cronbach's a of 0.967.

LIMITS. This study was a single-centre one.

CONCLUSIONS. This study is the first to develop a scale for measuring evidence-searching skills through a systematic approach. The scale is composed of 15 items that can be easily used in objective assessment of knowledge-acquiring ability.

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10. Development of online assessments to assess Evidence Informed Health Care (EIHC) competence

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BACKGROUND. To address some of the barriers to learning core EIHC knowledge and skills we developed five online, virtual patient EIHC modules, for use by different health professional learners. We wanted to test these modules by evaluating the knowledge and skills gained from the modules using a valid and reliable measurement tool. Objective tests that incorporate case-based decision making, such as the Berlin Questionnaire or Fresno test are recommended to evaluate EIHC knowledge and skills. However, these tools do not evaluate all five steps of EIHC, and there are many versions for use across the different professions. Modified versions of the Fresno have been used for some years at the University of British Columbia and feedback from course directors is that it is out of date and labour intensive to mark despite the standardized scoring rubric. The manual grading increases rater burden, especially when large volumes are being assessed.

AIMS. Overall Aim: To develop and pilot test online assessments for measuring competence in the five steps of EIHC. To answer the question: Will the new assessments discriminate EIHC knowledge, skills and attitudes between novices and experts across all five steps of EIHC?

METHODS. Items were developed iteratively by an expert content panel and designed to: align with the learning objectives of the five steps of EIHC (Ask, Acquire, Appraise, Apply, Assess). Include elements to measure learning competence including knowledge, skills and attitudes; assess using a variety of question formats including MCQ, checkbox, matching etc.; use a variety of patient/clinician scenarios which can apply to, and be used by, different health professions The first three steps (Ask, Acquire, Appraise) were pilot tested with occupational therapy (OT) and physiotherapy (PT) students and compared with their results on the adapted Fresno. The last two steps (Apply and Assess) were combined into one assessment which was pilot tested with a PT student group. Feedback was gained from focus groups of students, residents and instructors on accessing the assessments, content, ease of completion, what they liked/disliked, whether students got the expected grades, and the scoring rubric. A group of experts were requested to complete the assessment.

RESULTS. Four assessments, with marking rubrics, were developed to measure knowledge, skills and attitudes. These contained multiple choice questions, check boxes, matching, scenario-based short answers and rating scales. All questions, apart from short answers are automatically marked, and scoring can be made instantly available to the participant or accessible directly to the instructor. 20 students participated in the first pilot of steps 1 and 2, with the average time for completion of each step being 12 minutes. 14 students completed the first 3 assessments and the adapted Fresno. Minor revisions were made to the assessments, incorporating the feedback, before further testing. Focus groups were run with 26 students/family practice residents. More than 70 students/residents have completed the assessments. Experts are currently completing the assessments. Analyses for validity and reliability continue. The range of scores from students/residents demonstrates there is no floor or ceiling effect. The scores per participant were as instructors expected. The instructors were very positive in their feedback of the scoring and did not ask for any changes in either the assessments or the scoring rubric, just requested that they should be able to use them again. There is a demand for these assessments from teachers and prior to publishing results there is already pressure from residency programs to make these assessments available. This appears partly to be because the assessments include all five steps of EIHC and partially because the marking is much easier than the previous instruments they have used. The reliability and validity statistics are being calculated and will be available for presentation.

LIMITS. It is difficult to recruit experts to complete evaluations; more experts are required to be sure of construct validity.

CONCLUSIONS. To date, we have received extremely positive feedback from instructors and learners on an assessment tool designed to measure EIHC knowledge, skills and attitudes. While preliminary psychometric properties for this new measure are promising, further validation is needed.

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11. Network analysis of information needs to identify safe and effective prescriptions for an individual

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BACKGROUND. Physicians need to use more than two million pieces of medical information to help inform a patients' medication choices. This amount of information may contribute to the wide variation in outcomes such as mortality, and a fourfold variation in the number and type of drugs prescribed by physicians. For each patient the physician needs to determine multiple variables, including the patients' desired outcomes. As the numbers of people with polypharmacy and multimorbidity escalate this information requirement increases. To enable evidence-based patient centred care and shared decision making, it is important to have identified this information and filtered out the medications that are likely to cause harm or be ineffective before discussing medication options with the patient. The amount and complexity of information required to identify drug options for an individual patient in primary care has not been quantified.

AIMS. To quantify the amount, and complexity, of information needed to identify safe and effective drug options for a patient, including dosage, and regimens for four typical conditions seen in primary care. The conditions used were, depression, hypertension, type 2 diabetes, and osteoarthritis.

METHODS. We analysed multiple sources of prescribing information used to identify drug options. These included guidelines for the management of diseases, prescribing formularies, product monographs and a drug interaction database. Gephi was used for network analysis.

RESULTS. Each condition has at least one primary care guideline, and therapeutic recommendations that take into account the current state of disease, and previous and current medications for that disease. Each drug independently has its own recommendations that require more information such as biophysical and disease status data. For people with depression there are 13 different primary care guideline recommended drugs, of which seven need dose adjustment if there is liver or kidney disease, and seven would benefit from dosing adjustments in the presence of certain pharmacogenetic variants. In addition to these data points, there are eight biophysical and disease variables that need to be taken into account when identifying drug and dosage options. SSRI's are the commonest form of recommended medications in the primary care guidelines for caring for people with depression, and these have "serious interactions" with at least 79 different drugs, and "moderate interactions" with at least 208 drugs. When caring for a person with depression, the prescriber should check, and either change the medication or adjust the dose, for all these variables. The minimum number of variables should include renal and liver function, QT prolongation, bulimia or seizures, and drug interactions. This should be repeated for each individual drug option being considered. If the physician was considering using one of just three different SSRI's this would amount to checking 10 data points for each of the three drugs and then 281 drug interactions. In total there would be at least 873 data points for those three SSRIs alone. For each of the four conditions, depression, hypertension, type 2 diabetes, and osteoarthritis, a network analysis identifies common pathways, and explores the complex information pathways used to identify drug options in primary care. This is done for each of the four diseases and then for combinations of these diseases. Preliminary network analysis using Gephi identifies significant pathways of interaction between drug options, dosing, biophysical and disease variables. This approach demonstrates the high volume and complexity of the data that is needed for each individual patient prescription. It also demonstrates that variation in prescribing may be highly appropriate given the variation in patient profiles.

LIMITS. The information is taken from English guidelines. We did find variation in recommendations between European and North American Pharmacy company product monographs. Only the North American drug monographs were used in this work.

CONCLUSIONS. This analysis demonstrates the large amount of information required from multiple sources that needs to be translated into clinical practice to identify safe and effective drug options. It may indicate that within practice variation of drug prescribing is a marker of high quality, patient-centered, evidence-based care.

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12. Improving inappropriate laboratory test ordering: the Belgian experience on closing the evidence loop

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BACKGROUND. A decade ago, the Institute of Medicine envisioned that by 2020, 90 percent of clinical decisions should be supported by accurate, timely and up-to-date clinical information. This goal originated from the observation that the delivery of evidence-based care is increasingly challenging. Evidence-based decisions should, to the greatest extent possible, be grounded on a reliable evidence base, account for individual needs and draw from clinical experience. Learning health systems (LHS) or evidence ecosystems are being advanced as important catalysts for implementing evidence-based care. LHS are defined as systems "in which science, informatics, incentives and culture are aligned for continuous improvement and innovation, with best practices seamlessly embedded in the care process, patients and families active in all elements, and new knowledge captured as integral by-product of the care experience". LHS work in a continuous cyclical fashion, embedding new evidence into daily clinical practice using multiple implementation strategies including (electronic) clinical decision support systems (CDSS). To enable CDSS, clinicians are urged to use electronic health records and to document most parts of the care process in a structured fashion. These large repositories of structured data may prove to be valuable sources of new knowledge, which can then be fed back into the loop, completing the cyclical process. To date, many of the stages of an evidence ecosystem are present in Belgian primary care, but a functioning LHS has yet to be demonstrated. Inappropriate ordering of laboratory tests is known to be high in Belgium and CDSS have been proposed as a suitable strategy for improvement. This motivated us to choose this domain to explore various stages of an LHS. In this study we elaborate on various stages of the evidence ecosystem, as an example of an LHS, for introducing evidence-based information on laboratory test ordering to primary care physicians.

AIMS. In this study we elaborate on various stages of the evidence ecosystem, as an example of a learning health system, for the implementation of evidence-based information on laboratory test ordering in primary care. We aim to report on our experiences in closing the loop in the evidence ecosystem by bridging the gaps across this LHS.

METHODS. In this project we used multiple methods to explore the feasibility of a Belgian evidence ecosystem. We used a variation of the ADAPTE Manual to adapt clinical practice guidelines, introduced GP-trainees to guideline adaptation as a method for creating a culture of evidence-based practice and developed a CDSS based on these guidelines to improve appropriateness of laboratory testing in primary care. This CDSS was integrated in a computerized physician order entry (CPOE) system for ambulatory laboratory test ordering. To measure the effects of this CDSS we tailored a system for pseudonymized data extraction from primary care electronic health records. We subsequently designed the ELMO trial, a pragmatic cluster randomized trial, to measure the effects of our CDSS on patient important outcomes, hence closing the loop on the evidence ecosystem.

RESULTS. Results of the various steps in this study will be presented. We developed a CDSS which suggests appropriate laboratory tests during the process of laboratory test ordering through the CPOE system. The CDSS is structured as indication-oriented order sets integrated in the physician order entry system and suggests appropriate tests at the point of care. Almost 300 physicians were recruited for this trial and together they included almost 11 000 patients during a 6-month period. Preliminary data shows high rates of baseline inappropriate laboratory testing of around 50%, largely exceeding rates reported in published studies. Further data on appropriate laboratory testing is currently being analysed. In addition, data is being collected on the safety of the CDSS and on its influence on cascade investigations and overdiagnosis. A qualitative analysis of barriers and facilitators was conducted to inform further implementation strategies.

LIMITS. The ELMO trial is the first project that evaluates the implementation of an evidence-based intervention using routinely collected patient data directly from within primary care EHRs. In an LHS, the reuse of clinical data for research purposes is seen as an advantage, but sound evidence that these data are sufficient for clinical research is still lacking.

CONCLUSIONS. Our experiences have shown that developing a functioning LHS for primary care is possible and feasible. Several challenges to a working evidence ecosystem were identified and many were overcome. We have shown that it is possible to translate the ideas of an evidence ecosystem into a functioning LHS for an important health care problem in primary care.

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13. Evidence, knowledge, confidence

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BACKGROUND. At the National Collaborating Centre for Methods and Tools (NCCMT) we believe that every Canadian deserves to live their best life, and that is why we share best available evidence, deploy tools, and provide training and mentoring to support local public health organizations in making evidence-informed decisions.

AIMS. The aim of this work is to assist public health practitioner's grow in confidence knowing they are using the best available evidence to make informed decisions about the implementation of public health services that help Canadians be the healthiest they can be. NCCMT's approach to training and mentoring, tailored to the specific needs of public health organizations, will be described, illustrating how the approach can be used to build capacity for evidence-informed decision making (EIDM).

METHODS. The training and mentoring approach has evolved over a decade of one-to-one interaction with public health organizations to build EIDM capacity. NCCMT engages in long term relationships with organizations to assist them to embed EIDM within routine day to day work functions. At all levels of the organization this requires senior and middle managers, and practitioners to obtain new knowledge and skills. Our approach provides concurrent training and mentoring to senior and middle managers, as well as front line practitioners. Our approach supports participants in gaining knowledge and confidence in the steps of EIDM, changing practice, and facilitating change management, through large and small group interactive learning, the completion of a rapid reivew, and long term mentoring. Prior to implementing the training component, members of the senior management team complete an organizational assessment called: Is Research Working for you? Their responses are discussed using a focus group format, facilitated by a senior knowledge broker specialist from the NCCMT. The goal of the focus group is to identify organizational priorities for EIDM, then the mentoring program is tailored to support attainment of the organizational priorities.

RESULTS. Several public health organizations have completed this program with most requesting ongoing training and mentoring as part of the organization's ongoing professional development initiative. Those attending the program indicate increased knowledge in EIDM, as well as increased confidence in program planning decisions. Organizationally, new structures, processes and mechanisms have been developed and implemented to support and sustain EIDM.

LIMITS. There are some limitations to this work. Given the need to tailor the program to the specific needs of organizations, there is no one version of the program. As a result, traditional research methods to evaluate impact of the program on EIDM are inappropriate to use. However, rigorous evaluations focused on identifying short- and long-term impacts are needed. In addition, given the program is implemented to individual organizations, and NCCMT can only offer the training to a small number of organizations at any one time, it will take considerable time to reach all public health organizations in Canada. Finally, participating organizations incur costs to participate in the program which may present a barrier to participation for some.

CONCLUSIONS. Through a tailored training and mentoring program NCCMT is strengthening public health in Canada with an overall goal of improving the health of all Canadians. Current data indicates the program is well liked by participants, that they are gaining knowledge, skill and confidence, and that they are embedding EIDM within routine daily practice. This training and mentoring program holds promise as an effective knowledge translation strategy.

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14. Impact of an interdisciplinary master program in EBP

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BACKGROUND. Evidence-based practice has become part of the curricula for health care education in many countries. Still, there are few master programs specifically targeting evidence-based practice, and consequently, studies evaluating such programs are scarce.

AIMS. The aim of this study was to evaluate the impact of an interdisciplinary master program in evidence-based practice in healthcare on student's beliefs about the value of evidence-based practice and of their ability to implement it, and of the extent to which they implemented it.

METHODS. The study was based on self-reported data from six student cohorts (startup in 2008, 2009, 2011, 2013, 2015 and 2017) attending an interdisciplinary master program in evidence-based practice in health-care. The master program was a part-time study and extended 8 semesters. Some modifications were made to the program during the study period, the most important being a change towards more internet-based and blended learning. We used the 16 items Evidence-Based Practice Beliefs scale (EBPB) (sum scores range from 16 to 80) and the 18 items Evidence-Based Practice Implementation scale (EBPI) (range from 0 to 72) (Melnyk et al. 2008) as outcome measures. Statistical analyses were based on original score values and on scores transformed to a 0 to 100 scale. In addition to descriptive statistics, we applied generalized estimating equations regression to estimate possible longitudinal changes in the outcome measures throughout the semesters.

RESULTS. Among 166 eligible students, 160 gave consent to participate in the study. Baseline demographics showed that the typical student was female (86%) and adult (mean age 41 years, range 25-58). More than half of the students worked fulltime (53%), and a majority were nurses (63%). About 50% had worked for 13 years or more. At baseline, the mean EBPB score was 54 (SD 5.6) which corresponded to 60 (sd 8.8) for the transformed scores. Based on the transformed scores, we observed a linear increase in mean EBPB of 2.1 (95% confidence interval (ci) 1.7 to 2.5) per semester. Comparing values at baseline and at end of study, the estimated mean difference was 16 (95% ci 12-20). The mean EBPI at baseline was 10 (sd 8.3) on the original scale and 13 (sd 11.5) on the transformed scale. For the latter, we observed a linear increase in mean EBPI of 1.3 (95%ci 0.2 to 2.5) units per semester. Comparing values at baseline and at end of study, the estimated mean difference was 10 (955 ci 4.2-16) units. For both outcome measures, the estimated increase over time was largely unchanged with adjustment for student cohort and other student characteristics.

LIMITS. The outcome measures were self-reported. While the original EBPB and EBPI scales have been described with acceptable reliability and validity properties, the Norwegian versions have not been fully validated. To our knowledge, there is limited evidence of what should be considered high or low EBPB and EBPI scores, and also of what defines a minimal clinical important difference.

CONCLUSIONS. We observed that student's beliefs about the value of evidence-based practice and of their ability to implement it, increased throughout the master program in evidence-based practice in health care. This was also the case of the extent that students implemented evidence-based practice. Implementation scores were, however, lower than beliefs scores.

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15. Raising disease awareness and improving patient care in Russia: examples of real world data generation initiatives in classic Hodgkin lymphoma, systemic anaplastic large cell lymphoma and inflammatory bowel disease

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BACKGROUND. A lack of disease awareness along with gaps in understanding of the patient journey, local treatment patterns and unmet need is a significant challenge in Russia and the Commonwealth of Independent States (Russia-CIS). An absence of national disease registries and limited access to real-world data may be contributing to these evidence gaps. An initiative to generate these data in patients with classic Hodgkin Lymphoma (cHL), systemic Anaplastic Large Cell Lymphoma (sALCL) and Inflammatory Bowel Disease (IBD) is currently ongoing in Russia-CIS.

AIMS. To demonstrate the types of evidence that can be generated through cHL, sALCL and IBD disease registries and how they can raise disease awareness and support improvements in patient outcomes in Russia-CIS.

METHODS. 'INTENT' is an international, multicentre, disease registry aimed at evaluating disease control and treatment patterns in adult (=18 years) patients diagnosed with moderate to severely active IBD in real-world clinical practice. INTENT is unique and the largest IBD registry covering Russia, Belarus and Kazakhstan. It is planned to include ~3,000 patients with IBD (ulcerative colitis [UC] and Crohn's disease [CD]), recording at least 2 years of history at the time of patient inclusion; patients will be followed-up for at least one year. 'KLIO' is the largest national, multicentre disease registry in Russia aimed at establishing treatment patterns and outcomes in adult patients with cHL and sALCL (either newly diagnosed or confirmed diagnosis of cHL, or patients with relapse-remitting cHL or sALCL). The registry aims to recruit ~3,000 patients, and record 3 years of history at inclusion; patients will be followed-up for at least 2 years.

RESULTS. To date, INTENT has recruited 787 IBD patients. In addition to assessing treatment patterns and effectiveness of current therapies, patient sub-groups, impact on healthcare resources and patient quality of life will also be determined. Evidence generated from the registry will help to inform healthcare professionals (HCPs) and payers of the current disease landscape, costs and challenges associated with diagnosing and treating these diseases, with a view to generate initiatives that will help to more accurately diagnose patients and ensure timelier, optimal therapy. Through the dissemination of findings (e.g.: congress abstracts, publications, educational seminars) it is intended that a greater awareness of these diseases, including subpopulations, the patient journey and areas of high unmet need, will be made possible in Russia-CIS. Set-up of the disease registries has also facilitated greater collaboration of HCPs between sites and countries within Russia-CIS, allowing for future potential bench-marking of outcomes.

LIMITS. There are limitations in the evidence generated from disease registries that need to be considered. Firstly, diagnosis criteria, treatment assessments and outcomes may not be uniform and thus, there is potential for selection bias. Data are generally not verified and there may be a lack of complete data and follow-up information available for all patients. In addition, there may be limitations in the utilization of the evidence generated – for example, the infrastructure for health technology appraisal in Russia-CIS is still evolving and insights informing on the optimal patient journey and diagnostics may not always be possible to implement given local budgetary constraints.

CONCLUSIONS. Pharmaceutical companies are playing an ever-increasing role in the generation of real-world evidence to raise awareness of the disease landscape, understand the patient journey and highlight current unmet need. Evidence generated from local clinical practice, through similar disease registries as developed for cHL, sALCL and IBD, will help to inform decision-making for HCPs, payers and patients as well as improve disease diagnosis, access to innovative treatments and long-term outcomes in patients in Russia-CIS.

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16. Using real patients to support application of EBP skills in undergraduate medical training

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BACKGROUND. The evidence-based practice (EBP) curriculum spans all 5 years of the undergraduate medical programme at the Peninsula School of Medicine, with a focus on learning in years 1 and 2, and clinical application in years 3-5. Sessions in year 2 of the program have been designed to help students move from learning appraisal skills to communication of evidence to patients.

AIMS. The final sessions in year 2 introduce students to working with a patient panel. The sessions aim to promote the application of EBP skills from initial question to patient communication, introduce students to the complexity of true clinical queries, and provide clinical context to students' learning.

METHODS. During the Year 2 EBP curriculum, students worked in small groups of 9-10 to 'answer' a patient question. In the initial session, a panel of 10 patients gave a short medical history and outlined the concerns or queries they had regarding their diagnosis, management or prognosis. Though the patient volunteers were briefed beforehand, the questions they asked were individual and were not refined prior to the sessions. The patient queries varied; some focusing on alternative management options, others on predictive value of diagnostic tests. The students had a short time to question their patient. From this information, the students had to devise a clinical question, search for evidence, and appraise and interpret their evidence. In the second panel session, the students presented their information to the patients and made 'clinical recommendations' based on their findings. A questionnaire evaluation was carried out following the final session and included both Likert scale statements and qualitative free text sections, which were analysed with a simple thematic analysis.

RESULTS. The majority of students (59% agree or completely agree) felt that working with real patients pushed them to think more carefully about interpreting evidence, and many felt that working with patients added greater clinical context to their learning (52% agree or completely agree). The main themes identified by the analysis included the complexity of navigating patient narratives to form focused questions, the increased complexity of interpreting evidence when communicating to a lay audience, taking patient histories in a large group, and difficulties managing group work and division of tasks. Interestingly, though only 35% of students felt that the sessions helped them to apply their EBP skills, when asked to identify the aspects of the sessions that most supported their learning, many of the comments focused on stages of the EBP process, and particularly on finding and appraising evidence.

LIMITS. Students' felt that their engagement in the sessions was limited by the length and size of the group. This is the pilot year for the study, and results are limited to one year of curriculum.

CONCLUSIONS. At this point in the course many students are able to select and appraise evidence, but communicating this to patients, and firstly identifying the 'clinical question' within the complex patient narrative proved much more challenging. The skills and learning encompassed under the EBP umbrella, are also not necessarily the same skills considered to be EBP by the students. Using real patients has pushed the students out of their comfort zone, and has identified misunderstandings and gaps in their learning that may otherwise have gone unnoticed. The patient volunteers felt listened to and that they had made a difference to the students' learning. With appropriate training and support, using real patients enhances and supports students' learning.

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17. Development and piloting of a blended learning training programme for physicians and medical students to enhance competences in evidence-based decision making

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BACKGROUND. In 2016, the German Network for Evidence-based Medicine revised its basic curriculum for competences in evidence-based decision-making. The primary goal of the curriculum is to enhance healthcare professionals' competences in evidence-based decision-making. The curriculum comprises six modules outlining the steps of the evidence-based decision-making process.

AIMS. Our aim was to develop and pilot a blended learning training programme for physicians and medical students according to the UK Medical Research Council´s guidance for the development and evaluation of complex interventions with focus on acceptance and feasibility (phase I and II).

METHODS. Phase I: The training was conceptualised as a blended learning scenario comprising two 1.5 days lasting blocks of face-to-face training with online learning in between. We chose a problem-based scenario according to the immanent structure of EBM. Therefore, and in order to address the heterogeneity of the target group, we set up a case example about smoking cessation to relate theory to practice. The training modules aim to impart competences in searching for, critically appraising and extracting relevant literature according to the principles of EBM. The novelty of the revised curriculum consists in complementing the module "informed shared decision-making", in which physicians are trained to discuss treatment options with patients considering evidence-based health information and patients' individual preferences. We embedded work tasks that were supposed to facilitate the transfer and reflexion of the learning content with regard to the physicians' own practice. For the web-based training, the learning management system ILIAS was used. Phase II: We performed a qualitative pilot study. The study protocol is available online. Since no vulnerable and personalised data from the participants were obtained, ethical clearance was not necessary according to the requirements of the ethics committee of the Martin Luther University Halle-Wittenberg. Two trainings for physicians and other health care professionals were scheduled in Berlin and Halle (Saale), Germany. Providers of continuing medical education recruited participants. The course size was limited to 25 participants. Data collection was integrated in the training sessions. In the beginning, informed consent was obtained and baseline characteristics, including sex, age, English skills, work experience and EBM-knowledge were assessed. We observed the training in a structured way and documented processes, interactions and working results. In addition, teachers took field notes. Focus group interviews were conducted after each face-to-face-training to assess the acceptance of the content and teaching methods, the comprehensibility of learning materials and work tasks, the usability of the web-based learning environment and the practical relevance of the contents. The focus group interviews were audio recorded and transcribed anonymously. Baseline characteristics were analysed descriptively. Qualitative content analysis according to Mayring was conducted with the remaining data. Data saturation needed to be achieved through an iterative process of testing, analysing and revising the training programme.

RESULTS. We performed two trainings between January 2019 and March 2019 including 20 physicians working as researchers (n=6), resident doctors (8), clinicians (4) or in other fields of the healthcare system (n=2). Most of them were general practitioners (n=8). Additionally, 9 health care professionals with other specialties (e.g. pharmacists) participated. Overall, the training programme seems to be feasible. Participants rated the comprehensibility of the learning modules as high. However, practical exercises (e.g. role plays in informed shared decision making) revealed that relevant subjects were insufficiently understood (e.g. the difference between the benefits and harms of a diagnostic test and its test accuracy). Participants judged the case example about smoking cessation as relevant and helpful. The interactive instructional design was appreciated. Participants appraised the work tasks as comprehensible but also challenging and asked for a theoretical introduction in statistical terms in preparation for work tasks. The programme was revised according to the results.

LIMITS. Not all participants were practitioners being able to judge the practical relevance of the training. Furthermore, the researchers who developed and conducted the training also analysed the data.

CONCLUSIONS. Overall, the training was well accepted and feasible. After successful evaluation in a randomised controlled trial, the course should be established as a continuing medical education opportunity for practitioners. The training could also easily be adapted to an inter-professional training.

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18. A systematic analysis of peer reviewers? responses in 5 evidence-based medicine studies: do we need newer evidence synthesis approaches?

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BACKGROUND. Systematic reviews & meta-analyses of randomized controlled trials (RCTs) are considered by many to be the highest level of evidence in the hierarchy, when assessing the effectiveness & safety of interventional therapy. There is a strong emphasis on efficacy and economic considerations in the medical literature, but far less emphasis on studies addressing adverse medication events. Clinical trials and the medical literature are biased in favour of type I errors for safety, and type II for efficacy. Despite the superiority of evidence derived from meta-analyses of clinical trials, many question the limitations, validity & applicability, while others suggest alternative and more inclusive models are needed. Our experience of attempting to publish such studies may help address some of these concerns.

AIMS. To systematically analyse our experience of the peer review process concerning evidence synthesis regarding medication related side-effects, and the relevance to the current paradigm of evidence-based medicine.

METHODS. Data sources include electronic responses from medical journals that assessed manuscripts for peer-review, all of whom had an impact factor >3.0. Details and content of the peer review process were extracted by two authors (R.C & A.I) and consequently analysed by a sole author (A.I). We retrieved published critical views of the current evidence synthesis philosophy by searching and screening the scientific literature in this area. We utilized the following seven basic evidence based medicine critiques to further analyse the content of peer reviewers' responses retrieved from our studies: • Design & methods of the systematic review & meta-analysis • Design & methods of included clinical trials • Peer reviewers' personal prior experiences (views) that contradict generated evidence • Limited applicability (generalizability) of evidence • Other biological and clinical factors threatening validity of generated evidence • Social, psychological or environmental factors affecting validity • Unclassified EBM critiques Both descriptive and analytic statistics were used to assess the content and process of the peer review systems in EBM studies of drug related adverse events

RESULTS. We retrieved the following data from the peer review process of EBM studies of adverse medication events following 5 publications in our centre: • We submitted 5 studies for a peer review assessment 22 times over a period of 7 years, receiving a total of 191 peer reviewers' responses from 29 peer reviewers. • We received a decision of rejection without a review in more than half of our submissions (12; 55%), while (10; 45%) of journals' correspondence provided a formal peer review resulting in a decision of rejection, or acceptance with a revision request • The mean duration from first submission to successful publication was 11.4 months (342 days), (SD: 5.08). • The majority of peer reviewers' responses (72%) were critiques directed towards limitations of the design & methodology of systematic reviews, meta-analyses, and included clinical trials. A strong focus on applicability of evidence (in nearly a quarter of responses) and the contradiction of synthesized evidence with peer reviewers own prior experiences (5%) was also noted • 1 in 4 comments had little to do with the design, analysis or validity of the results.

LIMITS. The assessment of the scientific validity of peer reviewers' critiques and whether these were avoidable by authors or not was not considered, to avoid introducing author's biases. Despite the large sample size of responses, this analysis included relatively smaller number of studies, and utilized publications from a single EBM centre; limiting external validity. We received limited information from journals where we did not receive a formal review.

CONCLUSIONS. Our experience suggests considerable concern remains about the current basis for evidence-based medicine in the peer review system and the current evidence-based medicine hierarchy. The majority of reviewers' responses appropriately addressed specific concerns regarding study design, analysis and conclusions. More than one quarter of responses were reviewers opinions reflecting personal and pervasive biases.

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19. Assessment of allied and health sciences student competency in evidence-based practice

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BACKGROUND. Assessing learner competency in evidence-based practice (EBP) is a complex task. Few tools have been psychometrically assessed for their validity and reliability. The Assessing Competency in Evidence-based medicine (ACE tool) has previously been developed to assess medical student competency in EBP. Psychometric assessment has demonstrated it to be a reliable tool, with good validity constructs in assessing student knowledge and skills across four steps of the EBP construct – asking a question, accessing the literature, assessing the evidence and applying the evidence in the clinical context. There have been no studies to date that have modified the ACE tool to examine learner competency in the fields of allied health and health sciences.

AIMS. This study aimed to modify the existing ACE tool to examine learner knowledge and skills in EBP across the allied and health sciences. It also aimed to develop a reflective component, to assess learner attitudes towards EBP.

METHODS. The modification of the ACE tool to suit allied and health sciences disciplines was developed by an expert group, for content and face validity. A cross-sectional sample of 167 students across physiotherapy, radiography, paramedicine, nutrition and biomedical science were recruited. Construct validity, item difficulty, internal reliability, and item discrimination were analysed.

RESULTS. A reference group, consisting of academics and clinicians with expertise across physiotherapy, radiography, paramedicine, nutrition and biomedical science developed the modified version of the ACE tool. A reflective component was added to the tool (ACE + Reflection (ACER)), resulting in a 16-item assessment form. In total 55 participants responded, representing novice, intermediate and advanced competency groups. A statistically significant difference in total scores was observed across the three groups (novice: 8.3 ± 2.5, intermediate: 9.4 ± 2.1 and advanced: 10.6 ± 2.2). Item difficulty ranged from a pass rate of 22% to 100%. Internal reliability was acceptable for the majority of items apart from five. The ability of the tool to discriminate between participants with high versus low overall scores was good, with items ranging from 0.11 to 0.74. Reflective scores were highest in the intermediate group however, no significant difference in each reflective score between groups was observed.

LIMITS. Further validation of the refined ACER tool in larger sample sizes is needed to provide greater resolution of the tool's psychometric properties.

CONCLUSIONS. The ACER tool is a reliable and valid instrument to assess allied health practitioner's competency in EBP. The reflective questions provide a promising approach to critical thinking and self-reflection. Further assessment of its psychometric properties in different settings is required to increase the robustness of the instrument as an assessment tool across disciplines.

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20. A pragmatic trial of blended learning versus online learning for clinically integrating EBM teaching in an undergraduate medical school

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BACKGROUND. Multifaceted, clinically integrated teaching of Evidence Based Medicine (EBM) with assessments are more likely to improve students' knowledge, skills and attitudes. Currently, there is limited evidence on what are the minimum components of the multifaceted interventions or on the most effective models of clinically integrating EBM teaching.

AIMS. The aim of this study is to evaluate the effectiveness of two different models of clinically integrating EBM teaching – blended or online learning.

METHODS. EBM is a progressive longitudinal theme in the University of Buckingham Medical School, where students are taught to ask, acquire and appraise evidence in years one and two (phase I). In years three and four (phase II), students are asked to apply EBM in clinical practice and reflect on their experience. All students received the same educational intervention for phase I. Students in phase II are placed at one of two hospitals, where they received either blended learning (a combination of lectures, facilitated small group discussions) or online learning (recorded lectures and online learning resources). Learning outcomes assessed included students' EBM knowledge, skills and behaviour using the validated assessment tool- Assessing Competency in Evidence Based Medicine (ACE). In addition, students were asked to complete educational prescriptions (EP) - where they developed a question from a clinical scenario, searched and appraised evidence and applied it to the clinical decision.

RESULTS. Education was delivered to 65 students, from which 46 students completed the ACE test (32 blended / 14 online). There were 31 EP submissions (23 blended / 8 online learning). Students' performances in both the ACE test and EP were better in the blended learning model compared to online learning. The mean difference for performances in ACE and EP were 1.02 (one tailed p value

LIMITS. This study was a pragmatic trial; hence it was not possible to either randomise or blind individual students to the interventions. The blended learning approach was resource intensive and needed a lot of planning and commitment. It was feasible in this small teaching hospital with a small cohort of students- whether it is applicable in larger teaching hospitals with bigger cohorts of students is uncertain.

CONCLUSIONS. Our study demonstrates that it was feasible to offer both models of clinically integrated EBM teaching. Blended learning model is more effective than online learning for clinically integrating EBM teaching as demonstrated by the medical students' competency in EBM knowledge, skills and behaviour using validated assessment tools such as the ACE and EP. In designing teaching methods for clinically integrating EBM, educators need to balance resource implications, students' preferences and impact on learning outcomes. Further research into the minimum components needed for multifaceted interventions and the most efficient models of clinically integrating EBM teaching is needed.

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21. Development of an interprofessional competency framework for EBP & clinical effectiveness education

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BACKGROUND. Clinical effectiveness is defined as "the application of the best knowledge, derived from research, clinical experience and patient preferences to achieve optimum processes and outcomes of care for patients. Evidence Based Practice (EBP) is a cornerstone of delivering clinically effective care. Since 2016 the Department of Health in Ireland has sought to build capability and leadership for EBP with the ultimate goal of improving patient outcomes. A key component of this work is to promote and foster a culture of clinical effectiveness in healthcare through describing an approach to competencies that can guide clinical effectiveness education (CEE).

AIMS. Develop a competency framework for clinical effectiveness education for healthcare professionals working in various healthcare settings.

METHODS. This project consisted of three phases. Phase 1 consisted of documentary analyses of national and international reports and professional guidance documents pertaining to Clinical Effectiveness Education. Specifically, evidence in relation to relevant competencies, curriculum considerations, teaching and learning methods was drawn from the following sources: (1) scoping review of clinical effectiveness competency frameworks; (2) education requirements and professional standards of health regulators; (3) Focus group data from discussions by two Clinical Effectiveness Education Fora (2016 and 2017) and (4) findings from the 2017 national report on teaching EBP in Ireland. Phase 2 involved the integration and synthesis of data from Phase 1 leading to the generation of a draft competency framework. Further development and modification of the framework was conducted through stakeholder consultation. Representatives from clinical practice, third level education & professional training sectors, regulator/accrediting bodies, the Department of Health and patient/service user groups were invited to participate. The specific aims of the focus groups were to: a) Elucidate perspectives on clinical effectiveness education competencies for healthcare professionals; b) Examine proposed competencies and associated indicators of clinical effectiveness education for relevance clarity and comprehensiveness; and c) Discuss potential teaching and learning modes of delivery and assessment methods for clinical effectiveness education. Phase 3 entailed refining the proposed framework through further integration of the outcomes of Phases 1 & 2, in addition to nuanced feedback from the Department of Health, National Clinical Effectiveness committee.

RESULTS. Phase 1 findings indicated no evidence of competency frameworks pertaining specifically to clinical effectiveness education within international literature. Competency frameworks describing individual core components of Clinical Effectiveness, in particular EBP, were evident. Competencies suggested as core to clinical effectiveness included EBP, quality improvement processes and implementation science strategies. Related competencies, which addressed the need for effective communication, collaborative practice and leadership, were also prevalent within the literature. A fundamental curriculum consideration suggested was the explicit integration of clinical effectiveness competencies throughout academic and clinical learning domains of health professional curricula. Recommended teaching, and learning strategies emphasised the importance of an interprofessional focus to teaching. The use of clinically contextualised, interactive and multi-modal teaching and learning strategies that are perceived as relevant to learners was also highlighted. The synthesis of data from key international and national sources led to the generation of a draft competency framework for clinical effectiveness education which included the following domains: (1) Evidence Based Practice (EBP); (2) Quality improvement processes; (3) Implementation strategies; (4) Professional practice. Phase 2 & 3. Thirteen focus groups were held with 45 participants (3-4 per group). Representatives included: 14 health and social care professions; professional body organisations and regulators; advisors/specialists in quality improvement, clinical effectiveness and patient safety. Overall, participants found the framework relevant, appropriate and important for developing workforce capacity in clinical effectiveness. In addition, principles underpinning the framework and respective applications were suggested. Feedback on teaching and learning modes of delivery for clinical effectiveness education emphasised the need for interprofessional education and the application of adult learning theory principles. The most reported recommended teaching methods were based on an active learning approach and included: group-based projects; role play/modelling; simulations and case-based studies that aid learners to apply and relate theory to practice.

LIMITS. Patient/service user representation was absent despite invitations issued. The research team would advocate the further validation of the framework from the patient/service user perspective.

CONCLUSIONS. A competency framework for clinical effectiveness education for health and social care professionals is proposed. It is intended that this framework will provide guidance to healthcare educators and regulators in the blueprinting of curricula, learning outcomes, assessment strategies, and graduate/clinician attributes.

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22. Tools to validate evidence-based point of care resources for health care professionals

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BACKGROUND. Health care professionals are expected to practice evidence-based medicine, but with an increasing body of evidence, it is not feasible to routinely access and review current best information. Therefore, they need well-structured, rapidly accessible and comprehensive information for use at the point-of-care (POC). Although different instruments for assessment of methodological quality of clinical guidelines, systematic reviews or individual studies do exist, these instruments are not appropriate to evaluate trustworthiness of POC information.

AIMS. We aim to develop an instrument to assess trustworthiness of POC information that will be made available on an electronic platform for health care professionals in Belgium. Before developing a new instrument, we aim to describe and analyse the available instruments to assess the trustworthiness of POC resources in a systematic review.

METHODS. The protocol of this review is registered at PROSPERO (CRD42019122565). Pubmed and Cochrane Central were searched for literature. A search string was built using the concepts 'trustworthiness' and 'point-of-care information'. The Boolean operators 'OR' and 'AND' were used to combine terms within and between concepts. Additionally, we scanned reference lists of retrieved articles and we used the Google search engine to identify additional tools. We included all studies, reports, and websites that report on tools, checklists and criteria to assess the trustworthiness POC information developed for professionals. Trustworthiness represents features that make users trust information including methodological quality and editorial transparency. POC information is defined as web-based medical compendia specifically designed to deliver pre-digested, rapidly accessible, comprehensive, periodically updated, and evidence-based information for clinicians. In case websites contained multiple resources, they were separated by their methodology. Additionally, we included all webpages containing information regarding quality assessment of electronic health information resources. All studies and webpages had to be published by multiple authors or an organization. Tools to assess quality of information for patients and tools to assess the quality of mobile applications were excluded. Tools were selected by two researchers independently. First, all titles, abstracts and web pages were compared against the selection criteria. Then, full texts of potential eligible articles were retrieved. Subsequently, all full texts and relevant web pages were compared against the inclusion and exclusion criteria. Discrepancies in selection between the two researchers were resolved by discussion and consensus. We checked each tool for potential risk of bias in the developmental phase, such as lack of validity and reliability assessment. Data extraction was performed by one researcher and checked by a second researcher. Similarities and differences of the characteristics of the retrieved tools and criteria were described.

RESULTS. 22 websites and 6737 records were identified through database searching. 6347 records and 18 website were excluded based on selection criteria. Four more websites were excluded after check for duplicates with records. 390 full texts were analysed, 375 were excluded based on eligibility criteria. 14 records were included containing 17 tools for assessment of trustworthiness of POC resources. The tools and criteria were developed between 1997 and 2014. Only two of the 17 tool were assessed for reliability, and six tools had a scoring system implemented for quantification of trustworthiness of POC resources. The different topics used in the tools could be divided in three main categories: (1) editorial quality; (2) evidence-based methodology; and (3) design and usability. Editorial quality implies a clear definition of content, references to primary sources, review policy, authorship of content and ownership of the POC information source and reporting of financial aspects such as conflict of interests and sponsoring and advertising policy. Evidence-based methodology implies a clearly focused research question or aim, thorough literature search and surveillance and, formal grading of evidence. Design and usability involves the visual presentation, search and navigability possibilities.

LIMITS. We could not perform a standard risk of bias assessment on each individual tool because standards for methodological quality assessment of tools to assess trustworthiness do not exist. However, we checked each tool for potential risk of bias in the developmental phase, such as lack of validity and reliability assessment.

CONCLUSIONS. Based on tools and criteria described in literature, different items important for assessment of trustworthiness of POC information could be defined and will be used to designs a new instrument for validation of POC information.

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23. To replicate, or not to replicate: a value of information approach to decide whether to replicate systematic reviews

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BACKGROUND. Replication remains an essential tool for testing scientific rigor. In the context of systematic reviews, replication may allow for validation of methods, results, and interpretation of an original synthesis. However, replication is not always necessary, and may provide decreasing returns on investment of time as the evidence matures. There may be a limit in the amount of knowledge gained beyond which replication will be of low value and even wasteful.

AIMS. 1. To explore the usefulness of the concept of Value of Information analysis (VOI) in deciding when to update a systematic review. 2. To establish evidence-informed consensus-based guidance on when to and when not to replicate systematic reviews.

METHODS. In February 2019, we held a consensus meeting of 36 participants. The following key stakeholder groups were represented: patients, clinicians, journal editors, researchers, guideline developers, systematic reviewers, and HTA organizations. The primary purpose of the consensus meeting was to explore replication more broadly, the concept of VOI was raised as a potential innovation for reducing waste to help identify when systematic review replication was a worthy use of resources versus a wasteful effort. We explored the published and unpublished literature on VOI as a concept to inform when the expected value of updating a systematic review is sufficient to warrant the time and resources required to replicate the systematic review. If VOI had not previously been applied to inform replicating systematic reviews, we planned to develop a de novo conceptual model for applying VOI in this context by drawing indirectly from its use in health technology decision-making.

RESULTS. Overall, a lack of published evidence was found where the concept of VOI had been applied to inform when systematic reviews should or should not be replicated. We also found limited literature describing waste in the production of systematic reviews, and solutions for informing the value of replication. During the consensus meeting, a draft checklist was collaboratively developed to outline key points to consider when deciding whether to replicate a systematic review. VOI was added as a key component in the checklist. A subgroup of the consensus attendees subsequently developed a 6-item conceptual VOI model to enable a pragmatic approach to VOI which bypasses the need for complex statistical modeling, which has been typical of VOI in other research and policy contexts. This conceptual model was applied to 2 example systematic review decisions on whether replication is worthy.

LIMITS. Given that this is a novel concept, its application and refinement will need to be tested on future decisions about need to replicate systematic reviews before its full value in reducing research waste will be known.

CONCLUSIONS. The VOI concept can be used to inform whether the amount of incremental information gained from systematic review replication will be sufficient to warrant the resources required to do it. VOI is a promising tool to reduce waste related to unnecessary systematic review replication. Developing a pragmatic checklist improves the feasibility of applying the concept of VOI, forgoing the requirement for sophisticated statistical modelling.

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24. Teaching EBP in a flipped classroom model: a controlled comparison between learning on-campus and online

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BACKGROUND. In a flipped classroom model, students receive instructional content at home and use time in the classroom to engage in mentor-guided assignments and discussions. Evidence suggests that student centered learning through a flipped class model offers many advantages over a traditional, lecture-based model. However, what once defined the "traditional classroom" is evolving, driven largely by advances in online classroom learning technologies. As healthcare education moves online, delivering a flipped class with an on-campus component is becoming the new "traditional" model and the flipped, exclusively online classroom is the new frontier. In this case exemplar, we present how a flipped classroom model EBP course for doctor of physical therapy students, traditionally taught with an on-campus physical classroom component, was translated to an exclusively online learning environment to accommodate a cohort of students enrolled in a distance learning-focused version of the curriculum. The required course for year one students covers beginning and intermediate skills across the 5-steps of EBP. Results from the first cohorts of students to complete either the on-campus or exclusively online version of the course will be presented.

AIMS. 1. Describe how a flipped classroom model EBP course traditionally taught with an on-campus component was translated to an exclusively online learning experience 2. Compare outcomes of two cohorts of physiotherapy graduate students enrolled in a flipped classroom model EBP course with either an on-campus component or exclusively online

METHODS. Faculty were tasked to convert a two-hour per week EBP course for first year, doctor of physical therapy students to accommodate a cohort of distance learners. Learning objectives for the course are to apply the five foundational steps of EBP to using randomized controlled trials, systematic reviews, clinical practice guidelines, and prognostic cohort studies. The educational strategy for the traditional version of the course was a flipped class model in which students watch asynchronous video lectures related to key EBP concepts prior to class. On-campus activities included supplementary lectures, guided assignments, and small and large group discussion. Student enrolment in the on-campus or exclusively online version of the course was dictated by the version of the degree program in which they are enrolled. Student learning for on-campus and exclusively online cohorts will be assessed by two written exams, weekly quizzes, and case-based written assignments. Comparisons of student performance will control for student undergraduate grade point average. Student reaction to the course experience will be assessed using quantitative and qualitative data collected through a mid-course survey, end-of-course survey, and overall program survey.

RESULTS. The traditional version of the EBP course requires students to watch a 30-40 minute recorded video delivered via Mediasite® and complete required readings prior to each class. Weekly patient cases are presented in written text. Students engage in two hours per week of small and large group discussion and complete assignments on campus with a ratio of 1 faculty to 48 students. The 10-month process of translating the course for exclusively online learning was completed in 2018. The exclusively online version involves 60-90 minutes of short (<8 min) lectures interspersed with practice questions and reflections to facilitate depth of learning. Weekly patient cases are presented as short film clips with patient actors. Students engage in one hour per week of synchronous small and large group discussion and guided assignments using streaming video via Zoom Video Communications© in a ratio of 1 faculty to 12 students. In January 2019, 96 students enrolled in the on-campus version of the flipped classroom model EBP course (63% female; 15% under-represented minority; mean age 25.0±3.1 years; 100% live driving distance to campus) and 46 enrolled in the exclusively online version (48% female; 20% under-represented minority; mean age 26.7±4.3 years; 37% live driving distance to campus). To date, all students have completed all required assignments. The 16-week course concludes in May of 2019. Learning outcomes and qualitative feedback from course survey will be presented.

LIMITS. Students could not be randomly assigned to one version of the course or the other due to overall program restrictions and physical proximity to campus.

CONCLUSIONS. Healthcare educators can expect to see increasing trends toward offering curricula online to leverage opportunities presented by advancing technology. The process of translating a flipped classroom model EBP course to an exclusively online version for distance students provides new opportunities for teaching and learning. Comparing student performance and reactions to the course provides insight to best practices for student centered teaching on campus and online.

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25. A fellowship of evidence in clinical practice: adapting foreign guidelines for Middle Africa

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BACKGROUND. Clinical practice in middle Africa has been guided by foreign textbooks which are often outdated. This affects quality of healthcare and performance of health systems with worst impacts on women and children who suffer most from poverty-related diseases. There exists relevant evidence for African context but often not in a digestible format for clinicians, patients, and policymakers. Evidence-based national guidelines exist for some conditions with high burden e.g. malaria, HIV and TB mostly developed by WHO. Updated evidence-based foreign guidelines exist for the rest of the conditions developed by DUODECIM, NICE and other evidence hubs, however, these still require some slight adaptations for use in middle Africa.

AIMS. To demonstrate the feasibility of a technical platform to support a medical information ecosystem, containing 3 elements: 1. A complete set of guidelines (EBM-GUIDELINES, WHO guidelines, national guidelines), with a digital library and clinical decision support 2. An editing platform that allows the updating and contextualization of the guidelines to the African situation 3. A network of clinicians, working with a cloud-based electronic health record system to clinicians in rural areas that ensures a reliable and secure connection, and privacy-friendly, high-performance, convenient, and user-friendly access to clinical data.

METHODS. We conducted a stakeholder meeting with clinicians in Cameroon to prioritize disease, identify adaptation criteria, and gather their experiences with evidence implementation. We developed an online platform https://www.ebmafrica.net to guide clinical practice, store patients data in the cloud and network clinical practices. We uploaded local guidelines for Nigeria, Cameroon, and Rwanda for malaria, TB, and HIV, WHO guidelines and a suit of 4000 DUODECIM guidelines. The DUODECIM guidelines are adapted based on clinicians feedback on local context. We set up an editorial team with local clinicians to use piloted tools to guide guidelines adaptation. Clinicians using the platform create a community of practice within a network of evidence-based healthcare and can refer patients within this network. The editorial team also assessed conditions that required full guidelines development and will conduct rapid reviews and rapid recommendations using GRADE or 3-TIERS to develop recommendations.

RESULTS. We have recruited 11 clinical practices into the network. We uploaded 5 national evidence-based guidelines for malaria, HIV, TB, Soil-transmitted helminths and hypertension. 3 WHO guidelines and 4000 foreign guidelines adapted to local settings.

LIMITS. This project was started in 2018 as a pilot project in collaboration with iScientia Belgium and eBASE Africa and is a proof of concept. In order to measure longer term impact, there is a need for a longer study using a more robust study design.

CONCLUSIONS. This innovative approach has not been used before in Africa and provides a cost-effective approach to harness existing guidelines and adapt nonexisting guidelines to a low-income settings. It will impact on the lives of women and children who suffer the worst burden of disease from HIV, TB and Malaria.

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26. The Tunisian clinical practice guidelines adaptation: management of diabetes during pregnancy

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BACKGROUND. Capacity building projects to develop clinical practice guidelines (CPGs) at the national authority for assessment and accreditation in healthcare (INEAS), Tunisia, has been started with the collaboration of WHO, King Saud University and Osteba the Basque country agency in charge of developing health technology assessment (HTA) reports and CPGs. The first project has started in 2017 with the use of The ADAPTE toolkit and AGREE II to adapt a CPG on diabetes and pregnancy.

AIMS. The aim of this project is to develop a guideline on the management of diabetes and pregnancy using international clinical practice guidelines adaptation tools. In fact as diabetes is endemic in Tunisia, the ministry of health has highlighted the risk of this disease during pregnancy and INEAS was requested to start a project on this subject.

METHODS. Following the ADAPTE methodology, a (PIPOH) question was formulated and a working group has been formed. A literature search strategy covering 5 years was carried out. Several databases including GIN, Dynamed plus, Pubmed were explored. Four INEAS methodologists used the PRISMA Flow diagram then the AGREE II toolkit to assess the quality of the 7 selected CPGs, then relied on The 14th and 15th tools of the ADAPTE toolkit for the adaptation to the Tunisian context with the working group. The draft of the guideline developed has been submitted to a peer review group to be validated.

RESULTS. The Nice guideline "Management of diabetes and its complications from preconception to the postnatal period" was retrieved after the assessment by the AGREE II tool. A license for the adaptation of the guideline has been obtained from NICE. Several meetings with the multidisciplinary working group composed of healthcare professionals concerned by the subject were conducted to discuss the adaptation process and formulate the Tunisian recommendations.

LIMITS. The development of this guideline has taken more time than expected due to The large scope and the high number of the clinical questions chosen. In addition to that INEAS had to pay NICE to obtain the licence for the guideline adaptation and the payment procedure was very long.

CONCLUSIONS. After the diffusion of the adapted guideline to the Tunisian context, an implementation strategy has to be developed by INEAS with the collaboration of stakeholders and partners, mainly the national medical insurance, the ministry of health and medical associations

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27. The merit of monitoring the EBP competencies of healthcare bachelor students

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BACKGROUND. Almost twenty years ago, evidence-based practice (EBP) was first implemented in the curricula of the Rotterdam bachelor health care programs. A lot has changed since then. As the education in EBP once started with one relatively isolated course in the principles of EBP, it gradually evolved in a more integrated concept. The 'five-step model' is now more used as an instrument in clinical reasoning and in education, the focus shifted to apply these steps in clinical practice. In order to monitor level of EBP competencies of our students and their lecturers, we carried out several measurements since 2013.

AIMS. Aim of monitoring the EBP competencies of our health care students and lecturers was to gather input for curriculum modifications. On the other hand, we wanted to be able to compare different programs in order to make use of similarities and differences between them.

METHODS. More than 300 students and 60 lecturers from four different programs (occupational therapy, speech-language therapy, nursing, midwifery, physiotherapy) participated in our monitoring program, which comprised the Dutch Modified Fresno Test (DMF, with different scenarios for all programs) and the motivational questionnaire for determining attitude towards EBP. Both instruments were developed and validated by Bea Spek et al. (2012, 2013)

RESULTS. Results were statistically processed and yielded insights in differences and similarities between the programs. For instance, results from occupational therapy and speech-language therapy were very similar, as results from the nursing students differ a lot from the rest, especially the attitude. However, this presentation will focus more on results from the discussions with teachers in the programs and the modifications that were initiated following these discussions.

LIMITS. The study population may not be fully be representative for all health programs and comparison may not seem to be fair because of many differences between professions and programs. Therefore, the statistical effects are not very strong. Nevertheless, the discussions were of greater value.

CONCLUSIONS. After 6 years of monitoring the EBP-competencies of students and their lecturers, a complete set of scores was not available. However, administering the Fresno test and motivational questionnaire and discussing the results with the lecturers caused a lively and fruitful discussion. This led to a more evidence-based education regarding EBP and research skills.

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28. Occupational therapy students use of the mobile application EBPsteps to document the process of EBP: a cross-sectional study

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BACKGROUND. The mobile application (app) "the EBPsteps" was developed to support evidence-based practice (EBP) learning for students in health and social care education. The EBPsteps guides users through the five steps of EBP: ask, search, appraise, integrate and evaluate. Users create a personal profile in the app. The app integrates links to internet-based learning resources, provided by The Centre for Evidence-based Practice, Western Norway University of Applied Sciences (HVL) and The Norwegian Institute for Public Health. Additional functionality, such as a calculator and a glossary that provides definitions of core research-methods terms, are available. The app is free to access at https://ebpsteps.no/ and can be used on any device. Information documented in the EBPSteps is automatically stored in user profiles and on a research server, providing opportunity for assessing and researching EBP knowledge, skills and behaviour.

AIMS. To report on how occupational therapy students used the mobile application EBPsteps to document the EBP process

METHODS. Context: Third year occupational therapy students at HVL complete an 11-week clinical placement in their 5th semester. For pre-placement preparation, students must find, critically appraise and present relevant research to their clinical instructors. After placement, they hand in a take-home exam paper (5000 words) where they justify their rationale for activity and participation as therapy, based on a real patient scenario. In addition to the exam paper, students are required to submit an appraisal; either a critical appraisal worksheet or a printout of the EBPsteps. Third year students in the 2018 cohort (n=47), were introduced to the app at the beginning of 5th semester, so that they could also use it for pre-placement preparations and during placement. They were informed that using the app involved participation in a research project. Data collection procedure and data analysis: Data from EBPsteps appraisals produced during autumn 2018 were exported to Excel, and analysed using IBM SPSS Statistics for Windows, Version 25.0. Descriptive statistics were calculated to describe what was documented in the appraisals.

RESULTS. 41 out of 47 students chose to use the EBPsteps. In total, 73 unique EBPsteps appraisals were produced for this cohort. Most of the appraisals were produced before or after placement, only four appraisals were produced during placement. About half of the students (n=20) produced more than one appraisal. These preliminary results show what was documented for each EBP step. Ask: Type of core question was documented in 58 appraisals. Therapy questions were most frequent (n=47), followed by qualitative questions (n=10) and questions about prevalence (n=1). Only 15 appraisals had filled in all PICO elements, whereas the PIO was completed in 43 of the appraisals. Search: Synthesised summaries (e.g. UpToDate or BMJ Best Practice) and guidelines were searched in 21 of the appraisals; sources for summaries (e.g. Cochrane Library) in 51 of the appraisals, and databases (e.g. Cinahl or PubMed) in 58 of the appraisals. Appraise: Checklists for systematic reviews/RCTs/guidelines/case-control study were chosen in 47 out of the 73 appraisals. Integrate: Research evidence was reported applied in practice in 32 of the appraisals, and descriptions of how results were applied were given in 28 appraisals. Evaluate: How changes in practice were evaluated was described in 46 of the appraisals. Further analysis will be presented at the conference, for example assessment of EBP knowledge (e.g. knowledge about which study design/checklist is most appropriate for question asked), and assessment of EBP skills (e.g. ability to conduct effective searches, ability to critically appraise research evidence), and EBP behaviour (e.g. reasoning behind choice of information sources, using or not using research evidence).

LIMITS. Efforts are needed to established whether the EBPsteps is a valid and reliable measure of learning. To gain more knowledge about EBP in real clinical settings, we need to ensure that students apply the EBPsteps during clinical placement.

CONCLUSIONS. We report on what third year occupational therapy students documented in appraisals using the EBPsteps app. Our results showed that not all PICO elements were documented; databases for studies were used more frequently than summaries. Research evidence was critically appraised in most appraisals, although there was a tendency that results were not applied in practice. For formative or summative assessment, or research purposes, the app has the potential to measure different EBP educational outcomes and can be used for different types of assessment, including cognitive testing, assessing performance and monitoring activity.

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29. Capacity building for EBP in Ireland

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BACKGROUND. Building on the Sicily Statement (2009), evidence-based practice has grown throughout the world, with a strong community of international EBP champions and centres of excellence. However, the progression of a unified approach to putting evidence into practice has been hampered in Ireland by the lack of a unifying hub or network to connect the practitioners, educators and students of evidence-based practice. Recognising this gap, we consulted with international EBP enthusiasts and resolved to establish a network for evidence-based practice in Ireland (EBPI). The objective of this network was to promote evidence-based practice throughout our healthcare system, with the ultimate goal of improving patient outcomes.

AIMS. To build capacity and leadership for EBP in Ireland • To create a hub for EBP in Ireland • To establish a network of EBP practitioners • To establish a network of EBP educators/trainers • To build capacity for dissemination and implementation • To agree core competencies for EBP education • To integrate EBP into the curriculum of all healthcare professionals

METHODS. • Research to establish the baseline of current EBP teaching in Ireland, including literature review, interviews with international experts and a national survey with universities/ third level institutions. • Stakeholder engagement on the development of a curriculum and competency framework for EBP education for health professionals in Ireland. • Training of a cohort of EBP educators/trainers to teach EBP. • Provision of training courses in EBP for multidisciplinary healthcare staff, focusing on applying evidence to practice. • Participation in an international Delphi study on core competencies for evidence-based practice. • Development of a framework for EBP and clinical effectiveness education for healthcare professionals. • Development of an implementation guide and toolkit for evidence-based projects. • Development of a framework for patient and public participation.

RESULTS. • Publication of baseline research of EBP teaching in Ireland, which showed positive attitudes towards EBP. The research showed that the first three steps of EBP (ask, acquire, appraise) were taught more frequently in Ireland than steps four and five (apply, assess). • EBP Education Forum held with educators, regulators and accreditation bodies in 2016 and 2017. • Training of 7 EBP practitioners at CEBM Oxford to become future teachers of EBP. • 3-day training on 'Introduction to Evidence-based practice' provided to 50 multidisciplinary healthcare professionals in November 2017 and March 2019. • Training and coaching in Implementation Science, and publication of an Implementation Guide and toolkit for evidence-based projects in 2018, to build capacity for dissemination and implementation. • Core group of EBP practitioners and educators identified to commence establishment of a network in Ireland. • Publication of a core curriculum for EBP education and clinical effectiveness in Ireland in December 2018. • Dissemination and implementation phase commenced in 2019.

LIMITS. The inclusion of evidence-based practice is not currently mandatory in the curriculum of healthcare professionals in Ireland. Collaboration with the regulators, accreditation bodies and policy makers are required to integrate EBP competencies into curricula and standards.

CONCLUSIONS. This project addresses the current lack of standardised EBP education and training in Ireland. The network will provide a hub for education, collaboration and dissemination with a multidisciplinary group of health professionals working in the Irish healthcare system. Through inclusion of evidence-based practice in the curricula of all healthcare professionals at both undergraduate and post-graduate level, we aim to build capacity and encourage the next generation of leaders in evidence-based healthcare in Ireland. By means of consultation with stakeholders, capacity building for dissemination and implementation, and working in collaboration with regulators and policy makers, we can translate evidence into policy and real-world practice, to improve patient outcomes.

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30. Is there a need for implementation of more specified reporting guidelines for the search process in systematic reviews and meta-analyses?

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BACKGROUND. The foundation for all systematic reviews and meta- analysis is a comprehensively conducted and transparent documented literature search. The search is aiming to locate "all" available evidence matching the research question the pre-defined inclusion criteria. In order to obtain full search transparency and to make it possible to critically appraise also the search strategy, the search process is required to be described in the methodology and a detailed strategy reported in an appendix. Introduced in 2009, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) is the most common guidelines required for reporting of systematic reviews and meta-analysis in top ranked medical journals like JAMA, The Lancet, The British Medical Journal etc. Prisma and other standards and guidelines like the Institute of Medicines Standards for Systematic Reviews (IOM) and the Cochrane Handbook for Systematic Reviews of Interventions includes instructions of different levels of details for reporting the search strategy. The introduction of the PRISMA standard as a required reporting guideline for medical journals has been confirmed to generally improve the quality of published systematic reviews and meta-analyses. Research does at the same time however indicate a generally poor quality of the search processes reported in medical systematic reviews and meta-analyses. A direct connection between the search precision and documentation and the quality of the evidence has also been recorded.

AIMS. The aim of this presentation is to determine if there is a need for implementation of more specified reporting guidelines for the search process in systematic reviews and meta-analyses to improve the quality outcomes of published studies.

METHODS. A review of the literature published about the quality of the performance and documentation of search strategies for systematic reviews and meta-analysis and the search strategies impact of the quality of the evidence was conducted using PubMed, Embase, Scopus and LISTA. A publication year filter for past ten years were applied. The specification of the search reporting part in PRISMA, IOM and the Cochrane Handbook for Systematic Reviews of Interventions were in addition reviewed and compared.

RESULTS. The result from the literature review shows that several recent papers indicate a generally poor quality of both the search strategies and search process documentation of systematic reviews and meta-analysis published within different medical specialties in the past ten years. A comprehensive study of systematic reviews in Cochrane between 1994-2011, Golder et. al (2013) reports that only 9% (74/849) of the search strategies in reviewed papers were fully reproducible. Golder's study, and several others, also shows a close connection between the quality of the search strategies and the overall quality of systematic reviews.

LIMITS. This study is limited to a review of a prospective need for implementation of more specified reporting guidelines for the search process in systematic reviews and meta-analyses. Additional comprehensive studies comparing the result from this literature review with the quality of the search and search reporting of recently published systematic reviews and meta-analyses will be required to gather further evidence. Additional studies comparing the search strategies with used reporting guidelines will also be needed.

CONCLUSIONS. This result of the literature review is concerning as systematic reviews and meta-analysis are used as evidence-based support in clinical settings and for developing clinical guidelines. A poor conducted search can produce a totally different result compared to a comprehensive and structured systematic search that captures all possible available studies that match the research question and set inclusion criteria. The quality of the search therefore can have a direct impact on the quality of evidence used in evidence-based practice. Furthermore, a poorly reported search strategy hinders health care practitioners and researchers to fully appraise the quality of the evidence presented in the papers affecting the clinical usefulness of the studies. Implementation of more specified reporting guidelines for the search process in systematic reviews and meta-analyses, could therefore contribute to ensure that best possible evidence is presented in published papers.

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31. Creating advocates for evidence-using creative techniques to develop a network of evidence based practitioners in Ireland

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BACKGROUND. Evidence Based Practice Ireland (EBPI) was established in 2017 to promote evidence-based practice throughout he healthcare system in Ireland with the ultimate goal of improving patient outcomes. One of the aims of EBPI is to establish a network of EBP practitioners and educators with a vision to create a culture in the health and social series that "evidence-based practice is how we do things around here". A three-day workshop in EBP was held in Ireland in March 2019. There were ten facilitators from Ireland, two visiting speakers from the Centre of Evidence Based Practice (CEBM) in Oxford and 43 participants. Places were allocated to ensure a widespread geographical distribution and representation of health care disciplines both clinical and not clinical. This distribution was to ensure we could seed the network throughout the health services with EBP champions. While there are pockets of good practice of EBP in Ireland there is no unifying network or organisation to unify the efforts.

AIMS. The harness the enthusiasm and passion of the practitioners and teachers to create the strategic vision for the EBP network. To establish the steering committee of the EBP network. To build capacity for teaching and practicing EBP

METHODS. A series in interactive sessions were facilitated by a psychologist throughout the three-day workshop including an icebreaker opening exercise, creative thinking with facilitators each morning prior to the workshops and a networking interactive session at the network dinner with feedback of findings at the last session of the workshop. Each exercise involved personal reflection, sharing insights with another participant and feedback and exchange with the wider group. Exercises were designed to create bonds and opportunities to connect and develop

RESULTS. The exercise created an opportunity for people to connect and build relationships an essential component of network development. Themes emerged that were of importance to the participants for a network including; Nurturing capacity in EBP, teaching and practice Connecting the different pockets of EBP in Ireland Creating a website Sharing of resources and experience and methodologies in EBP Increasing the use of EBP throughout Ireland Implementing EBP in practice Impact on patient outcomes through the use of EBP Connection to other networks and group both nationally and internationally with a shared passion for EBP A steering committee has been established with all facilitators being invited. Terms of reference have been drawn up. This steering committee provides the strategic direction and momentum for the network.

LIMITS. There was enthusiasm at the workshop from both facilitators and participants to become active members of an EBP network. Sustained participation is driven by the value it brings individual members. The network is part of EBPI an initiative which aims to create a culture where EBP is the norm of how healthcare is delivered in Ireland. This normalisation is necessary to support an EBP network

CONCLUSIONS. Using the innovative approach to engage, connect and establish relationships throughout the three-day workshop in EBP enabled us harness the enthusiasm generated to create this network of EBP advocates. By choosing participants from different health care backgrounds based throughout the country we have an opportunity for each individual to change their behaviour, to influence that of their colleagues, the services and ultimately patient care. By establishing a network, those individuals will be connected to and supported by other practitioners of EBP allowing for exchange of knowledge and expertise. By identifying the needs of those in the network, through the creative exercises, we can ensure the network provides value for the individual members thus creating sustainability

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32. Pediatric journal club: a critical appraisal tool in postgraduate primary pediatric care education

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BACKGROUND. Journal clubs have traditionally been held within academic institutions and have served the dual purpose of fostering the literature critical appraisal and new findings dissemination. Recently online and virtual journal clubs have been started and are flourishing. In Italy, paediatric primary care (0-14 years of age) is a public service run by specifically committed paediatricians (family paediatricians), whose post-graduate training, unfortunately, is not regularly and formally provided in all the Italian Regions and is seldom evidence-based. Since 2004, the "Acp* Pediatric Newsletter" (Acp PN, Newsletter Pediatrica Acp), the Journal Club of Acp*, has been dealing with critical appraisal and dissemination of scientific papers, systematic reviews, and guidelines, particularly addressed to paediatric primary and secondary care, in the form of appraisal sheets, tailored to study types, following template, as jointly established and updated by our referral epidemiologists (CeVEAS, SaPeRiDoc, Burlo Garofalo IRCCS).

AIMS. The Acp PN is an evidence-based, peer to peer, training tool for healthcare professionals, whose aims include: identifying, selecting and commenting, based on a shared and consistent methodology, articles and papers published in leading international publications; boosting individual critical appraisal skills, group-work skills and competencies; instructing on the requirements of publishing work on indexed peer-reviewed publications; disseminating knowledge most relevant to everyday paediatric practices.

METHODS. Group members, about a hundred, include family paediatricians, trainee paediatricians and residents. Their activities are the following: regularly monitoring and selecting potentially relevant articles; reading and appraising based on methodological quality; monthly journal club meeting and discussion and structured appraisal sheet collegially compilation, included bibliographical references relevant to the topic at hand. The Acp PN groups, after an interactive peer-reviewing of the papers, forward their appraisal sheets to the editorial team that, in turn, is entrusted with copy-editing them, prior to publishing. Editors, furthermore, provide contributors their feedback concerning any edits made to the appraisal sheets prior to their publication or comments pertaining to the article's position with respect to the body of scientific literature, carry assessments on methodological issues, and also provide references to any further relevant articles on the same topic. As of November 2015, the appraisal sheets are regularly published in the ACP website's "Pagine elettroniche di Quaderni Acp" column (http://www.acp.it/pagine-elettroniche). All of the ACP PN journal club participants are benefiting by Italian CME credits, provided by Acp. Every year as of 2014, Acp NP editors have organized annual training days on the topics on relevant epidemiological and EBM tools, to enhancing literature appraisal methods. The regularly monitored publications are The Lancet, BMJ, JAMA, NEJM, ADC, Pediatrics, J of Pediatrics, JAMA Pediatrics, BMC Pediatrics, BMJ Updates, and Cochrane Database of Systematic Reviews, but relevant issues are possibly selected by other publications.

RESULTS. At present, contributors to Acp PN Journal club include members of 11 journal clubs' groups, that are based in as many Italian cities; each group is composed of 5-15 members. There are also 20 paediatricians, members of the Acp working group on child health and environmental pollution. 33 appraisal sheets were published in 2017 and 38 in 2018, in addition to comments to the most relevant Guidelines and Systematic Reviews published in paediatric primary and secondary care.

LIMITS. We think that this training modality delivers clear professional and working benefits to Journal club members which are, however, yet to be formally appraised in terms of their efficacy. Given the lack of evidence available at present, valuable research is needed on which methods would qualify for the purposes of assessing the training efficacy in this peculiar Italian context of paediatric primary care. In this regard, we are drawing up an effectiveness measuring system of each participant (a questionnaire). Other limits are lack of free access to libraries for family paediatricians; no recognition of this training commitment by some Regions health system (ASL).

CONCLUSIONS. Journal clubs should strive to contribute to spreading critical appraisal tools and methods relevant to primary and secondary research papers, and expand access to publications to an audience as wide as possible, independently, and in a peer to peer modality as Acp PN does. *Associazione Culturale Pediatrica is an Italian Paediatric scientific Society, whose first mission is Medical education.

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33. Perception of different forms of evidence-based information: results from a pilot study

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BACKGROUND. Internet is becoming more and more popular source of all-kind information. Dissemination of scientific based information should be based on the analysis of the needs of the target audience, while the information needs to be both precise and understandable.

AIMS. The aim of present study was to evaluate different forms of presentation of evidence-based information (called later formats).

METHODS. Using Focus Group Interview (FGI) we collected information and evaluation of 9 different formats based on Cochrane systematic reviews. FGI group consisted of 5 women and 1 man. Participants were recruited from University employees. We included the following formats translated into Polish: 1. Plain Language Summary (PLS), 2. Recorded Plain Language Summary (audio form of PLS), 3. Vlogshot, 4. Blogshot, 5. Infographics 6. Comic drawing 7. Summary of findings Table (SoF), 8. Abstract and 9. Press Release (PR). FGI moderator distributed formats together with the evaluation sheet sequentially and asked the participants to go through the material and immediately after that individually evaluate its usefulness (paper form; scale from 0-9). The moderator asked the participants to indicate clarity of formats and asked them to present their opinions on each format. Moderator facilitated the discussion about the advantages and disadvantages of each format.

RESULTS. Evaluation of each format indicated that the translated abstract was indicated by the participants as the most useful one, scoring 6.83 points. It was followed by infographics and PR, which scored: 5.83 and 5.8, respectively. The lowest score was 3.5 points and was assigned to PLS. Among the newest formats (blog and vlogshots) blogshot was assessed better than vlogshot: 4.3 and 3.67, respectively. The assessments obtained through paper forms were not in line with participants' verbal opinions expressed about each format. Participants expressed positive comments mainly about structured formats, comprehensibility of the information and precision of information presentation. Negative comments were associated with the use of terminology (e.g. randomized trials, induction, etc.), sometimes low precision (too plain language), lack of the effect of the intervention or not enough amount of information.

LIMITS. The main limitation of this study are participants who were recruited from technicians who work with information and prepare publications. Another limitation was probably connected with number of analysed formats.

CONCLUSIONS. The obtained results may indicate that the most popular form of Cochrane SR presentation – PLS, should be checked in terms of the language used. Participants pay attention to numerical data. The language used in formats should be coherent, coexistence of professional terminology with plain language remained the main drawback. Gathered data suggest that each format probably should be carefully revised and accompanied with clear guidelines.

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34. Capturing stories and demonstrating impact in the field of evidence-informed public health

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BACKGROUND. The National Collaborating Centre for Methods and Tools (NCCMT) is a national Canadian organization that champions the use of evidence in public health decision making. We compile the latest research and evidence for what works in public health and we work with practitioners to develop knowledge and skills for using different types of evidence when making decisions in their own work. Our goal is to help build confidence in the public health workforce so that practitioners know they are making informed decisions about the programs and policies that affect the health of both individuals and communities. We believe this is the foundation for evidence-informed decision making in public health. Recently, the NCCMT established a new data collection and management process using customized customer relationship management (CRM) software to better evaluate our reach, engagement, and impact on public health practice.

AIMS. One of the major aims of this project was to leverage existing sales technology to better capture and share stories of how the public health community is using the best available evidence in their own practice, and how we at the NCCMT can help to support these practitioners.

METHODS. The NCCMT used a customizable CRM software and adapted the platform to align with the organization's public health and knowledge translation focus. Customized tables were created to track the relationships between contacts, organizations, knowledge translation activities and products, as well as the impact of using NCCMT resources in practice. Data entry forms, naming conventions, and protocols were created to facilitate the data collection and management process. To ensure data quality and consistency, one staff member was assigned to review all data classifications. Customized reporting templates were developed to easily obtain aggregated data and access information in the system. All data tables in the CRM software are relational meaning that staff can efficiently access information on reach, engagement, and impact in diverse ways.

RESULTS. Examples of how public health practitioners are using NCCMT resources and services in their own work cover a range of levels of impact. At one end, practitioners are requesting copies of NCCMT resources to share with their colleagues, acknowledging the value of evidence-informed resources and encouraging others to explore what is available on the NCCMT website. Public health practitioners from around the world have requested to adapt NCCMT resources for use in specific settings and contexts. With the new CRM system we are able to comprehensively and prospectively capture these instances of evidence-informed decision making awareness-raising. Another aspect we are able to capture is the use of the NCCMT in post-secondary programs and courses relevant to public health to support the training and development of the future public health workforce. Finally, we can share stories of practitioners using our resources and practicing evidence-informed decision making in their day-to-day work as well as capture scenarios where there has been a shift across the entire organization towards a culture of evidence-informed decision making. By learning about and keeping track of these stories in a structured and systematic way we are able to demonstrate the impact and value of using an evidence-informed approach in public health practice.

LIMITS. Resources required to ensure adequate maintenance of the CRM, both the technological infrastructure as well data entry and accuracy, are the primary limitations. Software and server hardware requires ongoing financial commitments to remain current, and data entry and data accuracy are time consuming and burdensome for a small organization with limited resources.

CONCLUSIONS. Using a CRM software for data collection and management has helped the NCCMT to better capture examples of how public health practitioners have used an evidence-informed approach in their program and policy decisions in order to demonstrate the impact of evidence-informed decision making in public health practice.

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35. Piloting a workshop on evidence-based public health in Africa

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BACKGROUND. The Collaboration for Evidence-based Healthcare and Public Health in Africa (CEBHA+) is a network comprising seven African partners in Uganda, Ethiopia, Rwanda, Malawi and South Africa, and two German partners. The 5-year project is funded by the Federal Ministry of Education and Research in Germany and aims to build long-term capacity and infrastructure for evidence-based healthcare and public health in Sub-Saharan Africa. Sub-Saharan Africa is faced with many challenges related to a huge burden of disease and healthcare delivery. To make optimal use of existing resources, it is essential that public health practitioners adopt an evidence-informed approach to inform policies and practice. Evidence-based public health (EBPH) is defined as the "integration of the best available evidence with the knowledge and considered judgements from stakeholders and experts to benefit the needs of a population". In response to a lack of training initiatives in the field of EBPH in Africa, we developed a workshop on EBPH as part of CEBHA+.

AIMS. To develop, implement and evaluate a workshop on EBPH relevant to the African setting

METHODS. We developed a five day face-to-face, CEBHA+ EBPH workshop for African researchers planning to conduct systematic reviews on public health interventions or working on other aspects of EBPH; mid-career public health professionals; and postgraduate students wishing to embark on a career in EBPH. The aim of the workshop was to introduce the concepts of EBPH and focused on asking questions, and finding, appraising, interpreting and applying best available evidence to public health questions relevant to the African setting. Each of the five days focussed on one of the steps of EBPH. The workshop comprised lectures and interactive sessions including group exercises, small group discussions and hands-on searching, with more than 50% of the time devoted to these interactive sessions. We developed scenarios that portrayed problems relevant to the African setting and used these, as well as published papers that provided potential answers to these problems, as examples throughout the workshop. To supplement the face-to-face teaching, we created an online learning management site that contained reading material, workshops and presentations. Furthermore, it afforded participants the opportunity to interact with each other and the facilitators during and after the training. At the end of each day, we requested that participants complete an online evaluation form. The workshop was accredited with Stellenbosch University in Cape Town, South Africa.

RESULTS. The EBPH was first implemented at Makerere University, School of Public Health in Kampala, Uganda, from 8-12 October 2018. Thirty participants, including a mix of researchers, public health practitioners, and Master's and PhD students, attended the workshop. The facilitator team comprised five facilitators from Germany, South Africa, Rwanda and Uganda. As Uganda faces a huge burden of disease related to road traffic injuries, we used this as the main example to illustrate the five steps of EBPH. For the sessions on critical appraisal, we thus selected a controlled before-after study, an interrupted time series study and a systematic review on interventions to prevent road traffic accidents. Workshop participants were energetic, enthusiastic and eager to learn new skills. Facilitators felt that the mix of didactic presentations and exercises worked well, and group work afforded individual participants an opportunity to participate. Indeed, participants engaged well in both small and the bigger group, and discussions were lively. Overall, participants had very positive feedback. Among other things, they liked the interactive group exercises and discussions, critically appraising challenging papers, networking with other participants and time-management. They mentioned that the content was engaging, relevant and applicable to their daily work. They suggested to allocate more time for group exercise and discussions, to record sessions and to offer the training on an annual basis.

LIMITS. We considered the first CEBHA+ EBPH workshop in Uganda to be a pilot and have not yet done a formal evaluation. However, feedback from participants and facilitators will help us to enhance future offerings of the workshop. The EBPH workshop is currently funded through CEBHA+, as a once-off workshop in partner countries. However, to build long-term capacity and to ensure sustainability, partner institutions need to explore opportunities to expand the workshop into a full module that can be integrated into postgraduate curricula.

CONCLUSIONS. To our knowledge, this is the first EBPH workshop in sub-Saharan Africa. The first offering of the CEBHA+ EBPH workshop was successfully implemented in Uganda, with thirty participants receiving theoretical and practical training in the principles of EBPH. Future workshops will be offered in Rwanda, Malawi and Ethiopia, and a formal evaluation of all workshops is planned.

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36. The European breast guidelines from the European Commission Initiative on Breast Cancer: translating the evidence to enable informed healthcare decisions across settings

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BACKGROUND. The European Commission Initiative on Breast Cancer (ECIBC) aims to ensure and harmonise the quality of breast cancer (BC) care across Europe on a sustainable basis, contributing to improving health & reducing health inequalities.

AIMS. One of the aims of the ECIBC is to develop the European Guidelines on breast cancer screening and diagnosis (European Breast Guidelines, in short) with the objective that countries across Europe and beyond will implement the recommendations from these Guidelines within their national context. The other main aim of this initiative is the development of a voluntary European quality assurance scheme to be adopted by breast cancer services in Europe. This scheme includes quality and safety requirements, whenever possible based on evidence, for the entire breast cancer care pathway, which are relevant to citizens.

METHODS. The European Breast Guidelines are being developed using the GRADE approach with an international, knowledgeable and multidisciplinary panel of experts, including among them patients, healthcare professionals, epidemiologists and guideline methodologists. The GRADEpro Guideline Development software is used throughout the entire process. Evidence-to-Decision frameworks (Etds) that provide a number of different criteria, such as expected desirable and undesirable effects of the options being evaluated, the certainty of the evidence of these effects, values and preferences of the people affected by the intervention, costs, acceptability and feasibility, are used to provide a systematic and transparent process in going from the evidence to the healthcare decision.

RESULTS. The first 40 evidence-based recommendations on several topics related to breast cancer screening, diagnosis and communication with women have already been published online, with the complete Etds, in a dedicated webpage (https://ecibc.jrc.ec.europa.eu/recommendations/). The remaining 40 recommendations to complete the guidelines (making a total of 80) will be published by the end of 2019. Recommendations on the web are tailored in style and format to three different profiles: individuals/patients, healthcare professionals and policy-makers. The type of information emphasised in the three profiles differ according to what may be more relevant for each of them, as their needs may be different, thus enabling informed decision-making for all users of the guidelines. Additionally the screening and diagnosis recommendations are used within ECIBC to help define requirements within the quality assurance scheme.

LIMITS. The official language for the publication of the guidelines on the web is English which may somewhat limit their use in countries where this language is not commonly used.

CONCLUSIONS. The European Breast Guidelines uses a multidisciplinary, transparent & robust development process. Online publication of the complete evidence to decision frameworks, as well as utilisation of commonly used software for guideline development and continuous stakeholders' engagement will enhance implementation of the guidelines across countries. We already have examples of several countries (Bulgaria, Tunisia, and Bahrein) that have implemented/adapted our recommendations to their national contexts.

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37. Using Choosing Wisely recommendations as tools to promote diagnostic and therapeutical appropriateness in medical education

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BACKGROUND. Very few tools are available to help teaching how to make and communicate appropriate clinical choices in complex clinical and social contexts.

AIMS. We tested the usability of the recommendations from Choosing Wisely Italy (CWI, www.choosingwiselyitaly.org) to teach clinical appropriateness.

METHODS. We tested CWI recommendations in role plays within a course of Communication Skills with 210 2nd year undergraduate medical students and 40 freshmen physical therapy students, in 12 groups of 20-25 students. Each group performed two scenarios. The scenarios included a patient presenting to a healthcare professional (physician or physical therapist) with an obviously inappropriate request (such as antibiotics for sore throat, NMR for recent back pain, or continuous passive motion after cruciate ligament surgery), but feeling entitled by contextual factors (a prescription from a locally highly respected surgeon, fear to lose the job as an elder carer if he/she would be infected). Two students would play the roles of patient and professional, and the scenario would be discussed and repeated by further couples until a satisfactory strategy, according to the group, was found. After the first attempt, the recommendation from the relevant professional society (in which the practice was invariably listed at the first place among inappropriate practices of that professional community), was presented to the students.

RESULTS. At the first attempt, all the "professionals" except two (23/25), quickly complied with the "patient" request without questioning. Even after being shown the recommendation, two of the "professionals" still felt bound to comply with the request, while all the others tried to avoid the prescription, but failing to find a communicative strategy that could be convincing for the "patient". It took three to four attempts for each scenario for the group to devise a communicative strategy accounting for, legitimating, and suitable to change the patient's perspective. In the evaluation questionnaire, 23.1% of the students reported a dislike for engaging in role playing, but the scenarios were considered appropriate for the task by 82.9% and CWI recommendations were reported as useful by 82,3% and authoritative by 84.4%.

LIMITS. Exploratory study

CONCLUSIONS. CWI recommendations where perceived as synthetic, clear and authoritative by the students. By the teacher's perspective, they allowed to concentrate on the problem at hand and on its context, without having to engage in complex methodological, clinical and physiopathological matters.

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38. You can lead a horse to water... Can motivational theory contribute to our understanding of professional behaviour change?

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BACKGROUND. The challenges of implementing changes in clinical practice in organisations are well documented with a recent article claiming that the drive for improved quality has 'frozen in time'. One of the most puzzling aspects has been the high variability in the effectiveness of interventions used in the implementation process; so that, for example, the evidence for the effectiveness of audit and feedback has been found to range from nil to moderate across studies. This has led a number of researchers to consider that it may not necessarily be the specific method or approach used that predicts a successful outcome, but rather the way in which the change is introduced and by whom.

AIMS. To use Self-Determination Theory (SDT), a widely researched and empirically validated theory of human need fulfilment and motivation, to try to build a clearer understanding of why the implementation of change in clinical settings succeeds or fails.

METHODS. Implementation studies, derived from a narrative review of the literature, were analysed, using the lens of SDT, for evidence of: 1) whether the process was implemented in a manner that was supportive of the innate psychological needs of staff for autonomy, competence and relatedness; 2) the degree to which staff appeared to 'buy in to' or 'take ownership' of change; and 3) the outcome of the implementation process.

RESULTS. Findings suggest that the implementation of practice change is more likely to be successful when the psychological needs of staff are met. This appears to operate through increasing intrinsic motivation, which results in staff engagement and buy in to the process That is not to argue that training in improvement concepts and methodologies, the use of implementation tools and strategies and the provision of coaching and support are not important and necessary, but rather that unless the psychological needs of the workforce are addressed through the development of an autonomy-supportive work environment, services/organisations will continue to struggle to provide sustainable practice change at scale.

LIMITS. SDT has an extensive body of research supporting its effectiveness in health-related behaviour change, such as smoking cessation, weight loss and physical activity, as well as in a broad range of other areas such as education, sport and work. Although there have been a limited number of studies applying SDT in practice change amongst health professionals, two proof of concept studies have provided evidence of increased implementation behaviours. There is a need, however, for further well-designed studies to test the validity of SDT as a useful theory in clinical practice change, particularly given the complex and diverse nature of health.

CONCLUSIONS. Despite widespread acknowledgement of the importance of engagement of front-line staff in the change process, clinical change strategies have all too frequently been enacted with increasing top-down control and standardisation. Dealing with the resulting stagnation has proved remarkably difficult – so we need to tackle it in a new way. SDT would suggest that implementing change is critically about creating an environment in which people become motivated to change their behaviour. This will require a significant shift in our thinking about the way in which change is introduced and about organisational leadership for change.

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39. Self-reported and objectively assessed knowledge of evidence-based practice terminology: a survey among healthcare students

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BACKGROUND. Self-reported scales and objective measurement tools are used to examine self-perceived and objective knowledge of evidence-based practice (EBP). Knowledge of EBP terminology and research methodology are prerequisites to understand the concept of EBP and critically appraise research evidence. Agreement between self-perceived and objective knowledge of EBP terminology has not been widely investigated among healthcare students.

AIMS. The aim of this study was 1) to examine agreement between self-reported and objectively assessed knowledge of EBP terminology among healthcare students, and 2) to explore this agreement between students with different levels of EBP exposure.

METHODS. During winter 2016, a survey was conducted among Norwegian (n=336) and Canadian (n=154) bachelor and master students in various health disciplines. The survey contained demographic variables, 17 self-report questions from the Evidence-Based Practice Profile (EBP2) Terminology domain, one self-report question of how to understand the term 'evidence-based practice', and six open-ended questions formulated as "What does XX mean, in your own words, AND how would you describe it to a fellow student?". To limit the time needed to complete the questionnaire, the 18 open-ended items were divided into three subsets. Each student received a subset of open-ended items chosen at random. The self-reported questions were answered on a 5-point Likert scale, where 1= "never heard the term", 2= "have heard it, but don't understand", 3= "have some understanding", 4= "understand quite well" and 5 = "understand and could explain to others". The open-ended questions were scored on a five-level scoring rubric, which related to the 1 - 5 levels of the self-rating section. The scoring rubric was developed and piloted in close collaboration with experts in EBP from the McMaster University. We reported mean and standard deviation to describe the scores of the self-reported and assessed open-ended items. Mean differences between self-reported and assessed items were estimated with paired t-test. Interrater agreement between self-reported and assessed items was investigated with weighted kappa (Kw). We used intraclass correlation coefficient (ICC) to estimate overall agreement. Independent sample t-test was applied to analyze differences in mean self-reported EBP2 Terminology domain scores by EBP exposure.

RESULTS. Mean self-reported scores varied across items from 1.99 (forest plot) to 4.33 (evidence-based practice). Mean assessed open-ended answers varied from 1.23 (publication bias) to 2.74 (evidence-based practice). For all items, mean self-reported knowledge was higher than that assessed from open-ended answers (p

LIMITS. The EBP2 is a self-report questionnaire with five domains (Relevance, Terminology, Confidence, Practice and Sympathy) that examines self-perceived EBP knowledge, attitude and behaviour. The EBP2 Terminology domain (17 items) examines knowledge related to the understanding of common research terms. By applying the EBP2 Terminology domain, only one component of the EBP2 questionnaire and one facet of EBP knowledge was assessed. The EBP2 Terminology domain has previously been described with acceptable reliability and validity measures. The open-ended questions and scoring rubric were not evaluated for reliability and validity. Experts in EBP developed the scoring rubric, and a pilot revealed an almost perfect agreement between raters (Kw = 0.81). A convenience sample of students from two educational institutions in two different countries may have hampered the generalizability of the study. We included sufficient participants to analyze agreement between self-reported and objectively assessed knowledge. Due to a smaller sample size of students, agreement values between levels of EBP exposure should be interpreted with caution.

CONCLUSIONS. There was overall low agreement between healthcare students' self-reported and objectively assessed knowledge of EBP terminology. As a measurement tool, the EBP2 Terminology scale may be useful to differentiate between levels of EBP exposure among healthcare students. For the purpose of educational assessment, users should be aware that self-ratings on the Terminology domain would likely be higher than objectively assessed knowledge.

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40. Establishing patients' goals in general practice: online learning for general practitioners

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BACKGROUND. Evidence based medicine (EBM) has always been about applying scientific evidence to individual patients. In 1996 Sackett described it as 'the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients', and emphasised that it required 'thoughtful identification and compassionate use of individual patients' predicaments, rights, and preferences in making clinical decisions about their care'.(1) More recently there have been concerns that EBM is 'in crisis', due to a loss of its focus on individual patient centred care, and the risks of polypharmacy and overtreatment when evidence based guidelines are applied to multiple conditions in the same patient.(2) 'Real' EBM is when the ethical care of the patient is the top priority, and it starts with finding out what matters to the patient. This is particularly important in multimorbidity. However, establishing patient's preferences and goals in busy clinical practice is not straightforward.

AIMS. We aimed to determine the key components of the goal-setting process in general practice, and then develop an online training module to help general practitioners (GPs) establish the goals and priorities of their patients with multimorbidity, in order to deliver 'real' evidence-based medicine shaped around the patient.

METHODS. We applied activity analysis to 10 hours of video-recorded doctor-patient interactions to explore key themes relating to how goal-setting was attempted and achieved in 22 patients and 5 GPs. The four main components of the goal-setting process were: patient preparedness and engagement; eliciting and legitimising goals; collaborative goal-setting; and GP engagement. We then worked with patients and GPs to develop an elearning module for GPs to improve their skills in goal setting, particularly with patients with multiple conditions. We use real video-recorded consultations of GPs talking to their patients about their goals, to illustrate the key steps in goal setting in primary care.

RESULTS. The eLearning module consists of 3 linked components, each of which takes less than 1 hour to complete online, with the expectation that learners will also spend time trying out their learning in clinical practice. It is hosted on the 'Future Learn' platform as an open access course, and will be available by the end of August 2019.

LIMITS. The effect of the learning module on clinical practice and patient outcomes has not yet been identified.

CONCLUSIONS. We have studied goal setting in real consultations, and developed an eLearning package to demonstrate the four main components of goal setting. Goal setting between GPs and patients with multimorbidity and agreeing real evidence-based management, with meeting the patient's goals as the top priority, is an extremely high level skill. This accessible training package will help GPs adapt their existing skills to achieve goal setting within the tight constraints of everyday practice, in order to better reach a shared understanding of their patients' goals, and agree a management plan to deliver on these outcomes that matter to patients. We hope this will improve the 'thoughtful identification and compassionate use of individual patients' predicaments, rights, and preferences in making clinical decisions about their care'.

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41. Global guidance for country needs: a WHO online repository of recommended investments in universal health coverage

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BACKGROUND. In order to achieve the Sustainable Development Goals, countries face challenges on how to prioritize and get the best value for money for current and future resources. Decisions around what to deliver in most settings require analysis of the cost-effectiveness of various interventions proposed for the health benefit package, in addition to considering a range of other criteria, such as fairness, priority to the worst off, and budget implications. While such processes are institutionalized in many high income settings, low and middle-income countries are now advancing on the same path. However, engaging in evidence-based analysis requires resources. Countries turn to WHO for guidance on essential cost-effective interventions, on resource needs and health impact, and on recommended lists for essential medicines, diagnostics and medical devices. This information is currently available in distinct knowledge repositories across the organization. However, information is not linked together and often not available in a standardized format. This makes the processes of evidence synthesis, communication and translation inefficient. Moreover, global evidence is not readily applicable at country level and requires local adaptation.

AIMS. Our aim is to create a knowledge repository that brings information together on WHO-recommended health interventions. The intent is to build a platform that brings evidence together from existing resources such as the WHO Essential Medicines List, the International Classification of Health Interventions (ICHI), and the WHO GRC Guidelines process. The intent is to make information accessible through an interactive website, where users can filter the information according to their specific policy question. The database will be comprehensive in scope, with specific detail on the resource requirements to deliver health interventions, including health workforce, health products, and procedures used in the diagnosis and treatment of ill health. Moreover, tools and approaches should be made available to country users to allow them to contextualize the information to the country level. Here, we will build upon existing WHO tool sets for country-specific predictive health modeling (health impact, cost-effectiveness, resource planning and budget allocation), to allow decision makers to look at future priorities and anticipate critical changes that should be considered when developing health policies, strategies and reform processes.

METHODS. We engaged in a consultative process to determine the scope and boundaries of the online repository. We gathered evidence available across all departments of WHO, by asking each technical programme to define the essential investments required to create an enabling environment for Universal Health Coverage, and for reaching the SDGs. Rigorous criteria was applied to ensure that only strong evidence-based activities and interventions are included in the final database. Data was collected using a standardized data collection tool. Quality controls were done by subject matter experts and a technical advisory team was put together to advise on standardization – for example when it comes to health workforce requirements to deliver specific health actions. Next, data will be synthesized and presented in a user-friendly online portal. Tools for country contextualization include the widely used OneHealth Tool for cost and impact projections; and the WHO-CHOICE tool for analyzing cost-effectiveness of health interventions. WHO's Choosing Interventions that are Cost-Effective (CHOICE) programme has been a global leader in the field of economic evaluation, specifically cost-effectiveness analysis for almost 20 years. Cost-effectiveness analysis plays two roles in the global health landscape, firstly as a quantitative assessment of allocative efficiency within a health system, supporting priority setting processes, and secondly through analysing the value for money of alternative investment options in the decision-making process. Combined, these applications can ensure an optimal use of financial resources within the health care sector, ensuring the greatest health gain possible is achieved given the fiscal space for health.

RESULTS. A first version of the portal will be launched in September 2019. This will include a large set of WHO-recommended interventions along with key interventions for planning and priority setting, such as health workforce requirements, health impact, and equity considerations.

LIMITS. The platform is limited to WHO recommendations, which does not cover all health areas

CONCLUSIONS. Global organisations such as WHO play an important role for evidence synthesis and dissemination. However, when information on different criteria (i.e., cost-effectiveness, essential medicines, workforce needs) is kept in discrete products, it makes the translation of evidence to country policy less efficient. A platform which brings evidence together will benefit country decision makers.

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42. "The Order of Cochrane": a new way to encourage students to learn about systematic reviews and Cochrane Collaboration

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BACKGROUND. In gamification, we can use game design to build cooperation, commitment, and rivalry. It can be used at universities, also during classes. Obtained points, leaderboard and direct competition can effectively motivate participants.

AIMS. The aim was to familiarize students with the structure of the Cochrane Collaboration (CC) and the process of creating systematic reviews using gamification methods.

METHODS. At the beginning of the facultative course of "Methodology of systematic reviews", students were divided into 4 teams of 2-3 people. The course was planned for 30 hours and took the form of workshops. The students were offered participation in the game, which was voluntary. During the classes, students were awarded points for completing tasks related to the steps of a systematic review (such as formulating a research question, preparing search strategy, assessing the risk of bias). Those points could be exchanged for the currency of the game - 'covidence'. The game is called 'The Order of Cochrane'. The playing platform was a board: a map of the world with 18 centers of CC (black crosses) and 25 branches of CC (white crosses). At the beginning of the game, the participants drew missions (for example, visiting all European CC centers, visiting CC centers on five continents), and upon completing they received victory points. Victory points could also be obtained for capturing the CC center/branch itself. Additional possibilities were unlocked after certain achievements e.g. after completing the task about formulating a research question, the participants got a message 'You can build paths', after preparing a search strategy - 'You can build bridges' or after assessing risk of bias - 'You can buy 'Risk of bias card' or 'Mission card' These cards allowed to vary the plot and strategy and possibly reverse the fate of the game, which kept the motivation to earn points.

RESULTS. In penultimate classes the results were announced and the team that scored the most victory points won and was exempted from the final presentation of the results of the work. Teams in subsequent places could choose the form of presentation - flipchart, multimedia presentation or film. The feedback from students was very positive and many highlighted the attractiveness as well as the effectiveness of the game in motivating to learn the process of conducting a systematic review.

LIMITS. The game was designed before the first classes and it had been shortly tested before on a group of volunteers, but without linking the game to the classes.

CONCLUSIONS. The use of gamification has allowed to increase student involvement, maintain interest in the subject, develop strategic elements and increase teamwork skills.

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43. Tackling discrimination in global public health guidelines

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BACKGROUND. Discrimination manifests in various ways in health care, undermining access to appropriate care, and negatively affecting the quality of the services received, resulting in poorer health outcomes. WHO develops a wide range of public health and clinical guidance for member states. A number of these guidelines address discrimination, but there is significant variation in the types of statements made, the evidence behind such statements, and the methods used to derive these.

AIMS. This study looked at how discrimination is currently addressed in WHO Guidelines to identify the potential for developing common, consistent, organization-wide and evidence-based standards for the provision of non-discriminatory health care. A better understanding of how and what aspects of discrimination are most frequently discussed in guidelines will also help determine the evidence gaps and research priorities.

METHODS. An initial review of thirty WHO guidelines (2008 - 2017) was undertaken to gain an understanding of the nature and extent of non-discrimination statements in WHO guidance. A conceptual framework was developed iteratively to identify the different ways in which discrimination may manifest in health care settings, acknowledging the inter-relationship between discrimination experienced by both patients and providers. The statements were categorized in three ways: 1) Targeted Drivers of Discrimination: The study considered four broad drivers of discrimination. (1) laws, policies or programs designed, implemented and evaluated in a way that has discriminatory intention or effect; (2) an absence of law, policies and programs that protect individuals and groups from being discriminated against on prohibitive grounds; (3) punitive and criminalizing laws, policies or programs and (4) stigmatizing attitudes, behaviors and beliefs. 2) Targeted Manifestations of Discrimination: Discrimination in health care settings is understood to affect both access to health care and/or affecting the quality of care received. 3) Non-Discrimination Interventions: Non-discrimination interventions are any best practice statement, recommendation or implementation consideration that provides clear and actionable direction to guideline users on how to intervene on the pathway between at least one driver and manifestation of discrimination. Following validation by a second reviewer of the methodology, a further 75 WHO guidelines (2013 – 2017) were reviewed and relevant statements identified and classified according to the typology above.

RESULTS. The analysis revealed several trends and gaps in the WHO guidelines regarding non-discrimination. 1) Evidence-based recommendations were the most common type of non-discrimination statement followed by implementation considerations. Only 19% of statements were statements of principle and 12% were good or best practice statements. 2) Regardless of whether these were listed as recommendations, best practice statements or implementation considerations, only half of all statements seeking to address discrimination provided clear practical guidance on measures or actions to be taken. 3) 73% of statements sought to affect laws, policies, programs or practices designed, implemented and/or evaluated in a way that has discriminatory intention or effect. 47% of statements targeted the absence of law, policies and programs that protect individuals and groups from being discriminated against on prohibitive grounds. Only 11% of statements called out punitive and criminalizing laws, policies or programs, while stigmatizing attitudes, behaviors and beliefs constituted 36% of statements. 4) Very few statements and interventions sought to target manifestations of discrimination as potentially experienced by health care workers.

LIMITS. The categorization of 'drivers of discrimination' included a single category encompassing 'laws, policies, programs or practices designed, implemented and/or evaluated in a way that has discriminatory intention or effect'. This category was significantly broader than the other three and may explain the high number of statements found to address this particular driver.

CONCLUSIONS. This literature review shows that while discrimination in health care settings is addressed across a range of WHO guidelines, most non-discrimination statements (regardless of whether these are evidence-based recommendations or best practices), do not offer a clear direction or course of action. Statements focus unevenly on the different pathways of discrimination, and only a minority consider the role of discrimination against healthworkers. As the precise impact of discrimination on health is better understood, there is a need for more evidence of what drivers of discrimination impact most significantly on health, to design interventions tailored to address these. In the meantime, there is considerable scope to further refine a set of common standards of care that draw from normative standards of human rights for all public health guidelines.

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44. Critical thinking for transformation: an extension to the 5 steps of EBP incorporating ways of thinking and practising

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BACKGROUND. Over the years since the Sicily Statement was published (Dawes et al, 2005) teachers of evidence-based practice (EBP) have discussed, published and battled with the knowledge that their students find learning this practice difficult. Over nearly the same period of time, the explanatory Threshold Concept Framework (TCF), first proposed by Meyer and Land in 2003, has demonstrated that transformative conceptual learning is key to gaining disciplinary knowledge and expertise but can be troublesome for students. This framework has successfully improved student outcomes by identifying and targeting these troublesome transformative concepts with pedagogical support. Recent TCF research has focused on the 'liminal space', the time-space where students struggle to grasp transformative concepts. However, no research has fully mapped this learning journey to transformation considering the contribution of critical thinking to this cognitive process. In addition, the threshold concepts of EBP, biostatistics and research skills have not been fully elucidated separately or in combination.

AIMS. This doctoral research took a qualitative approach to investigate how critical thinking acts within the liminal space during conceptual learning of evidence-based practice and biostatistics in an Australian undergraduate medicine program. Its first aim was to identify the troublesome and transformational conceptual development domains for EBP and biostatistics, and from this it explored how students use critical thinking to transform to be evidence-based clinical practitioners.

METHODS. Local experts and medical students at an Australian university medical school were interviewed about their experiences of threshold concepts in learning and teaching evidence-based practice and biostatistics. This led to a year-long case-study series of students from across the medicine program. Participants were invited to keep a reflective journal of the critical thinking employed at troublesome conceptual learning moments. Journal and interview data were analysed using an abductive analysis method that applied a combined theoretical framework of the TCF, Vygotskian educational development theory and relevant theoretical learning models.

RESULTS. Iterative abductive analysis revealed that students experience challenging learning thresholds where individualised conceptual systematisation creates distinct disciplinary conceptual elements. These were identified and clarified for EBP, biostatistics and research skills. Importantly, the research showed that assimilation of key overarching concepts initiates a core transformation of knowledge and disciplinary perspectives, leading to new ways of thinking and practising with augmented clinical expertise. Language and critical thinking both assist in this; language acts as the central cognitive bridge that initiates and enables critical thinking within the liminal space. Dialogue with experts and peers was important for student learning, but self-teaching, as inner speech, was significant in exploiting crucial critical thinking steps that unlock transformation. It is proposed that specific critical thinking steps can be harnessed to ensure that students reach their full potential in learning these threshold concepts for application as clinical practitioners. A revised model of the 5-steps of EBP was developed from these findings that incorporates the main threshold concepts identified by this research, and emphasises the transformed ways of thinking and practising that our students should aspire to.

LIMITS. This was a sole-researcher, qualitative study of participants at one university medical school using a relatively novel methodology, so its limitations are acknowledged. However, evaluation showed that the process undertaken was rigorous and the results are considered valid and transferable. This research offers fresh avenues of research for EBP teachers, a new theoretical framework for qualitative research of threshold concepts, and an extension of the knowledge and ways of teaching EBP for healthcare professionals.

CONCLUSIONS. Language and critical thinking work together as 'bridges' for transformative learning of EBP and biostatistical concepts. Recommendations are made to emphasise and nurture this intrinsic language-critical thinking integrator system to enhance student conceptual transformative learning. It is proposed that specific critical thinking steps can be harnessed to ensure that students reach their full potential in learning these threshold concepts. The desired metamorphosis from novice to competent, and then expert clinical practitioner can be assisted by emphasising the ways of thinking and practising represented in this extended model of the 5-steps of EBP.

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45. Activating the knowledge to action framework: a 5-site implementation case series in rehabilitation settings in the United States

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BACKGROUND. The Knowledge to Action framework describes a multi-step process for implementing established evidence into practice. The framework emphasizes the importance of adapting implementation efforts to fit local contextual needs and priorities. Models are needed to demonstrate local adaptation for a common clinical practice guideline (CPG) across varied settings and evidence is needed to understand the impact of such implementation efforts. We used the Knowledge to Action framework to guide therapist-driven implementation of a newly published CPG, targeted at therapists providing vestibular rehabilitation, across five diverse rehabilitation sites in the United States.

AIMS. 1) Analyse how teams from five diverse rehabilitation facilities used the Knowledge to Action framework to implement the same CPG 2) Assess the impact of each site's implementation efforts on provider adherence to CPG recommendations

METHODS. A convenience sample of five sites located in five different US states agreed to participate in this mixed-methods implementation study. Sites represented diverse organizational structures: Site 1 - small independent practice; Site 2 - research hospital; Site 3 - moderately sized independent practice; Site 4 - large academic institution; Site 5 - large US government institution. Each site met the criteria of providing physiotherapy rehabilitation services to individuals with vestibular disorders and willingness to implement a newly published CPG using the Knowledge to Action framework. Disparities between therapists' practice behaviours and CPG behaviour recommendations were assessed through a therapist survey and follow-up stakeholder meetings. Therapists at each site identified target practice behaviours to improve CPG adherence. Barriers to implementation and readiness to change were assessed using the Organizational Readiness for Implementing Change (ORIC) and the Consolidated Framework for Implementation Research (CFIR). Therapists at each site developed a 6-month implementation intervention to improve adherence to site-specific target practice behaviours in accordance with the CPG behaviour recommendations. Researchers audited therapist adherence to target practice behaviours on a monthly basis during the intervention. Adherence was analysed and feedback provided to therapists at monthly meetings. To assess how each site's implementation intervention impacted provider CPG adherence, the primary outcome will be pre- to post-intervention change in therapist adherence to targeted clinical practice behaviours. We will measure adherence for the six months prior to and six months following the implementation intervention. Qualitative data, including therapist survey responses and therapist interviews and focus groups, will be employed in a sequential explanatory design. Semi-structured interviews will address therapist reaction to use of the Knowledge to Action framework and reflection on barriers and facilitators to implementing the CPG.

RESULTS. Twenty-one therapists agreed to participate in the study and completed the ORIC and CFIR survey. Therapists had an average of 10.2 ± 6.98 years of experience and 5.95 ± 4.46 years practicing in a vestibular rehabilitation setting. Sites collectively selected 20 target therapist behaviours that represented CPG adherence. Monthly chart audits during the six-month implementation intervention showed improved therapist adherence to 12 target behaviours (range: 4.2 to 77.2% increase), no change in adherence to 5 target behaviours, and a decline in adherence to 3 target behaviours (range: -2.4 to -43.0%). Monthly audit data suggests that the smaller facilities (Sites 1 and 3) had the highest rates of success of therapist adherence. Primary outcome data for adherence across four sites, comparing adherence to targeted behaviours six month prior to the intervention and six months following, will be presented in conjunction with analysis of qualitative data from therapist interviews, focus groups, and survey responses.

LIMITS. Site 5 will not have complete data available due to a delayed start.

CONCLUSIONS. This mixed-methods, multi-site case series demonstrates use of the Knowledge to Action framework to guide five diverse US rehabilitation sites through implementation of a CPG targeted at therapists providing vestibular rehabilitation. Similarities and differences in barriers and facilitators to implementation using the Knowledge to Action framework will be explored to identify common elements of success and unique needs across small and medium private institutions, a large academic center, a large translational research hospital, and a large government facility. Findings will inform future implementation efforts across diverse types of institutions.

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46. EBP training in The Netherlands: deviation from Dutch guidelines in general practice

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BACKGROUND. The Dutch College for General Practice (NHG) generated over one hundred evidence based general practice guidelines. These guidelines are developed using a rigorous evidence-based procedure and input from specialists and patients. In the vocational training for general practice (GP) the guidelines play an important role. However, decision making during evidence-based practice (EBP) calls for the integration of evidence with patient values and doctors' clinical expertise as is discussed before by David Sackett in 2000.

AIMS. To make students aware of the three aspects of the triad of Evidence Based Medicine (EBM) and to teach them how to incorporate these aspects in the daily care for their patients. To make students aware of their underlying reasoning within the triad, when deviating from a guideline.

METHODS. Working group setup In the Netherlands GP students spend four days a week in general practice and one day a week at the university, for reflection, lessons and supervision in groups of 8 to 20 colleagues. Before the start of this particular working group, students were asked to identify consultations in which they had deviated from the guidelines and to discuss these cases with their supervisor in the practice, using the triad of EBM. During the day at the university their cases were discussed in small groups of three trainees during a two-hour session. Students were asked to choose one case for presentation on a poster answering the leading questions as shown below. Thereafter the cases were presented to and discussed by the total group of around 15 to 20 trainees, directed by the teacher. Leading questions were: 1. What is the scientific evidence concerning this case? 2. What is your experience as a doctor concerning this case? 3. Which patient factors influence your decision? Students were asked to combine these three aspects and to discuss with each other how they arrived at their decision. Thereafter they were asked to show their colleagues in a poster presentation the hesitations and doubts concerning the evidence regarding this particular patient, the way they weighed the patient values and preferences, and the influence of their clinical experience on the decision.

RESULTS. Working group sessions Examples of subjects that were discussed during the poster presentations: prescription of eye drops in conjunctivitis when the patient wants this and the doctor had similar ideas and experience but the guideline suggests otherwise; referral for a CT scan of the head in case of a fall in an older person when the older person does not want this but the guideline advises to have it done; prescription of codeine in case of cough when the patient wants this and the guideline advises against this; how to make a choice in the treatment of hypertension based on evidence rather than the experience of the supervisor. During the poster presentations the students explained their doubts and the arguments that they had used to come to their decisions. The group discussions were then sharpened by opening GP guidelines as well as specialist guidelines on the computer. In addition, PubMed Clinical Queries was used to find the most recent evidence concerning the specific case. Students were critical towards each other concerning typical experience-based aspects. Also, the weight of the patient values and preferences was discussed deeply. Experiences from students and teachers Students gained more insight in what EBP is and were more aware of the three circles of the EBM triad: "The triad was an eye opener". There was more awareness that individual doctor preferences are included in EBM and students felt more competent to deviate from the guidelines legitimately in daily practice. Teachers were enthusiastic because they observed that students made the translation from EBM to EBP in day to day practice.

LIMITS. This way of teaching evidence-based practice is limited to small interactive group sessions. Active participation and bringing along real-life cases are pivotal.

CONCLUSIONS. This is a practical example of teaching EBP in the vocational training for general practitioners in the Netherlands. Students were enthusiastic to adopt this approach and were stimulated to find the evidence and weigh this in their decision making, being aware of their own preferences and those of the patient.

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47. How can we enhance shared decision making in an international guideline project? The example of an international consensus conference on patient blood management

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BACKGROUND. Patient Blood Management (PBM) aims to optimise the care of patients who might need a blood transfusion. An international consortium of European, American, Canadian and Australian organizations organized a 2-day International Consensus Conference (ICC-PBM) to develop recommendations on 3 PBM topics: preoperative anaemia, Red Blood Cell transfusion triggers and implementation of PBM programs.

AIMS. To enhance shared decision-making in the process of formulating recommendations for 17 different PICO questions relevant in the field of PBM.

METHODS. A 2-day International Consensus Conference (according to the Consensus Development Conference format) with a multidisciplinary set of speakers, chairs, rapporteurs, decision-making panels including 10-15 health care professionals and patient representatives, and a general audience was organized to formulate evidence-based recommendations. GRADE's Evidence-to-Decision (EtD) framework (10 items), the GRADEpro software and indicative opinion polls via a smartphone/laptop application (Mentimeter™ software) were used to facilitate the discussions during the plenary/open sessions and to translate the evidence reviews into recommendations (conditional, strong) during the closed/private sessions.

RESULTS. The conference was attended by 186 healthcare professionals from 5 continents that were affiliated to 63 (University/Academic) hospitals, 28 Blood Services, 23 (Patient) Organizations, 12 (Pharmaceutical) companies and 5 governmental bodies. On day 1, 17 reviews were presented in 3 open sessions after which discussions with the general audience were initiated according to GRADE's EtD framework and opinion polls on the EtD items that were not covered by the evidence reviews were performed (i.e. values and preferences, equity, acceptability and feasibility of the intervention, general response rate: 65±12%). Subsequently, 3 multidisciplinary decision-making panels formulated draft evidence-based recommendations in 3 closed sessions. On day 2, draft recommendations and underlying justifications were presented to the general audience in a plenary session after which opinion polls (general response rate: 69±4%) and discussions were organized to identify the level of agreement. The decision-making panels finally formulated 3 strong and 7 conditional clinical recommendations.

LIMITS. The integration of a formal consensus methodology with evidence-based decision-making tools is challenging (costly and time-consuming), particularly in an extensive group of healthcare professionals that are in general not familiar how to develop evidence-based recommendations.

CONCLUSIONS. A multidisciplinary group of healthcare professionals including patient representatives has been involved in the process of developing evidence-based recommendations. The use of the formal Consensus Development Conference format with a multidisciplinary audience, GRADE's EtD framework/software and opinion polls via smartphone/laptop application improves and enhances shared decision-making when formulating recommendations.

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48. Adapting deliberative democracy for clinical guideline implementation in a dental setting: the DISGO study

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BACKGROUND. Dentistry in the U.S. has only in the past ten years engaged in significant development and dissemination of clinical practice guidelines (CPG). Most of these CPGs are developed by professional associations and disseminated through their journals and websites. However, the decentralized structure of U.S. dental practice, with no overarching national governing entity or comprehensive financing for care, leads to a poor uptake of high-quality evidence and poor monitoring of what care is delivered. In fact, most dentists are unfamiliar with the notion of CPGs, and much of the currently available high-quality evidence fails to be taken up into routine clinical practice. Although the process of developing evidence-based guidelines is becoming more standardized, best practices for adapting these guidelines in clinical dental practice are still being determined. Dental sealants provide an important example. Sealants are a resin coating applied to the biting surface of posterior teeth and have been documented through several systematic reviews and a recent CPG to provide a large benefit for primary prevention of dental caries (tooth decay) and arresting the advancement of early caries lesions. Untreated caries accounts for the majority of dental treatment needs, and early intervention with sealants can substantially reduce caries associated morbidity (which include severe infection, chronic pain, and reduced quality of life) and lower overall treatment costs (RR=0.16). The use of sealants is highly endorsed by the American Dental Association (ADA), the U.S. Center for Disease Control, and the U.S. National Institutes of Health. Presently dental sealants for treatment of early caries lesions have not been widely adopted, and research suggests that only approximately 40% of dentists endorse their recommended use. This failure to adopt sealant use into routine dental practice results in increased disease rates and higher treatment costs for dental patients. The present study: Dissemination and Implementation of Sealant Guidelines in Organizations (DISGO) study (Grant No: 5U01DE027452-02) was funded by the US National Institute of Dental and Craniofacial Research to address this specific Know-Do gap in dental practice. At this point, the DISGO study has completed its first year of funding and has adopted an implementation strategy described below.

AIMS. The overarching aim of the DISGO study is to develop and evaluate an implementation plan that would result in increased use of dental sealants within a large multi-site dental practice (i.e. Kaiser Permanente). This practice includes 20 dental clinical sites and approximately 130 dentists along with additional dental providers (dental hygienist and dental assistants). The aim of this abstract is to present the development of the methodology that will be used in the DISGO implementation plan.

METHODS. In this study, we examine whether a process most commonly used to obtain stakeholder feedback to inform policy setting in a political context (i.e., the Deliberative Democracy process [DD]) is also effective in improving guideline implementation in a multi-site, managed-care dental practice setting. Drawing from political science, we followed a multi-phase, iterative approach to identify areas of the DD process to adapt for clinical guideline implementation. The study team evaluated data from clinic practice, structure and governance.

RESULTS. We identified three main areas at two levels (individual and clinic). At the individual professional level, adaptations were required to (1) the stakeholders involved in the implementation process; (2) the individuals responsible for developing briefing materials about the clinical guideline; and (3) the briefing materials to be tailored to the scopes of practice of each of the stakeholders' roles (e.g., dental assistant, dentist, clinic manager). At the clinic level, adaptations were required due to characteristics of the specific dental practice in which the study is taking place. The adaptations included (1) determining the locus of decision-making (administration and practice) with respect to implementation strategies; (2) determining how to work with the multiple administrative and practice structures of this practice; and (3) determining a process focused on tailored practice guidelines.

LIMITS. Our study design is established (and reported here), but results with regard to the success of the actual guideline implementation are pending. Based on general principles of implementation science, we anticipate that our findings will provide important insight into the effectiveness of the DD process within a dental setting. The importance of context in any implementation project, however, is well understood, so a pot

CONCLUSIONS. Adapting the DD process from a political context to a multi-site, managed-care dental practice requires consideration of the multiple professional roles and perspectives as well as the structure of the workplace and its governing body.

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49. Effectiveness of web-based dissemination and implementation knowledge translation interventions in cancer prevention

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BACKGROUND. Cancer is currently the leading cause of death in Canada and the effectiveness of public health programs and policies have direct implications for health system outcomes and expenditures related to cancer. To address the pervasiveness and costliness of cancer, implementation of effective prevention strategies informed by the best available research evidence are critical. Despite the availability of research evidence in cancer prevention and expectations of public health professionals in Canada to use research evidence in decision making, limited skills in distinguishing good quality research from studies with high risk of bias and interpreting and applying research evidence to decisions continue to contribute to a gap in the transfer of research evidence into cancer prevention programs and policies. This study addressed this gap by attempting to enhance the awareness and use of high quality research evidence on cancer prevention among Canadian public health professionals.

AIMS. The aims of this study were to test the effectiveness of three knowledge translation interventions for enhancing awareness and use of high-quality cancer prevention evidence among Canadian public health professionals.

METHODS. A prospective cohort before and after study tested three knowledge translation interventions (i.e., monthly tailored email messages, quarterly webinars, and weekly TwitterTM posts) to disseminate high-quality systematic review findings on cancer prevention over 18 months. Public health professionals across Canada were recruited via contact with public health departments and communication from public health organizations. Data was collected via an electronic survey at baseline (Fall 2015) and follow-up (Spring-Fall 2017) on awareness and use of systematic review evidence in cancer prevention decision-making, and satisfaction with knowledge translation interventions.

RESULTS. 313 participants enrolled in the study and 134 participants (42.9%) completed follow-up. Higher satisfaction scores were reported for tailored email messages (M = 31.6, SD = 8.1) and webinars (M = 31.4, SD = 7.7), compared to TwitterTM (M = 24.9, SD = 8.2). Greater satisfaction was reported for increasing awareness of high-quality research evidence, as compared to promoting its use in practice. No significant increases in awareness and use of research evidence were found from baseline to follow-up across all interventions.

LIMITS. Limitations of the study include: a convenience sample of primarily nurses, projected sample size was not achieved, use of a cohort study design, and only small percentages of participants choosing to receive TwitterTM only and TwitterTM plus tailored email messages.

CONCLUSIONS. When considering social media as a knowledge translation intervention, TwitterTM may not be optimal, given greater satisfaction with other interventions and the specialized resources needed to summarize research evidence within technological constraints.

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5 MINUTES FOR 1 IDEA

5 MINUTES FOR 1 IDEA

Speaker indicated in bold

50. Let's tackle the opportunity cost of incentivising project work in medical training
Achilleos Haris

51. Going beyond the barriers of healthcare management tools: an integrated approach in lean management, clinical pathways and clinical risk management
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53. Synthesis of evidence from case studies. Shining a light or blocking the view?
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Martin Janet

55. EBPracticeNet Africa: networking a community of evidence-based practice in middle Africa
Okwen Patrick

50. Let's tackle the opportunity cost of incentivising project work in medical training

Achilleos Haris
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Medical training heavily incentivises projects like clinical audits and research studies, which are considered a requirement for career progression. This incentive-driven culture introduces a significant "opportunity cost" by producing studies of little value to patient-important outcomes and jeopardising critical thinking and judgement. In his book "Punished by Rewards" A. Kohn argues that incentive systems in education reduce intrinsic motivation placing the focus on extrinsic drives. I would argue that indiscriminately rewarding project work promotes a distorted perspective of achievement and at a larger scale contributes to the increasing burden of research waste. Let's consider ditching this system of rewarding "tick-box" exercises and instead focus on teaching trainees data methodology, on engaging in pragmatic collaborative studies and promoting good quality evidence. We could thus find that research waste starts to reduce and evidence translation into practice is enhanced.

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51. Going beyond the barriers of healthcare management tools: an integrated approach in lean management, clinical pathways and clinical risk management

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In health care management many tools exist and when one is chosen, it is often applied with a "all or nothing" attitude. A wider view is needed. Lean management, clinical risk management and clinical pathways follow four similar steps: a) An analysis of the actual process the patients go through b) A further examination of the processes through a specific lens: - Lean management focuses on increasing value through the elimination of wastes; - Proactive clinical risk management focuses on the identification of the potentially dangerous steps with the FMEA; - Clinical pathways focus on the application of the best evidence (clinical guideline) to the contextualized patient process. c) An overhaul of the process according to the optimal model worked out. d) The actual implementation of the changes followed by evaluation of the results. Therefore, when it comes to the step b), an integration of the three approaches is conducive to the improvement of several quality dimensions at once.

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52. Streamlined access to papers

Burls Amanda
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Getting hold of evidence can be difficult and time consuming. Papers can be behind paywalls and even if a library can supply papers not available electronically this can take days when evidence is needed quickly. Sci-Hub, the ultimate disruptive technology aims "to remove all barriers in the way of science" but is illegal. Unpaywall, a legal alternative, systematically collects open access versions of papers from institutional repositories (~47% of papers). Many clinicians have access to other papers through professional, employers and other organizations, but it takes time to find out if a paper is available and several steps to obtain it. Kopernio allows users to input institutional credentials for subsequent 1-click access to papers. However, it only accepts one identity and does not work on mobile devices. In response to user feedback on BestEvidence, we propose to develop a tool for 1-click access to all papers for which a user has legal access that will work on any device.

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53. Synthesis of evidence from case studies. Shining a light or blocking the view?

Hopayian Kevork
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The fallibility of generalizing from cases and the attendant problems of bias mean case studies are mostly ignored by evidence-based practice developers. While case reports and series may be the 'lowest/weakest' form of evidence they are often the first and sometimes the only line of evidence. Successful systematic reviews of rare conditions have been conducted in the areas of diagnosis, harm (drug and post-op), prevalence and treatment. Synthesis of case studies presents specific problems. Notes made for clinical practice are often not adequate for research. The rapid growth of case report journals has increased quantity without necessarily quality. However, reporting guidelines for case studies now exist. Treated with the same scientific rigor, case studies have the potential to inform both practice, while other forms of evidence are collected, and research, pointing to fruitful questions. The challenge is to develop robust methods for synthesis.

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54. A tool to inform "When is there Enough Evidence?". Discrepant international guidelines for oxygen supplementation for surgery and critical care as an example

Martin Janet
University of Western Ontario (Canada)

Supplemental oxygen has remained controversial, both in critical care and perioperatively. Historically, it was assumed that administering high fractions of inspired oxygen routinely would improve patient survival and reduce serious complications. A number of randomized trials have been conducted to test the hypothesis that high fractions of inspired oxygen improves outcomes compared to lower fractions of inspired oxygen (or no supplemental oxygen), and a number of systematic reviews of these trials have recently been published. The conclusions have been somewhat varied, and guidelines produced by the WHO, CDC, critical care societies, surgical and anesthesia societies have had varied views on whether supplemental oxygen helps or harms in the setting of critical care or surgery. This talk will explore this example as the perfect 'petri dish' to apply the concept of evidence sufficiency to inform whether conclusions have been reached prematurely, or whether more research is warranted.

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55. EBPracticeNet Africa: networking a community of evidence-based practice in middle Africa

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[1]*Effective Basic Services Africa (Cameroon)*, [2]*Katholieke Universiteit Leuven (Belgium)*, [3]*University of Ghent (Belgium)*

Clinical practice in Africa has untapped opportunities for evidence implementation, secure clinical data storage in the cloud and networking of clinical practices which can help unlock health markets and promote uptake of effective health technology within the continent. This will also contribute to the African Union's Vision 2063. Clinicians in Africa are working with iScientia Belgium and tapping from evidence hubs including Cochrane, MagicApp, JBI, DUODECIM, WHO, and Guidelines International Network to get country level contextualized clinical guidance through an online platform EBPracticeNet Africa (https://www.ebmafrica.net). Clinicians connect on the clinical decision support platform which allows them access GRADED guidance for practice; store patients data in the cloud; and, collaborate on patient management across health districts and national borders. This disruptive innovation creates new opportunities and increase value for evidence generation, synthesis, and translation.

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POSTERS

POSTER PRESENTATIONS

Speaker indicated in bold

56. **Role of professional networks on social media in addressing clinical questions at general practice: a cross-sectional study of general practitioners in Australia and New Zealand**
Albarqouni Loai, Hoffmann Tammy, Mclean Katrina, Price Karen, Glasziou Paul

57. **Evidence generation for screening and diagnostic tests and algorithms**
Andrews Jeff

58. **Methodological quality of studies published as systematic reviews or meta-analyses on the effects of nutritional/dietary interventions in cancer prevention: a systematic methodological survey**
Bala Malgorzata M., **Storman Dawid**, Koperny Magdalena, Zajac Joanna, Tobola Paulina, Swierz Mateusz, Staskiewicz Wojciech, Górecka Magdalena, Skuza Anna

59. **Are randomised controlled trials on Alzheimer's disease informed by prior evidence?**
Brini Stefano, Stavropoulou Charitini, Ioannidis John

60. **BestEvidence: a mobile app to facilitate EBP**
Burls Amanda

61. **Upgrading bachelor nurses in EBP: an evaluation of the introduction of a 3-day educational program in a Dutch general hospital**
Cramer-Kruit Jessica, Smid-Nanninga Henriette

62. **Can online educational prescriptions assess medical students? competency in applying EBM in clinical practice?**
Foggin Emily, Plimmer Sarah, Panchal-Bird Mala, Wilson Victoria, Thomas Peter, **Kumaravel Bharathy**

63. **Piloting of a blended learning training programme for health information providers to enhance application of the guideline evidence-based health information**
Hinneburg Jana, **Lühnen Julia**, Steckelberg Anke, Berger-Höger Birte

64. **Self-management interventions to reduce urgent healthcare use in patients with asthma: a systematic review and network meta-analysis**
Hodkinson Alex

65. **Scoping review of systematic reviews: the state of art of simulation as a pedagogical tool in health education**
Potrebny Thomas, Hole Grete Oline, Reime Marit Hegg, Johnsgård Tone, Olsen Marit Vassbotten

66. SAFOBAD: a generic, internal validity assessment tool for light touch EBP
Hopayian Kevork

67. Accessing the national collaborating centre for methods and tools? capacity building resources remotely: supporting the development of evidence-informed practice skills in low resource settings
Howarth Claire, Read Kristin, Husson Heather, **Dobbins Maureen**

68. Life after death? Evidence and the credulity of crowds. What we can learn from Africa's charismatic pastors
Hugman Bruce

69. The use of journal clubs to teach EBM to clinicians: a systematic review and meta-analysis
Ilic Dragan

70. How to make EBM teaching practical and fun: enhancing diagnostic understanding using chocolate
Jack Edmund, Burns Alexander, Perry Mark

71. A systematic review of methods used in usability studies of mobile applications for healthcare education
Johnson Susanne G., Potrebny Thomas, Larun Lillebeth, Ciliska Donna, Rydland Olsen Nina

72. Assessing medical students' competency in EBM using the ACE tool: a cross sectional study of medical students across different stages of the curriculum
Kumaravel Bharathy, Ilic Dragan, Stocker Claire, Thomas Peter

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56. Role of professional networks on social media in addressing clinical questions at general practice: a cross-sectional study of general practitioners in Australia and New Zealand

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BACKGROUND. Clinicians frequently have questions about patient care. However, for more than half of the generated questions, answers are never pursued, and if they are, often not answered satisfactorily.

AIMS. We aimed to characterise the clinical questions asked and answers provided by general practitioners (GP) through posts to a popular professional social media network.

METHODS. In this cross-sectional study, we analysed clinical questions and answers posted between January 20th and February 10th 2018 on a popular GP-restricted (Australia, New Zealand) Facebook group. Each clinical question was categorised according to 'background' or 'foreground' question; type (e.g. treatment, diagnosis); and the clinical topic (e.g. cardiovascular). Each answer provided in response to included questions was categorised into: (i) short answer (e.g. agree/disagree); (ii) provided an explanation to justify the answer; and (iii) referred to a published relevant evidence resource.

RESULTS. Of 1060 new posts during the study period, 204 (19%) included a clinical question. GPs most commonly asked about treatment (n=87; 43%) and diagnosis (n=59; 29%). Five major topics (23% skin, 10% psychology, 9% cardiovascular, 8% female genital, and 7% musculoskeletal) accounted for 118 (58%) questions. Each question received on average 10 (SD=9) answers: 42% were short; 51% provided an explanation; and only 6% referred to relevant research evidence. Only 3 answers referred to systematic reviews.

LIMITS. we analysed questions posted in a single restricted Facebook group by GPs who thought to be active social media users (504 GPs out of 5800 GPDU members), therefore, our findings may not be generalised to GPs who do not actively use social media or use other social media platform, or do not use social media at all. We also did not verify the validity of provided answers or the evidence used to support these answers.

CONCLUSIONS. In this sample of Australian and New Zealand GPs, who were members of a GP social media group, GPs asked clinical questions that can be organised into a limited number of question types and topics. This might help guide the development of GP learning programs.

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57. Evidence generation for screening and diagnostic tests and algorithms

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BACKGROUND. Evidence generation for new screening or diagnostic test has traditionally emphasized a single test result, with critical statistics of sensitivity and specificity, and an ROC model for choosing a clinical cut-off. New methodologies for screening have evolved to screen-triage-triage; new methodologies for diagnosis have evolved to cascades Single results have been replaced by algorithm determinations; some algorithms utilize advanced neural network with continuous learning capabilities. The evidence generation for an individual test that is part of screen-triage or a cascade is more complex. General screening population clinical trials have very large sample size and are exceptionally burdensome; negative predictive value requires either potentially harmful testing of screen-negative subjects to confirm ground truth, or long follow-up durations.

AIMS. Less burdensome evidence generation strategies and more sophisticated study designs are needed to increase value and reduce harms and waste and ensure the integrity of health research.

METHODS. The author used cervical cancer screening and management of abnormal results as an example of a field seeking less burdensome methodologies to meet diagnostic IVD regulatory requirements while reducing waste of health research, and analysed experiences from the diagnostic industry, an FDA Advisory Panel, interactions with NMPA of China, interactions with TGA of Australia, and utilization of biobanks.

RESULTS. The discussion will include: changing to risk-based guidelines and reporting test results as risk prediction; incident vs prevalent risk; sensitivity and NPV for screen and specificity and PPV for triage; LR+ LR- as less burdensome minimum requirements; considerations for use of referral (high prevalence) populations and mitigating the inherent bias; the reference standard – 'ground truth' diagnosis; head-to-head with an approved test (molecular comparator), supplanting clinical trials with real world evidence (pragmatic studies, retrospective analyses).

LIMITS. Observational

CONCLUSIONS. The author will conclude with experiences of change in FDA regulations and an advisory panel designed to regulate research more efficiently and effectively.

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58. Methodological quality of studies published as systematic reviews or meta-analyses on the effects of nutritional/dietary interventions in cancer prevention: a systematic methodological survey

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BACKGROUND. Several dietary/nutritional factors have been identified as associated with increased or decreased risk of cancer, results of many studies were inconsistent. The number of studies published as systematic reviews/metaanalyses (SR/MA) has increased substantially in the recent years. Previous studies on SR/MA in other field concluded that validity of many studies published as SR is questionable. Similar situation may exist in the field of nutrition in cancer prevention, but the evidence in this field is limited.

AIMS. The main aim of this research is to examine the quality/risk of bias (ROB) and methods of articles published as SR/MA on nutritional/dietary interventions in cancer prevention and examine the associations between characteristics of studies and their quality/ROB. This presentation is related to methodological quality of those studies evaluated with AMSTAR 2 checklist.

METHODS. We searched MEDLINE, EMBASE and Cochrane Library from 2010 using previously developed search strategies, in Cochrane Library, MEDLINE and EMBASE. We included articles identified as SR/MA in the title and/or abstract which included primary studies with control group (such as RCT, CCT, other study with control group) carried out in general population or people at risk for cancer, which evaluated the effects of any nutritional/dietary intervention (such as changes in the intake of any type of foods or supplements or changing dietary constituents) in cancer prevention (i.e. with the aim to decrease risk of cancer). Outcomes required to be reported in the SR/MA to be included in the survey included any cancer incidence /any cancer mortality according to the definitions and times of measurement defined by the authors of the SR/MA Following calibration exercises title and abstract screening and full text screening was performed by two reviewers independently. Conflicts were resolved by discussion and if necessary third reviewer was involved. Following piloting of the extraction forms, extraction is being carried out by two reviewers independently. Conflicts are resolved by discussions, if necessary third reviewer will be involved. Data extraction form is designed to retrieve all data necessary for description of studies characteristics and analyses, including population, intervention, outcomes analyzed, year of publication, Cochrane/non Cochrane review, impact factor of the journal, funding, conflict of interest, country of corresponding author, number of authors, number of included studies, number of participants in included studies, number of databases searched and date of search, types of studies eligible and included, methods used for the assessment of methodological quality or risk of bias, methods for data synthesis, incorporation of methodological quality into conclusions. The assessment of methodological quality using AMSTAR 2 tool (and risk of bias - but this is a subject of separate presentation) is being carried out along with the extraction process by two reviewers independently. Conflicts are being resolved by discussions, if necessary third reviewer will be involved. The protocol was registered in PROSPERO (CRD42019121116)

RESULTS. Our searches yielded 24739 references. After removing duplicates, we screened 20413 references on the basis of title and abstract and 1594 full texts of which 750 studies met inclusion criteria. We randomly selected a sample of 101 articles (proportional to the total number of studies included per each year of publication). We are in the process of data extraction and quality assessment of the studies. Preliminary data on a few studies extracted so far show low or critically low confidence in the results of the reviews. Common problem identified in those studies was lack of quality or risk of bias assessment of primary studies included in SR/MA. Studies did not report on protocol or prespecified methods. Heterogeneity was commonly examined using Q test or I2 or both, but it was common to pool different study designs in one meta-analysis.

LIMITS. Since we are in the process of data extraction we are not able to present results of our study yet.

CONCLUSIONS. The project will bring important information about methods and methodological quality of studies published as SR/MA addressing nutritional interventions in cancer prevention. Funding: Project funded by National Science Centre, No. UMO-217/25/B/NZ7/01276

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59. Are randomised controlled trials on Alzheimer's disease informed by prior evidence?

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BACKGROUND. Alzheimer's disease is rapidly becoming one of the leading causes of death globally. Despite a significant investment in research, to date there is no known cure or treatment of Alzheimer's disease. As such, Alzheimer's disease has become a global public health priority. Yet, researchers continue conducting trials on approaches known to be ineffective, potentially leading to a significant waste of research time, resources and funding.

AIMS. The aim of this paper is to explore the extent to which randomised controlled trials (RCTs) on Alzheimer's disease are informed by previous systematic reviews.

METHODS. We search Scopus for RCTs and RCT protocols published between 2008-2018 in individuals diagnosed with Alzheimer's disease and search whether they cite previous systematic reviews. When a systematic review is cited, we explore the extent to which the review had informed the conceptualisation, methods or statistical analysis of the new RCT. To complement this search, we examine registered protocols of newly registered trials to see how they cite previous systematic reviews.

RESULTS. A preliminary search of Scopus revealed that in 2018 a higher percentage of RCTs and RCT protocols cited a systematic review than in 2008. However, we are still exploring the extent to which, and how the results from the systematic review were applied to inform the design, methods, and statistical analysis of the new trial as well as whether they considered negative results. The work is ongoing, and we expect to provide results by the start of the conference on 6th of November 2019.

LIMITS. The study focuses on one condition only, but can have wider implications.

CONCLUSIONS. Our study explores the extent to which prior research informs future studies in the field of Alzheimer's disease, an area wherein despite decades of research, has been largely unsuccessful in developing a cure or treatment. Our results can be useful to other areas of research, where resources may be wasted in exploring interventions that are known not to work.

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60. BestEvidence: a mobile app to facilitate EBP

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BACKGROUND. When Mickan, Glasziou and I systematically reviewed studies that looked at the dissemination of research evidence in guidelines we found "leakage" of ~15% at each steps along the pathway from awareness of guidelines' recommendations through agreement, adoption and adherence to them, meaning that less than 2/3 of recommendations were actually implemented in practice. Yet other research has established that evidence-based practice is associated with reduced mortality, reduced hospital LOS and increased clinician efficiency. Nonetheless, most healthcare professionals still to not take an explicit and daily evidence-based approach to their practice. Amongst the barriers to EBP the following three issues are consistently raised: lack of skills in finding and appraising evidence; lack of access to information resources and lack of time.

AIMS. We aimed to facilitate EBP by reducing these three barriers by creating a mobile tool that helps users find high quality evidence and guides them in critical appraisal and does so in a way that is fast and easy.

METHODS. Creation of a free mobile app that provides easy and quick access to the best available evidence whenever and wherever users need it. The development has used lean and agile methods and open development on Github. The minimum viable product, a web-based version of the app, was funded by City, University of London and Barts NHS Trust and was soft-launched in April 2018 on a small mailing list (CHAIN). This alpha version rapidly acquired users and received very positive feedback, therefore a decision was made to establish an independent organization to develop the app further and seek to monetarise it in a way that would secure BestEvidence's financial sustainability for continuing evaluation and development without impeding or constraining its uptake. Cochrane and the Critical Appraisal Skills Programme have partnered with BestEvidence to take this project further.

RESULTS. Over 4,000 users were acquired, and tens of thousands of papers were accessed in less than a year despite no wider dissemination. Further development has been undertaken to add electronic checklists and other functionality which is currently undergoing user testing and should be in production before this conference. Because of the lean methods being used the app is continually evolving in the light of user feedback. Moreover, the metrics are changing quickly. The latest version of the app will be described at the conference together with the most up-to-date metrics and plans for future development.

LIMITS. The app, while useful for those committed to an evidence-based approach, does not help the majority of healthcare professionals who are still not aware of the importance of pro-actively seeking evidence to inform healthcare decisions.

CONCLUSIONS. It is too early to draw conclusions.

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61. Upgrading bachelor nurses in EBP: an evaluation of the introduction of a 3-day educational program in a Dutch general hospital

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BACKGROUND. In the Netherlands the professional profiles of nurses (1999) were re-evaluated by a professional association of nurses (V&VN) and the Dutch Government. This resulted in 2016 in new profiles of nursing (Nursing profiles 2020)1. Till recently, there were 2 different levels of nursing in a hospital setting, which were not distinctive from each other. The new standard is to differentiate between two types of nurses: the bachelor-nurse (BSc) and nurse. Since 2016 the Institutes for Nursing Education started with the education according to the Nursing profiles 2020. But the BSc now working in the hospitals are educated according to the old profiles, miss skills or are undereducated to act on the new level of BSc. This resulted in an educational program for the BSc in hospitals. These changed profiles lead to a new role of BSc on the ward. The Martini General Hospital in Groningen (MGH) educate the BSc in team nursing with 4 specific areas to fit into the new profile: clinical reasoning, nursing leadership, coaching and Evidence Based Practice (EBP). Besides theoretical education, training on the job is an essential part in the educational programs and provides a better learning curve2. The EBP-training, developed by 2 EBP-experts, was subtracted from the already successfully implemented 60 hours EBP program (60hEP) on knowledge, skills, attitudes and perceived barriers of nurses3, which resulted in a 3 day (24 hours) educational program (3DEP) and a follow up training on the job. Reasons to develop a new strategy to implement EBP for BSc is the large group of nurses who need to be educated in a short notice of time (± 175 BSc before 2020), the costs and that EBP needs introduction and consolidation on the ward.

AIMS. Aim of this abstract is to evaluate the developed knowledge, skills, attitudes, and perceived barriers in EBP by BSc after introduction of an 3DEP and training on the job.

METHODS. A 3DEP was developed by 2 EBP-experts, including: acknowledgement of a clinical uncertainty, searching for clinical evidence, appraising evidence, apply and implement the results in daily practice. Learning goal of the program is to educate the BSc theoretically on a user level of EBP4. After this education the BSc will be accompanied by the EBP-experts to use EBP in daily practice. This guidance in EBP on the ward takes 1-2 hours monthly for a group of 2-4 BSc. By open interviewing and monitoring of the education process the experience and results of the attending BSc were discussed. Also the staff of the wards were interviewed about their experiences so far with EBP and the limitation of implementation of EBP.

RESULTS. The 3DEP with the training on the job was implemented successfully. Nurses and staff were enthusiastic about EBP in daily practice. Their beliefs in the power of EBP is increased, but time is a limiting factor. This has been appointed by the BSc and staff. It takes time and effort to implement EBP on the ward. Training on the job must be maintained. Besides time, the BSc are insecure about their EBP skills after training. This implicates the need to visualize the learning curve for BSc.

LIMITS. The development of 3DEP was limited by time and organizational problems. Interviews with the staff before starting the 3DEP showed a gap in available vs. necessary hours on the ward for implementation and consolidation of EBP. Also, a limitation was available time to educate BSc. The development of the 3DEP for BSc had a limited timeframe. Therefore, time to educate BSc was restricted. In the 60hEP there is sufficient time for theory and performance of EBP. Measurement of the skills at the baseline and follow-up assessment consists of two questionnaires each.2 In the 3DEP the evaluation was done by interviewing and monitoring of the education process, because of the limitation in time during the program. This limited the power of the conclusion. Another limitation was the timing of the implementation in the MGH. The implementation of EBP on the ward in a changing working environment due to the changing of the professional profiles was challenging. BSc were saturated in their changing role as BSc on the ward with the additional educational programs in the hospital, increasing working load on the ward. There is also a high turnover of nurses due to a national shortage of nurses. This complicated the implementation and consolidation because of time and effort to introduce the new nurses in their new job. Because of the insecurity on EBP skills by BSc there is a chance that the main goal of EBP training on the job has a smaller chance to succeed. A practical development instrument for BSc is needed.

CONCLUSIONS. Implement EBP in a changing nursing environment is challenging, but possible. Time and a cooperating board are essential for a successful implementation and consolidation of EBP by BSc on the wards. To visualize the learning curve for BSc a validated questionnaire as a development tool will be used in future training programs.

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62. Can online educational prescriptions assess medical students? competency in applying EBM in clinical practice?

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BACKGROUND. Validated assessment tools are available to evaluate medical students' competency in evidence-based medicine (EBM). These tools assess the ability of students to formulate a clinical question, acquire and critique the evidence and apply to clinical scenarios. Currently there is little evidence regarding the feasibility of incorporating these tools into UK medical curriculums, and how this might impact on medical student use of EBM and competency in real-life application of EBM. One such tool is the Educational Prescription (EP), which helps students identify a clinical question from patient encounters, search and appraise relevant evidence and apply it to clinical decisions.

AIMS. This study aimed to test the feasibility of administering EPs to University of Buckingham Medical School (UBMS) students during their clinical rotations, to assess their competency at applying EBM in clinical practice. In addition, we also evaluated the impact of EBM on clinical decisions and student-reported usefulness as an indicator of 'buy-in'. The types of clinical questions encountered, and their settings were collected to identify high-yield learning areas.

METHODS. EP templates were created online in the virtual learning environment and used as a mandatory formative assessment. Medical students in their third year of the MB ChB curriculum (n= 64) were asked to complete at least one submission either individually or in groups from their clinical rotations. The EBM theme lead, in collaboration with junior doctors, developed a marking rubric based on previous validated tools and trained clinical facilitators in the medical school. A team of five staff members graded the submissions between 0-20, scoring on clinical history, PICO question, search strategy, critical appraisal and application of evidence to clinical setting and provided written feedback.

RESULTS. 31 online submissions were made and assessed with scores ranging from 8 to 17 out of 20. The average score for students was 13/20. Engagement in the process was good at 93% of students. The task was applicable across all clinical settings, with the majority coming from primary care. 90% of students reported that their EP had, or would have had, an impact on clinical decisions. 87% of students found the process useful, giving a score of 4 or 5 on a Likert scale of usefulness; 1: not at all and 5: extremely useful. Graders required minimal training to complete the grading rubric. Overall scores were provided and corroborated, representing quantifiable proficiency in applying EBM in clinical practice.

LIMITS. The University of Buckingham Medical school is a young institution with a small number of students and no graduates at the time of study. The feasibility of using EPs in this cohort of students may not be replicable across a bigger cohort in larger teaching hospitals. Long-term sustainability of these competencies has not been evaluated yet.

CONCLUSIONS. It was feasible to incorporate EPs into the clinical rotations of the UBMS curriculum. Most students reported that they found the assignment useful, the task had an impact on clinical decisions, and it was helpful for patient care. This assignment has aided in quantitatively assessing students' competency in applying EBM in clinical practice. Longitudinal follow-up and further validation of the assessment is needed, by comparing students' performance in EPs with their performance using other validated assessment tools like the Fresno test, Assessing Competency in EBM (ACE) and OSCE stations.

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63. Piloting of a blended learning training programme for health information providers to enhance application of the guideline evidence-based health information

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BACKGROUND. The guideline evidence-based health information was published in 2017 and addresses health information providers. It comprises ethical and methodological requirements as well as evidence-based recommendations for the development, content and presentation of evidence-based health information (EBHI). EBHI represent a prerequisite for informed shared decision-making. Interviews with health information providers revealed shortcomings regarding their competences in evidence-based medicine (ebm). Therefore, we developed a blended learning training programme for the implementation of the guideline to enhance health information providers' adherence to the guideline.

AIMS. Aim of this project was to test the training programme for acceptance and feasibility with health information providers and to optimise it prior to implementation.

METHODS. We conducted a qualitative pilot study. Recruitment of health information providers was performed on institutional level. Employees involved in the development process of information material were supposed to participate in the training. We offered in-house trainings. The training programme includes two modules. The first module comprises two days of face-to-face training followed by one day of web-based training. It aims to impart competences in searching for, critically appraising and extracting relevant literature according to the principles of ebm. We set up a case example about smoking cessation to link theory to practice by case-based learning. The second module is designed as a converted classroom scenario: one day of web-based training followed by one day of face-to-face training. It comprises the criteria for EBHI, critical appraisal of health information and the reflexion of provider's processes to develop health information. For the web-based training, the learning management system ILIAS is used. Data collection was integrated in the training sessions. In the beginning, informed consent was obtained and baseline characteristics of the participants, including sex, age, education status, English skills, ebm knowledge and their qualifications for the development of health information, were assessed. We observed the training in a structured way and documented processes, interactions and working results. Focus group interviews were scheduled after the two training blocks to assess the acceptance of the content and teaching methods, the comprehensibility of learning materials and work tasks, the usability of the web-based learning environment and the practical relevance of the contents. The focus group interviews were audio recorded and transcribed. Analyses of the baseline characteristics were descriptive. The transcripts and documentations were analysed using qualitative content analysis of Mayring. Data saturation was intended by an iterative process of testing, analysing and revising the training programme. The study protocol is available online and ethical clearance has been obtained from the ethics committee of the Martin Luther University Halle-Wittenberg.

RESULTS. We performed two trainings between November 2018 and March 2019 with employees of a health insurance company (n=5) and a foundation (n=12). The mean age of participants was 41 years (range 28-51). 9 out of 17 participants were female and 15 out of 17 had a university degree (1 in medicine). The learning material was rated as clear and readily understandable. The case example about smoking cessation was considered to be relevant and helpful. The work tasks were understandable but also extensive and challenging, especially the online tasks. Participants asked for more information and definitions of (statistical) terms in advance. Partly, they found it difficult to integrate the online phase into their working routine. In addition, minor problems in navigating in ILIAS were reported. The practical relevance of the EBM module was rated rather low compared to the second module. The implementation of comprehensive literature searches into the working routine seems to be challenging. Based on these results we revised the programme.

LIMITS. The participants of the pilot trainings were heterogeneous regarding their prior knowledge and their involvement into the process of developing health information within their institutions. Not all of them will be able or intend to implement the training contents into their working routine, which may have limited their judgement of the practical relevance of the training.

CONCLUSIONS. Overall, the training was well accepted, and it seems to be feasible for implementation. The implementation will be evaluated in a randomised controlled trial. In the long term, the aim is to improve the quality of health information.

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64. Self-management interventions to reduce urgent healthcare use in patients with asthma: a systematic review and network meta-analysis

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BACKGROUND. Asthma is a heterogeneous disease characterised by varying levels of bronchoconstriction, airway hyper-responsiveness, mucus secretion, and chronic inflammation. It is a major source of global economic burden affecting almost 6 million people in the UK and more than 330 million people worldwide - causing 250,000 deaths each year. For a quarter of a century, national and international guidelines have recommended - unequivocally - that people with asthma should be provided with self-management education reinforced by a personalised action plan and supported by regular review. However, because the mode of delivery, personnel delivering the support, the targeted group and the intensity of self-management interventions (SMIs) often vary, only a minority of people with asthma are seen to have an action plan in place; due to the many challenges faced, such as length of hospital stay, and the skill and resources required to deliver the SMI.

AIMS. In the past, SMIs have been assessed in standard pairwise meta-analysis, which are likely to limit the evidence when there are head-to-head comparisons of SMIs and comparators that have more active controls than usual care. The network meta-analysis (NMAs) approach has a district advantage here over the pairwise meta-analysis, as it allows for different SMIs to be evaluated both directly and indirectly, and for the inclusion of trials with minimal intervention or education-based comparators. Therefore, this review aims to evaluate and compare the effectiveness of SMIs modalities in people with asthma using NMAs (enabling simultaneous assessment of multiple variables and a wide variety of comparisons other than just usual care).

METHODS. We have adapted the search strategy from our earlier RECURSIVE study and updated the searches for any new eligible asthma trials. The PRISMS meta-review was used to identify any eligible trials within the published systematic reviews. The key modalities of interest in the NMAs include: content of self-management intervention (theory-based or not), mode of delivery (i.e. face-to-face consultation or telecommunication) and intensity (i.e. hours of support by health professional) which moderate the effectiveness of SMIs. The main outcomes include, unscheduled health care utilisation (i.e. hospitalizations or accident and emergency visits) and quality of life (general quality of life, asthma-specific quality of life). Standardised mean difference was used for both outcomes. Heterogeneity was quantified using the I2 statistic and explored using mixed-effects meta-regression.

RESULTS. 90 RCTs (63 adults and 27 adolescents) were eligible for this systematic review. The NMAs for unscheduled health care includes 71 trials, and for quality of life there are 54 trials. A network of the different comparators (usual care or minimal education) and modalities (mode of delivery and intensity) will first be constructed. This will give us some initial idea about the distribution of the effect modifiers in each of the nodes in the network. Both NMAs will be conducted in a Bayesian framework using Markov Chain Monte Carlo. Where sufficient data are available we tested the assumptions of consistency between direct and indirect evidence using standard methods. Appraisal of inconstancy was assessed in the entire network on particular comparisons (nodes) by node splitting analysis; P

LIMITS. The evidence that support effective use of SMIs in asthma candidates is overwhelming. For example, there exist two studies; the PRISMS study which is a large meta-review involving 27 systematic reviews, and our RECURSIVE review involving a meta-analysis of 184 RCTs. However, only the effects of basic modalities (such as intensity of self-management support) were explored in these studies. Other modalities such as the use of theory based-content of the intervention and mode of delivery have not been examined. More importantly, the evidence thus far provides limited information on direct ('head-to-head') comparisons between SMIs. In the meta-review which includes 244 RCTs, approximately over one third of these trials involved 'minimal intervention' or 'education-based intervention' which differs to usual care. Some trials also tested alternative self-management interventions. Such trials are often excluded in a traditional pairwise meta-analysis as they tend to focus on usual care as comparators. But there is urgent need to assess them in a NMAs framework.

CONCLUSIONS. We provide a comprehensive and rigorous assessment of the comparable efficacy of different self-management interventional approaches for adults and adolescent participants with Asthma. This study is significant in methodology research as it is the first NMAs in this field, and the findings could lead to great potential to influence sound clinical guidance for the SMIs in asthma.

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65. Scoping review of systematic reviews: the state of art of simulation as a pedagogical tool in health education

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BACKGROUND. Simulation as a pedagogical method is popular, but there are unsolved matters related to design; didactic approaches; effect; and measuring outcomes and lasting changes. It was found that simulation leads to better skill performance; while it's difficult to find sustainable effect of non-technical skills as team-training. To explore the field of simulation training, the project group of SimArena want to make a "Scoping review over systematic reviews" from all SR globally with the research question: What is the state of art of simulation within health education?

AIMS. The aim is to map the research regarding the use of simulation within health educations globally. The PICO used was: P = Health science students from all professions; systematic reviews from all levels of educations (BA; MA; PhD and credited post-graduate courses). I = All kinds of simulation modalities to enhance learning. C = Classroom teaching /Nothing. O = Learning outcomes (technical/non-technical skills, cognitive skills), Patient outcomes, User experiences (learner and teachers).

METHODS. All kinds of systematic reviews will be included. A protocol following the Prisma-P Checklist was made and registered at Prospero, (CRD42018112230). The literature search was developed and conducted by a skilled librarian, in the following databases: MEDLINE, EMBASE, PsycINFO, The Cochrane Library (Cochrane Database of Systematic Reviews (CDSR), Cochrane Database of Abstracts of Reviews of Effect (DARE)), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Educational Resource Information Centre (ERIC), Epistemonikos and Campbell Library.

RESULTS. The search resulted in nearly 6000 papers. We will use RayyanQCRI for the screening process. Titles and abstracts of the studies retrieved will be screened independently by two review team members to identify studies that potentially meet the inclusion criteria. Inclusion criteria will be: Students in health education (all kinds of health educations). A review presenting studies of health and other students will be included if the health students' outcomes or experiences are reported separately. Intervention/exposures are: All kind of simulation training. Exclusion criteria: papers that do not report Systematic Reviews; do not report reviews within health care education and do not report studies about simulation as a pedagogical tool. Didactical e-learning courses without interactive learning will also be excluded. Comparator/control are: traditional classroom or clinical teaching, nothing or another type of simulation. The full text of these potentially eligible studies will be retrieved and independently assessed for eligibility by two reviewers. A standardised, pre-piloted form will be used to extract data from the included studies. Data reported will be: Study characteristics, Intervention, Comparison, Outcomes, Context and pedagogical strategies- Two review authors will independently assess the risk of bias / quality in the included systematic reviews using ROBIS; the tool to assess Risk of Bias in systematic reviews.

LIMITS. This review was limited to systematic reviews, and thus can only report on whatever outcomes were chosen. We acknowledge that primary studies may have outcomes that are not reported in the systematic reviews. We will include systematics reviews world-wide and will have studies we are not able to read in full-text.

CONCLUSIONS. The results will give the state of art concerning simulation in health care education worldwide and may show the direction and need for further research in the area.

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66. SAFOBAD: a generic, internal validity assessment tool for light touch EBP

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BACKGROUND. Appraising internal validity requires knowledge and skills that most practitioners are not interested in or fearful of studying. It was argued at the 2003 EBHC conference that a stratified approach to teaching is needed. For most practitioners, the aim should be to offer basic knowledge and skills (light touch EBP). Appraisal of internal validity requires knowledge of study designs and biases, some of which are specific to each study design. Existing appraisal tools are mostly study specific meaning that a practitioner must acquire a multitude of checklists for use. A simple, generic, appraisal tool could play a part in teaching light touch EBP.

AIMS. To develop an appraisal tool for most health workers that meets the following criteria: it should be simple, emerge from teaching basic principles, be applicable to all quantitative study types, be easy to remember and be useable by the non-expert.

METHODS. Building upon Sackett's division of biases into the phases of a study and Delgado-Rodríguez and Llorca's classification, biases were grouped into three phases. To the usual before and during data collection classification, an after phase was added to include analysis. Each phase was subdivided into facets of research to create a mnemonic. The tool was tested by mapping against study designs and the classification of biases. It was compared to existing generic tools found through a MEDLINE search and a request to the evidence-based-health list.

RESULTS. A tool was developed that relates to all quantitative study designs and translates into a mnemonic relevant to the appraisal process: Scrutinise All Facets (of a study) Otherwise Bias Avoids Detection = SAFOBAD = Selection Allocation Follow-up Outcomes Blinding Analysis Discussion. Although discussion is not integral to internal validity, it was added to round off the appraisal by prompting users to consider if any flaws discovered undermined the conclusions. Two generic appraisal tools were discovered, the McMaster Critical Review Form and the Graphic Approach to Epidemiology. Both are comprehensive and adaptable. The McMaster tool does not meet the criterion of simplicity for the non-expert. GATE's associated mnemonic, RAMboMAN, is simple and covers similar ground to SAFOBAD but the GATE tool in its entirety is not simple and different versions are needed for different study types. SAFOBAD has been used for critical appraisal exercises both in classroom teaching and written assignments in the international, online, post-graduate training programme of family medicine at the University of Nicosia Medical School, Cyprus. For each epidemiological design, specific biases are used as examples of each element of SAFOBAD. The whole acts as framework upon which teacher and students can attach such biases onto each part. It also acts as a prompt for appraisal taking the generalist through the sequence of the report.

LIMITS. It has been used in the setting of one training programme and needs scrutiny by a wider audience as offered by delegates at Sicily 2019.

CONCLUSIONS. SAFOBAD encompasses basic principles and all research designs, is simple to learn, remember and use, and can be used as a framework in lessons across study types. It could play a part in the education and implementation of the light touch EBP appropriate for the majority of practitioners.

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67. Accessing the national collaborating centre for methods and tools? capacity building resources remotely: supporting the development of evidence-informed practice skills in low resource settings

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BACKGROUND. The National Collaborating Centre for Methods and Tools (NCCMT) is a leader in evidence-informed decision making (EIDM), compiling evidence on what works best in public health. We share this knowledge broadly across public health so that public health practitioners gain confidence, knowing they are making evidence informed decisions. As such, the NCCMT has many online resources to achieve these goals. However, globally, access to the internet and internet connectivity varies widely. In response to user feedback highlighting limited internet capabilities as a barrier to accessing the NCCMT's online resources, the NCCMT worked to adapt our suite of online resources for offline use. This allows users with limited to no internet connectivity to access resources to build skills and confidence to use best evidence in decision making.

AIMS. The aim of this work is to increase the accessibility of the NCCMT's online resources in settings with low internet connectivity. It explores the background and development of the NCCMT's offline website. It will also look at how the offline website has been used in Canada and how it can be used globally to build capacity in EIDM.

METHODS. The NCCMT consulted with community partners in Northern, rural, and remote areas in Canada to ensure product compatibility with existing operating systems and worked with a web developer to adapt the website for offline use. Internal testing was conducted to ensure that all features of the offline website were functioning. Additionally, the offline website was shared with the NCCMT's advisory group and they were asked to provide feedback.

RESULTS. The suite of NCCMT online resources is now available on a USB stick. Almost all of the resources on the NCCMT's website can be accessed offline. The USB includes access to the following resources, among others: - The Online Learning Modules: A suite of 13 modules developed to support the process of EIDM. - The Understanding Research Evidence videos: A series of short, plain-language videos explaining important terms that you are likely to encounter when looking at research evidence. - The Registry of Methods and Tools: A searchable collection of evidence-informed methods and tools for knowledge in public health - The Rapid Review Guidebook: A step-by-step guide on how to conduct a methodologically rigorous rapid review. - The Skills Assessment Tool: A short multiple-choice quiz developed to test knowledge and skills required for EIDM. The USBs are available to individuals and organizations by request at no cost to the recipient. The NCCMT has sent the USBs to organizations in Canada's north, and is also working to provide the offline version of the website to public health practitioners in low resource settings globally. The offline website is also available in both English and French.

LIMITS. There are some limitations to this work. One limitation is that any links to external websites that exist on the NCCMT's website will not open. This most impacts the Registry of Methods and Tools which links out to knowledge translation methods and tools from external organizations. Additionally, as the external links do not work, there is no access to Health Evidence™, a registry of quality appraised systematic reviews on the effectiveness of public health interventions which is also managed by the NCCMT. Finally, since the website is offline, the NCCMT cannot collect details on the frequency of use of our resources for our reporting purposes, as we would with Google Analytics. To address these limitations, the NCCMT has put together a user guide to explain what the USB can and cannot do.

CONCLUSIONS. Providing access to the NCCMT's resources in an offline format increases the accessibility of training and capacity development opportunities for EIDM in public health in areas where there is limited internet connectivity.

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68. Life after death? Evidence and the credulity of crowds. What we can learn from Africa?s charismatic pastors

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BACKGROUND. We fail in the communication of evidence and risk, whatever the quality of the data. The voices of science sceptics – anti-vaccine campaigners, climate change deniers, advocates for alternative therapies - are loud, colourful, persistent and penetrative. Regulators and medical scientists and professionals often have good evidence, but in its communication, two vital aspects are often ignored: the perceived credibility of the source and the human and emotional context and significance of the message. Ideas and beliefs – even 'facts' – are associated with ideology or group identity; data and evidence cannot penetrate or influence closed minds. There are large numbers of people who may be undecided about all kinds of issues; we have a duty to ensure that they are not captured by anti-science rhetoric. Trish Greenhalgh has said*: 'We must speak for the evidence; the evidence will not speak for itself' and it is that profound insight that underlies much of my work on understanding how we might be able to reform medical and scientific communication. She speaks of building, '...a grand narrative of evidence in context...part of a story...a social movement.' That is a large part of the challenge that faces us. My work is an ongoing analysis of the social, political, economic and philosophical context in which we must communicate evidence, particularly in the impact of prior beliefs on decision-making and behaviour. The project provides an exploration of the practical ways in which we might be able to give scientific evidence a more credible and influential role and voice in society. *Professor Trish Greenhalgh, at the Global Evidence Summit, Cape Town, Sept 2017; https://www.youtube.com/watch?v=gYhqbL268eM

AIMS. 1. To demonstrate that perceptions of evidence and reality are fundamentally driven by beliefs and values 2. To examine the delusional self-confidence of influential figures and the vulnerability of populations in the communication of complex issues 3. To review the systems of values and belief that supersede or challenge science and scientific evidence 4. To argue that failures in scientific communication and influence are, amongst much else, failures in imagination and implementation of the art of rhetoric 5. To propose radical changes in regulatory and scientific communication and engagement with citizens

METHODS. This project is part of an ongoing examination of the contemporary political, social and communications contexts in which scientists and bureaucrats exist and must explain themselves to the world. The early fruits of this work have been presented at various meetings around the world, including EBHC in 2017. The research entails scanning of national and international printed and broadcast media, and examination of professional journals and the latest books for insight and evidence about perception, opinion-formation and decision-making in the digital age. It includes philosophical consideration of the nature and impact of bias. The material for this proposal represents the latest stage of that journey and offers some radical new insights. The 'Life after Death?' of the title, referring to an actual recent event of staged 'resurrection' in Soweto, is taken as emblematic of the profound issues at stake, especially audience vulnerability to deception, and the crisis facing us.

RESULTS. 1. Perceptions of science and the credibility of evidence, even among some scientists, are driven by values and beliefs that may be inaccessible to scientific discourse 2. In an increasingly polarized world, where identity politics drives loyalties, 'facts' become determined by group consensus or ideology, and fake-news sustains and consolidates prior beliefs. These powerful forces are generated by political, economic and religious processes and realities, which must be factored into any public communications and determine their every detail 3. Regulatory, bureaucratic and many scientific communications fail to take this complexity into account in both the presentation of evidence and in its defence 4. Exploiting some of the wisdom of Aristotle's Art of Rhetoric, and using some of the insights of modern sociology, psychology and neuroscience, specific reforms in medical and scientific communications and public engagement are proposed. The resurrection we need is that of genuine social discourse and engagement.

LIMITS. Though the content of this project is based on an immense amount of reading and thinking over several years, its inferences and conclusions reflect, of course, the beliefs, biases and opinions of only one person. Its contribution is in extending and deepening the debate

CONCLUSIONS. With few exceptions, scientific, regulatory and bureaucratic communications in medicine, have fallen far behind the dynamism and diversity of modern popular culture, especially digital media. Scepticism about vaccination (and climate change); the embracing of alternative and charismatic practices and therapies; the dismissive attitudes to causality and evidence; the vast failures in adherence; the seemingly irresistible trade in fake and substandard medicines; the opioid crisis; infant and maternal mortality; medical and medication errors and the worldwide abuse of antibiotics – hardly any of these are either countered with the skill, energy, creativity and seductiveness of their promotion, or equal in response to the intensity of their entrenchment. Proposals for debate and change: radical community engagement; nurturing of ambassadors for science; prioritisation and ranking of core issues; creation of evidence narratives and stories; revolution in use of language; exploration of the causes of scepticism; dynamic exploitation of digital devices and channels.

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69. The use of journal clubs to teach EBM to clinicians: a systematic review and meta-analysis

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BACKGROUND. Teaching evidence-based medicine (EBM) to clinicians is challenging. Journal clubs are an educational activity in which individuals meet to critique and discuss research articles. They are an established part of the medical education system and are considered to be a practical way to improve the content knowledge of health professionals. Previous studies have concluded insufficient evidence (primarily from observational studies) to conclude the effectiveness of journal clubs as an education intervention.

AIMS. To conduct a systematic review to determine the effectiveness of journal clubs for teaching clinicians EBM.

METHODS. In November 2018, MEDLINE, ERIC and Scopus databases were searched for peer-reviewed literature that met the following pre-determined criteria: 1) health professionals such as doctors, medical students, nurses, pharmacists, allied health professionals (dietetics, physiotherapists, physical therapists, occupational therapists, paramedics, podiatrists) and social workers; 2) studies in which the intervention was journal clubs, with no restriction on mode of delivery (e.g. face-to-face or online); 3) studies in which the comparisons were any other form of medical and health professional education, or no educational intervention 4) randomised controlled trials (RCTs); 5) studies in all languages. A risk-of-bias tool was used to assess external and internal validity based on the Cochrane Collaboration's tool for assessing risk of bias in RCTs.

RESULTS. Five studies (n=378 individuals) were included. There was no overall statistical benefit in mean knowledge of journal clubs over other professional education (SMD 0.15, 95% CI -0.09, 0.39). There was no significant difference in attitudes to evidence based medicine in intervention and control groups (mean change in attitude score journal club -0.07 (95% CI -0.07 to -0.18) vs control +0.08 (95% CI -0.05 to 0.2) P = 0.07 for difference in change). There was no significant difference between the intervention and control groups in the practice of evidenced based medicine (EBM quantitative skills mean change journal club +0.1 (95% CI -0.01 to 0.2) vs control +0.1 (95% CI -0.05 to 0.3) P = 0.9 for difference in change). There was some evidence that time spent reading journals per week increased more in control participants (+ 26 min 95% CI + 3.5, 48.3 min) compared with intervention participants at follow-up (-10 min 95% CI -30, 11.4 min, P = 0.02 for difference in change).

LIMITS. Although the quality of studies was assessed as low risk of bias, the small number of RCTs eligible for inclusion in the review limits the generalisability of results.

CONCLUSIONS. There is insufficient evidence to support, or refute, the effectiveness of journal clubs in improving the knowledge, attitudes and implementation of evidence-based skills by health professionals in clinical practice. Further research (specifically from RCTs) is needed to test the effectiveness of other interventions to increase uptake of EBM in real world settings. Such interventions may include interactive components with auditing and feedback to facilitate more effective learning.

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70. How to make EBM teaching practical and fun: enhancing diagnostic understanding using chocolate

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BACKGROUND. Health professionals and the public find understanding health statistics difficult, particularly interpreting diagnostic tests (Gigerenzer et al., 2007). As teachers, we have found it hard to produce an engaging introduction to the topic. Poor interpretation of tests has consequences: for the health system as tests are ordered requested unnecessarily; and for patients as they are exposed to the harms of overdiagnosis. Helping Doctors and Patients Make Sense of Health Statistics. Gerd Gigerenzer, Wolfgang Gaissmaier, Elke Kurz-Milcke, Lisa M. Schwartz, and Steven Woloshin Psychological Science in the Public Interest Vol 8, Issue 2, pp. 53 - 96, 2007.

AIMS. We aimed to develop a teaching technique aimed at those starting to understand diagnostic studies and that would be effective in a small group setting. We wanted our teaching technique to deliver the following learning objectives: Learners would be able to: 1. Explain the concept of diagnostic studies 2. participate in a diagnostic study 3. interpret the results to calculate the key terms that apply to diagnostics (sensitivity, specificity, prevalence, predictive values) 4. apply these terms to a diagnostic problem 5. conceptualise the effect that changing prevalence or the test cut-off has on the meaning of the test result 6. find that they enjoy the experience

METHODS. We developed an educational tool where learners perform their own diagnostic validation study measuring chocolate coated raisins and peanuts. After piloting this with a group of experienced evidence-based medicine practitioners, we have refined the teaching method and developed resources to support this. The teaching technique: The scenario involves a factory making both chocolate covered peanuts and raisins (chocolate covered things, or CCTs). An unknown quantity of peanuts has been added to the separate batches of raisins. You need to separate the peanuts from the raisins and think that the peanuts are generally larger than the raisins. You develop an index test of measuring the CCT's largest dimension. The learners perform the index test by measuring and sorting by size a sample of 100 CCTs, where =Xmm is "positive" for a peanut, and

RESULTS. The tool is engaging and accessible and has helped a range of health professionals, educators, researchers and the public understand the meaning of diagnostic tests. Learners enjoy participation, gain an understanding of typically dry concepts, and many can calculate specificity, sensitivity, and predictive values. This can be done with one batch of CCTs. The effect of differing prevalence on predictive values is demonstrated by using different CCT batches containing different numbers of peanuts (we recommend 30-60%) but with same test sensitivities/specificities (70% to 80%).

LIMITS. The main limitation is preparation time. This can be reduced by using a completely or partly random mixture of CCTs in one or more CCT batches. There is the potential for those with a severe nut allergy being unable to fully participate, although to date this has not happened.

CONCLUSIONS. The tool can be used to achieve our learning objectives relating to diagnostic tests. We have used it to enable learners to: describe biases in diagnostic studies; consider the consequences of differing measuring methods; and to assess the effect that changing the decision rule has on the meaning of the test. The test used in the tool can be easily related back to a clinical example. The tool has met our objective of finding a way in which health professionals can gain an understanding of, and even get a taste for, the statistics behind diagnostic reasoning.

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71. A systematic review of methods used in usability studies of mobile applications for healthcare education

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BACKGROUND. Mobile applications can provide extendable learning environments and motivate students to use adaptive and collaborative learning outside the classroom. Developers of mobile applications need to consider different usability aspects, such as effectiveness, efficiency, satisfaction, learnability, memorability, errors, simplicity, comprehensibility and/or learning performance. Knowledge of methods used in usability studies are important, as development of mobile applications probably will continue to expand within healthcare education.

AIMS. To conduct a systematic review of methods used in usability studies of mobile applications for healthcare education.

METHODS. The systematic review is registered in PROSPERO. Eight electronic databases covering technology, education and healthcare and OpenGrey for grey literature were searched from 2008. There are no language restrictions. Text words and subject headings for healthcare students and mobile applications were developed according to the different databases. The search string was peer reviewed. There will be citation searches in Google scholar on included studies, and hand searches in key journals. Eligibility criteria and selection. The participants are healthcare students. Data extraction of interest are usability testing of mobile application used in higher education, which involve any assessment of usability attributes, i.e., perspectives on learning, technological aspects, instructional design or the context, such as effectiveness, efficiency or satisfaction of the mobile application. We will include qualitative and quantitative studies: Systematic reviews, randomised controlled trials (RCTs), cluster RCTs, non-randomised trials (including controlled before and after studies, and post-test only), interrupted time series and prospective cohort studies. Non-systematic reviews, cross-sectional studies, case reports, commentaries, discussion papers, books and editorials will be excluded. Identified references will be screened, full text articles retrieved and reviewed according to the eligibility criteria and independently assessed by at least two reviewers. Assessment of methodological quality by study design-appropriate checklists and data-extraction will be done independently by two reviewers. Any disagreement will be resolved through discussion, and if necessary, involve a third reviewer. Strategy for data synthesis A descriptive analysis will be conducted of the selected studies. A narrative synthesis will be used to link together the findings from the studies included in the review.

RESULTS. We experienced different challenges with this systematic review. Reviewer and research librarian had little experience with databases in academic areas outside healthcare, as for example Engineering Village and Scopus. "Usability" was not used as a term in the search strategy, as studies on usability not necessarily refer to or use the term usability. Consequently, the search was challenging to narrow and the search yielded 14298 unique hits. Similarly, usability is a less known term in the healthcare educational setting, and the review team experienced it challenging to understand the scope of the term usability. To ensure that members of the review team had similar understanding of inclusion and exclusion criteria, efforts were made to calibrate our screening.

LIMITS. Including studies without restriction of language, both qualitative and quantitative evidence, and studies published from 2008, will provide broad inclusion of relevant articles. The different study designs can make the quality assessment, data extraction, and the synthesis difficult. Having pre-defined data items to be included in tables, will contribute to making the results trustworthy.

CONCLUSIONS. The results of this systematic review will provide an overview of different usability methods and relevant attributes for usability testing, with specific reference to mobile applications for healthcare education. Results will also inform a subsequent usability study of an educational mobile application. Challenges will be discussed.

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72. Assessing medical students? competency in EBM using the ACE tool: a cross sectional study of medical students across different stages of the curriculum

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BACKGROUND. The importance of teaching the skills and practice of Evidence-Based Medicine (EBM) for medical students has steadily grown in recent years. Alongside this growth is a need to evaluate the effectiveness of EBM curriculum as assessed by competency in the five 'A's': Asking, Acquiring, Appraising, Applying and Assessing (impact and performance). The University of Buckingham Medical School (UBMS) is an independent medical school in the UK. A longitudinal, competency based, clinically integrated EBM theme, with assessments has been designed and implemented in the medical school. The EBM curriculum is progressive with students taught to ask, acquire and appraise evidence in years one and two. In years three, students are asked to apply EBM in clinical practice and reflect on their experience. The 15-item ACE tool has been shown to be a reliable and valid instrument to assess medical trainees' competency in EBM.

AIMS. The aim of this study was to carry out a cross sectional study examining the feasibility of administering the ACE tool. We also wished to compare student performance in the ACE tool across different years of EBM training.

METHODS. While initially testing the feasibility of administering the tool, we used paper-based assessment administered during the EBM teaching session. After successfully completing the feasibility phase, we administered the test through our virtual learning environment. Data was collected on student performances in the paper-based assessment for one cohort (third year students) and from the assessment in our online portal for first and second year students. Performance data in ACE was gathered from a cross-sectional sample of 212 medical students representing, first year, second year and third year cohorts. Total ACE scores, item discrimination and internal reliability were analysed.

RESULTS. Performance data from 212 students (83 first years, 83 second years and 46 third years) was compared via one-way ANOVA. No significant difference in means scores was observed across the years (mean scores 10.4, 10.22, 10.28). Individual item discrimination was good except for one item (item discrimination index ranging from 0.27-0.93), overall test reliability was 0.60, with internal reliability consistent across most items (item total correlations were all positive ranging from 0.14-0.60).

LIMITS. Despite the ease of administering and scoring, the ACE tool may have a lower potential to discriminate between different levels of students' EBM competencies. The lack of correlation between test scores and levels of training maybe explained by the small sample size for third year students, and administration via paper-based test versus the online based test. The ACE uses dichotomous questions type, where even novice students could randomly guess answers and still score high.

CONCLUSIONS. The ACE test was very easy to administer and score, compared to other validated EBM assessment tools, such as the Fresno. Students found it very useful as a learning resource, demonstrating the application of EBM steps of asking, acquiring, appraising and applying evidence to a realistic clinical scenario. It is feasible to administer the ACE tool as a formative assessment in undergraduate medical education. It is a valuable teaching tool to demonstrate the application of the first four steps of EBM to a clinical scenario. Further research is needed to compare feasibility and students' performances in assessment tools and suggest a taxonomy of tools to guide EBM educators.

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73. A multifaceted, clinically integrated EBM curriculum improves medical students? competency as measured by the Fresno test

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BACKGROUND. The University of Buckingham Medical School (UBMS) is an independent medical school in the UK. Following feedback from students that they struggled to understand the relevance of Evidence Based Medicine (EBM) to clinical practice, the curriculum has been revised. A longitudinal, multifaceted, clinically integrated theme, with assessments has been designed and implemented.

AIMS. The aim of this study was to assess the effectiveness of the new EBM curriculum in improving students' competency using the validated Fresno test and their self-reported attitudes.

METHODS. Blended learning approaches have been incorporated with a mix of didactic lectures, facilitated small group discussions involving application of EBM in clinical scenarios. In addition, peer teaching of phase I (years one and two) students of the relevance of EBM to clinical practice by phase II (years three and four) students using their personal experiences in clinical rotations has been introduced. Formative and summative assessments have been designed to capture written demonstration of EBM knowledge and skills as applied to clinical scenarios in short answer format. The new curriculum is being evaluated on an ongoing basis by assessing the EBM competency of the medical students in assessments as they progress through the curriculum. All students from the 2017 cohort that experienced the first iteration of the integrated curriculum were invited to participate. The Fresno test of EBM competence was administered as a formative assessment test before and after the EBM teaching in phase I through our virtual learning environment. Self-reported students' attitudes and knowledge of EBM, its relevance to clinical practice were assessed through questionnaires and students were invited to participate in a focus group discussion at the end of EBM teaching.

RESULTS. Of the 83 students invited, 31 participated at baseline (37.3%) and 55 participated at the end of the study (66.3%). 18 students attempted the Fresno test at baseline as well as at follow-up. The average score for the test was significantly higher after teaching than at baseline, with the average score increasing by 38.7 marks, from 29.3 at baseline to 68.0 after teaching (p

LIMITS. There were no controls, hence it is difficult to claim that the change was entirely due to the EBM teaching. Secondly, EBM is an important longitudinal theme in our curriculum and a significant component in all formative and summative assessments. Our findings may not be applicable to other settings where EBM has not been similarly integrated into the curriculum and assessments. Thirdly, though we invited the whole cohort to participate, only 18 students completed the Fresno test both before and after EBM teaching.

CONCLUSIONS. It is feasible to design and implement a multi-faceted, clinically integrated EBM curriculum in undergraduate medical education. Early evaluation of the curriculum using the Fresno test, questionnaire and focus group discussions has shown an improvement in EBM knowledge, skills and students' perceptions of the clinical relevance of EBM.

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74. Identifying challenges in evidence use and synthesis in clinical practice guidelines: a systematic review of stroke clinical practice gGuidelines and evaluation of the evidence underpinning recommendations for the intervention of Thickened Liquids for aspiration subsequent to dysphagia

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BACKGROUND. Clinical guidelines are decision support tools intended to facilitate evidence-based clinical decision making. Their role in such decision making is central, both in cases where interventions are empirically supported and where there is limited evidence. This is especially important in light of findings which suggest high usage of guidelines among clinicians. Thickened liquids is an internationally, commonly used intervention for aspiration post-stroke subsequent to oropharyngeal dysphagia. Despite its widespread use, the evidence supporting the intervention is limited and conflicting. Thus, an analysis of the recommendations made by guidelines regarding thickened liquids and the evidence used by guideline developers to support those recommendations may help to illuminate some methodological challenges and provide a basis for improving the process of guideline development.

AIMS. The purpose of this systematic review and narrative synthesis was to evaluate the evidentiary bases of recommendations made by stroke clinical guidelines regarding the thickened liquid intervention in order to: identify the evidence used by guidelines to support recommendations; highlight methodological issues, and; make suggestions for improvements in guideline development.

METHODS. A systematic search for stroke clinical guidelines was conducted between across a number of databases and guideline websites. Guidelines were eligible for inclusion if they focused on adult stroke populations, made recommendations relating to the intervention of thickened liquids and were published between January 2010 and December 2018. Four independent reviewers rated the methodological quality of the guidelines using the AGREE-II instrument. Intervention recommendations were extracted and analysed using the Criteria for Levels of Evidence Reported from the Canadian Stroke Best Practice Recommendations and a framework examining the appropriateness of the evidence used by guidelines to support intervention recommendations.

RESULTS. Thirteen stroke clinical guidelines were included in the review. The methodological quality of included guidelines was variable but generally good-excellent overall according to the AGREE-11 tool. Thirty recommendations regarding the intervention were extracted. The consensus across all guidelines was that the intervention of TL should be used for people with aspiration subsequent to stroke either in isolation or as part of a general dysphagia treatment programme. The evidence base pertaining to the intervention of TL is less than robust suggesting a mismatch between evidence and guideline recommendations. While some guidelines acknowledged the limited evidence base, others did not or failed to do so overtly. Much of the specific evidence used to scaffold recommendations did not directly support the intervention, did not reflect multiple forms of evidence such as patient evidence and did not use recent evidence where available. Further, a number of guidelines referenced the recommendations of previous guidelines to support their recommendations.

LIMITS. Some limitations are evident. Comparatively, this review includes a small sample size. Further, although it is advised that guidelines are updated every three -five years, this was not the case for a number included in the review. This means that some included guidelines could not reflect up to date evidence. Further, the inclusion criteria did not capture guidelines published by professional speech and language therapy associations which may reflect deeper discipline-specific knowledge regarding the research evidence and the intervention itself. This may limit the external validity of the findings. Where possible the evidence referred to by guidelines in other guidelines was also extracted. In some cases this was not possible due to guideline age, lack of access to original documents or being superseded by a subsequent guideline. Some guidelines may not have been best reflected in this exercise due to lack of accessibility to guideline development documents.

CONCLUSIONS. Despite the limited evidence base for the thickened liquid intervention, there was consensus among the included stroke clinical guidelines in recommending the intervention irrespective of its limited empirical support. Further, much of the evidence used to support recommendations was not appropriate, inadequate, not recent and tended to be limited to efficacy evidence. This suggests less than satisfactory evidence-based practices in formulating recommendations and raises questions regarding the reliability of guidelines as decision-support tools in this case. Suggestions for improvement are made in a number of areas for both guideline developers and clinicians and organisations employing guidelines.

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75. PhD candidates evaluations of a systematic review and meta-analysis course

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BACKGROUND. As more PhD-candidates choose to write systematic reviews as part of their dissertation, a greater demand for courses on synthesizing research has arisen. At the Oslo Metropolitan University (OsloMet) two 5 ECT courses have been held and evaluated the last two years.

AIMS. We will describe how the courses were carried out, but with a specific focus on the parts concerning the search strategy and the selection process. We will also report the PhD-candidates evaluations of these courses.

METHODS. The courses included five full day sessions over a period of four months. An exam in the form of a protocol of a systematic review was submitted on a topic relevant to the candidates PhD projects. The submitted protocols were evaluated according to the PRISMA-P criteria. Between the fourth and fifth full day session the candidates were offered 60 minutes supervision on writing a protocol and planning the literature search. The first session of the course focused on what a protocol should cover and how to critically appraise a systematic review. The second session covered how to ask a clear question, how to set selection criteria and introduced how to conduct a systematic search. The third session expanded on how to conduct the literature search and the process of article selection. The fourth session comprised how to critically appraise included studies and how to summarize the results. In the last session, we focused on the Grading of Recommendations Assessment, Development and Evaluation (GRADE). Each session began with an introduction to the topic of the day by a lecturer and was followed by hands-on exercises and small group discussions. During the final session, the candidates were encouraged to fill in an evaluation form consisting of three parts. Part 1 consisted of six questions related to the learning outcomes. We will show the results from question 1; to what extent the pedagogic approach has contributed to the attainment of knowledge and skills. This is specified as e.g.: The PhD candidate can: plan and write a protocol of a systematic review, formulate a focused research questions, plan a literature research, and conduct a systematic and explicit selection process of the identified articles. This was evaluated on a scale from 1 to 4, where 1="to a small extent" and 4="to a very large extent". Part 2 included seven statements evaluated on a scale from 1 to 5 (1 = I disagree and 5= I agree). The results from two of the statements are included in this presentation, i.e.: "The teaching methods of the course matched the learning outcomes" and "Overall, the course fulfilled my expectations." Part 3 included evaluation of each specific session and addressed the content, relevance and presentation of the lectures/group sessions on a 1 to 5-point scale, where 5 = Very good. We report the evaluations of sessions 2 and 3.

RESULTS. Thirty-two participants signed up for the two courses, 23 completed the courses by getting their protocol accepted, and 15 responded on the evaluations. To introduce the participants to systematic literature searching both lecturing and hands-on searching was used over a total of 6 hours. During the second session, the participants got an introductory lecture on the principles of literature searching and exercises in building a literature search. Between the second and third session the participants were encouraged to continue their searching. In the third session, MWG introduced search filters. The participants used the remaining time to continue to develop their own searches. In the third session, 2.5 hours were used to introduce candidates to article selection. HTM gave an introduction lecture, followed by a hands-on exercise. The exercise simulated a screening process by first screening ten titles including abstracts. This was followed by full text assessment of a relevant article from the former screening process. Before the screening started, the candidates read the set selection criteria. Course participants conducted the screening process and full text evaluation independently. Any disagreements were solved by discussion until consensus were reached. In part 1 of the evaluation, the candidates responded that the teaching to a large extent contributed to the attainment of the learning outcomes (mean 3.3, N=15). In part 2 the candidates agreed that the teaching methods matched the learning outcomes; that the teaching methods of the course encouraged active participations and that the course fulfilled their expectations (mean 4.7, N=15). In part 3 the course candidates rated the evaluations of the sessions targeting literature search and study selection as good to very good (mean 4.5, N=15).

LIMITS. The low responds rate of 47 % might be due to this being a non-compulsory PhD-course where attendance was not noted.

CONCLUSIONS. Through lectures, hands on exercises and group discussions, the candidates' evaluations suggested that the pedagogic approach was beneficial to attain the learning outcomes of the course.

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76. Evidence implementation in performance based financing in Africa: a missed opportunity?

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BACKGROUND. Performance-Based Financing in Africa is a health financing strategy to improve quality of care, efficiency, and equity. It is gaining popularity amongst service providers and users in resource-challenged settings, but very controversial amongst researchers and academia. Due to its rigorous approach, it is suitable for evidence implementation. Performance could be best measured by the use of best available evidence in clinical practice. Implementers of performance-based financing in Africa could do more to ensure clinical practice is guided by best available evidence. Performance indicators need to be tied to evidence criteria. In Africa, most performance-based fiancing programs are funded by the World Bank and national ministries of health.

AIMS. To use a health systems approach in integrating multiple evidence-based guidelines as a performance measure indicator in Cameroon.

METHODS. We modified the JBI approach of Getting Research into Practice (GRiP) and Practical Application of Clinical Evidence Systems (PACES) by using guidelines for multiple conditions and district health services as point of entry to allow for economies of scope (equity) and scale (returns on investments). We used WHO malaria guidelines, MAGICApp Project rapid recommendations for perinatal prevention of HIV and HBV infection, a rapid review of routes of temperature measurement and a set of WHO neonatal guidelines. We used an innovative approach to the theory of change to facilitate the workplace change process. We worked with stakeholders including patients, clinicians, government and traditional authorities. We evaluated short term impacts on change in practice and conducted an economic evaluation.

RESULTS. We report a 31% increase in compliance with evidence-based criteria (R: 20-42) and a $472 USD marginal cost per health facility added compared to $4,079 with standard approach.

LIMITS. This project was conducted within a single district in Cameroon. Wider trials will be necessary to test the process of evidence implementation within performance-based financing.

CONCLUSIONS. This approach is cost effective for resources challenged settings where de-novo guidelines development may be unaffordable. It needs further robust evaluations including the impact on patients' outcomes.

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77. Teaching EBP, addressing the "Applying Evidence in Practice" domain

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BACKGROUND. In 2017 an initiative was undertaken to establish Evidence Based Practice Ireland (EBPI) to promote evidence-based practice throughout he healthcare system in Ireland with the ultimate goal of improving patient outcomes. One of the aims of EBPI is to build capacity and leadership for EBP in Ireland. One of the challenges to the widespread adoption of the EBP paradigm is the lack of teaching of EBP to healthcare professionals. For those who have received training it rarely addresses the domain of how to apply evidence in practice. To address this knowledge gap among practicing healthcare professionals a three-day workshop in EBP was held in Ireland in March 2019. As it is easier to change knowledge than behaviour the workshop was designed with an emphasis on putting evidence into practice.

AIMS. To develop and deliver a teaching module to address the EBP domain "applying evidence in practice" To empower healthcare professionals to become evidence based practitioners by equipping them with the knowledge and skills to find the best evidence and be able to put it into practice To build capacity in practicing and teaching EBP To create international links through inviting speakers for the Centre of Evidence Based Medicine (CEBM) in Oxford

METHODS. The workshop was delivered through a blend of plenary and small group sessions modelled on the CEBM approach to teaching EBP. In all plenaries speakers used real life examples from their own experience with consistent emphasis on the impact to patients and the importance of patient values. Each small group had two facilitators one with extensive experience in teaching EBP with the second being mentored to develop the teaching capacity within EBPI. Facilitators have completed either an MSc in EBP or the Teaching EBM course in Oxford. The programme for day one covered the Ask and Search domains. Day two explored appraisal of different study designs. Day three focused on putting evidence into practice with plenaries on • From Evidence to Recommendations • Shared decision making • Implementation Planning These topics were chosen to reflect the real word challenges health care professions face both individually and when working with multidisciplinary teams. Finally, each small group was required to demonstrate the skills attained including, asking am answerable question in PICO format, finding the evidence, critical appraisal of the best evidence and how they would put the evidence into practice in the real world setting. Participants completed an evaluation form. Participants filled in a postcard with personal goals which is sent to the participant eight weeks after completing the course. Participants are required to complete a reflection 10 weeks after completing the course detailing the impact of the workshop on them, their service area/colleagues and most importantly the impact on patients.

RESULTS. The small group presentation covered a wide range of topics which were based on a real clinical query of a participant. Each group considered the quality of the evidence to answer their question. Then they agreed what recommendation they would make to individual clinicians, their department or clinical programme, in answer to the question weighing up the potential benefit and harm and patient preferences and values. The also described barriers and facilitators to implementation including resources. In the evaluation form the all participants rated their ability to practice EBP a 4-5 on a five-point scale compared with a range of 2-5 in the previous workshop. When asked what aspects of the course were most useful, comments included; "Practical aspects of bringing EBP to patients" "Guidelines to aid implementation" "Connection of theory to real world practice" "Shared decision making" "Apply information in practice"

LIMITS. This was our first experience of introducing the "applying evidence in practice" module. While participants rated their ability to practice EBP highly, follow up to see the impact on their practice in their reflective reports will add to our knowledge of the impact in teaching this domain.

CONCLUSIONS. Our goal in EBPI is to promote the practice of EBP through the healthcare system in Ireland to improve patient outcomes. To be successful we need health care professionals to understand the principles of EBP. While much work internationally has gone into addressing the skills needed to ask focused questions, search the literature and appraise the literature for its quality and applicability there is less agreement on how to integrate the best evidence with clinical expertise and patient values. By developing this practical evidence into practice module we are addressing the curriculum gap in how to teach the "apply in practice" domain of EBP while building capacity and leadership in EBP in Ireland.

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78. Adolopment of clinical practice guidelines in Tunisia with GRADE methodology: screening breast cancer

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BACKGROUND. The adaptation of clinical practice guidelines is expected to improve their uptake and implementation, when compared with guideline adoption. It was agreed on adaptation methodology of CPGs as an alternative to de NOVO elaboration, saving time, money and human resources.

AIMS. The objective of this paper is to describe the process used for the adaptation of European commission Guidelines on Breast Cancer Screening and Diagnosis to the Tunisian setting.

METHODS. We used the GRADE-Adolopment methodology particularly in relation to: (1) defining guideline scope and topics, (2) identifying the source guideline, (3) determining groups and roles, (3) training the working group and guideline panelists on guideline development and adaptation using the GRADE methodology, (4) prioritizing questions and outcomes, (5) searching for local data, (6) reviewing evidence tables prepared and shared by the European guidelines, (7) formulating and grading strength of recommendations, (8) using the GRADEpro-GDT software. Six clinical questions were adapted from the European Guidelines on Breast Cancer Screening and Diagnosis to the Tunisian setting, using the adolopment approach.

RESULTS. The Tunisian guideline panel considered nine clinical questions from the European Guidelines on Breast Cancer Screening and Diagnosis. The panel dropped three questions on tomosynthesis screening, as it is not used in Tunisia as a screening tool. The panel changed the guideline perspective from that of a population to that of an individual due to Tunisian resources. For all questions, the panelists prioritized the same outcomes as the European guideline; however, they changed the rating of importance for two outcomes: (1) "all-cause mortality": from "not important" to "important"; (2) "overdiagnosis": from "critical" to "important". Despite the lack of data from the Tunisian context, the panelists assumed a lower incidence of breast cancer but a higher risk of breast cancer mortality in Tunisia compared to Europe. The panel did not modify the overall certainty of the evidence for any recommendation. However, the panel changed the strength of one recommendation from "conditional against" to "conditional for either" mainly due to very low certainty of the evidence, large costs and unclear cost-effectiveness.

LIMITS. Some members of the working group were resistant to change and didn't understand the difference between health programmes and clinical practice guidelines. In addition to that the panelists had to be trained on GRADE approach and systematic reviews elaboration. The lack of Tunisian epidemiologic data and Tunisian cost effectiveness studies.

CONCLUSIONS. This process illustrates both the feasibility of GRADE-Adolopment approach and the importance of consideration of local data. It also highlights the value of collaboration with the organization that developed the source guideline.

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79. Selecting a theoretical model to guide implementation projects

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BACKGROUND. It is known that there is a gap between research knowledge and its application in practice. A Belgian organisation, called 'ebpracticenet', aims to support health professionals in closing this gap using evidence-based guidelines. Since 2011, Ebpracticenet has been responsible for the dissemination of evidence-based guidelines on its platform. In the middle of last year, it has been given the task and funding by the federal government to support (multidisciplinary teams of) health professionals with the implementation of these guidelines into practice. In order to have an evidence-based and systematic approach for implementation projects, Ebpracticenet sought a theoretical model as a starting point for their work. Many frameworks or models exist and they all seem to have advantages and disadvantages. Among other things, the choice for a certain model seemed to depend on the reason why they need a model (e.g. for implementation planning, solely for identifying barriers or for evaluation). Professionals and researchers in the field of implementation sciences have used a large number of criteria to select models, but there is little consensus on which are the most important. The selection of an implementation model is often haphazard or driven by convenience or prior exposure.

AIMS. The implementation team of Ebpracticenet aimed to select a theoretical model to guide implementation projects.

METHODS. All articles mentioned in Nilsen et al. (2015)'s publication about implementation theories, models and frameworks were read. Moreover, the implementation team of Ebpracticenet explored many articles, which were recommended by senior researchers in the field.

RESULTS. Many different types of models exist: process models, determinant frameworks, classic theories, implementation theories and evaluation frameworks. The Ebpracticenet team preferred a 'process model' to illustrate the implementation process 'as a whole'. From all process models, the implementation team had a preference for the 'knowledge-to-action framework' because it is very intuitive, clear and frequently used in implementation research. Graham and colleagues, the developers of the model, recognised that research translation is a continuous, cyclic process that requires continuous refinement over time. This is in line with how the implementation team of Ebpracticenet perceives implementation of evidence-based guidelines. Moreover, the implementation team appreciates that the 'knowledge-to-action framework' acknowledges that each element in the implementation process influences other elements. Birken et al. (2017) identified several criteria for selecting a model for implementation sciences. The following criteria also applied to Ebpracticenet's choice for the 'knowledge-to-action framework': logical consistency/plausibility, empirical support, generalisability, application to specific setting, process guidance, i.e. provision of a step-by-step approach for application, simplicity and frequency of use. Birken and colleagues' criteria 'description of a change process' was missing in the knowledge-to-action model'. This is one of the reasons why the implementation team adjusted the 'knowledge-to-action framework' to their needs and specific context. The 'knowledge-to-action framework' became the foundation of the model and specific elements were added, where the team felt the 'knowledge-to-action framework' was too brief. This led to a model with the following five steps: identification, context analysis, development of action plan, evaluation and sustain.

LIMITS. The implementation team of Ebpracticenet explored the literature but they did not conduct a thorough systematic literature review. Another limitation is that the model has not been tested in practice yet.

CONCLUSIONS. This implementation model will be piloted during the first project in 2019. Afterwards, it will be refined based on the experiences of the implementation team. The model aims to be helpful for each implementation project of Ebpracticenet but it might be adjusted based on the needs of the stakeholders and the context. It is expected that this model will be a guide to implementation projects of different scales: national level (macro-level), regional or provincial level (meso-level) and organisational or individual level (micro-level).

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80. Evidence-based public health training: a scoping review

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BACKGROUND. Evidence-based public health (EBPH) is the "integration of the best available evidence with the knowledge and considered judgements from stakeholders and experts to benefit the needs of a population". It involves applying the five steps of evidence-based medicine (EBM) to public health namely, phrasing questions, finding evidence, critically appraising evidence, applying results and evaluating the process. In contrast to EBM, EBPH focuses on the population instead of individual patients; on prevention and health promotion instead of treatment; and targets public health practitioners and policy-makers instead of physicians or clinical healthcare workers. As part of the Collaboration for Evidence-based Healthcare and Public Health in Africa (CEBHA+) project, we planned to develop a workshop on EBPH for public health practitioners in Sub-Saharan Africa. We performed a scoping review to identify existing courses on EBPH that could inform development and implementation of the workshop.

AIMS. To identify, describe and summarise the content and format of existing EBPH courses

METHODS. We conducted a scoping review of existing EBPH courses. We considered any type of training initiative to be eligible, including workshops, modules or summer schools of any duration and format (online, face-to-face or blended), delivered at postgraduate or continuing professional development level, in any setting. Eligible courses had to explicitly state that they related to EBPH, we excluded general courses on EBM or evidence-based practice. To be eligible, courses had to provide training on the general principles of EBPH, or on one or more of the five steps of EBPH. We considered courses that were described in published reports and those that were described on websites of institutions or associations. We excluded once-off presentations, webinars or lectures on EBPH. We developed a search strategy using relevant key words and searched PubMed, CINAHL, Web of Science and Scopus on 25 June 2018. In addition, we used snowball searching to identify courses on Google and contacted experts in the field. Two authors independently screened titles, abstracts and full-texts to identify eligible courses. One author extracted data using a standardized, pre-piloted data extraction form. The second author checked data and contacted authors in case of missing data. We analysed data per unique 'parent course' identified. Hence, where more than one article reported on the same course or where courses were based on a 'parent course', we merged information. We used the five steps of EBPH as a framework to analyse the content of included courses and summarised results narratively.

RESULTS. Our search of electronic databases yielded 1877 citations. After excluding irrelevant titles and abstracts, we assessed 51 full texts for eligibility. We included 21 studies, reporting on 13 unique courses. Our search on Google yielded another four courses. We therefore included a total of 17 courses. Most of the existing courses are based on the EBPH course first developed at Saint Louis University in 1999, and although these were offered across the USA and other countries, we collectively described them as one course. Courses were offered in Asia, Australia, Europe, North America and South America, but none in Africa. Courses were facilitated via a face-to-face (n=11), online (n=3), and blended approach (n=1). Two courses did not report on delivery format. Most courses lasted between three to five days, however, one course lasted only six hours, while one was part of a Master's program spanning two to three years. Content covered included general principles of EBPH (n=8), phrasing questions (n=13), searching (n=15), critical appraisal (n=8), application of results (n=10) and evaluation (n=7). Only three courses covered all five steps of EBPH, and most courses (n=13) provided additional training that was relevant to EBPH but did not fit into the five step EBPH framework e.g. using logic models in systematic reviews of public health interventions. Teaching and learning methods were poorly reported. Where reported, courses used a mixed approach including lectures and group discussions, hands-on searching and critical appraisal exercises. Participants doing online courses watched videos prior to online discussions.

LIMITS. We tried to identify existing EBPH courses through a systematic search of published reports, supplemented by a Google search and contacting experts in the field. However, we cannot rule out the possibility that we may have missed existing courses. Reporting of courses was not always adequate. We contacted authors and course conveners for missing information but did not always receive a response. There is thus some missing information regarding course content and teaching or learning methods.

CONCLUSIONS. Existing EBPH courses are mostly delivered in high-income countries. The five steps of EBPH were covered to a varying extent. The findings helped to inform the development of a CEBHA+ EBPH workshop.

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81. Mapping health service utilisation and health information exchange for people with disability living in supported accommodation

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BACKGROUND. In Australia, 22% of people with Intellectual Disability (ID) live in supported accommodation settings provided by specialised Disability Sector Organisations (DSOs), with varied levels of in-house health and domestic support. DSOs support health outcomes for their clients, with a vital role in ensuring health care is accessed appropriately; however, little is known regarding the current health service utilisation for this cohort. Further, despite the potential for impacting organisational sustainability, the level of support DSO's provide their clients to access health services is unknown. Due to the nature of their impairments, people with ID may not be able to effectively communicate regarding their health needs to guide necessary care and support, and 76% of people with severe or profound disability need assistance accessing health care. Additionally, their support worker(s) may not have sufficient health literacy or knowledge about the individual to facilitate access to the right clinical services in a timely manner, nor elicit or provide essential information during a health appointment. For these reasons, facilitating care coordination for people with disability living in supported accommodation settings is challenging. Communication is a key strategy underlying effective care coordination, particularly when integrating care across different services and/or sectors. Health Information Exchange (HIE) is defined as the transfer of health information amongst service providers, however, this is often limited to only health service providers. Given the DSOs role in providing care and support, they are key partners in any care coordination model. For the HIE processes to be effective the DSO needs to provide appropriate health information to the health service to inform clinical decision-making. Similarly, for clients admitted to hospital, active use of health information is required in discharge planning and transition of care from hospital to home regarding the client's changed needs, given that the DSO is also responsible for executing follow-up care plans and medication regimens.

AIMS. A systematic monitoring approach was taken to understand health service utilisation, consider the collective service need across the disability sector, and identify existing service gaps and potential for quality improvement for health service access. The aims of the research were as follows: 1. Map the patterns of health service use for adults living in supported accommodation settings; 2. Map occasions of health information exchange occurring between DSO and health services; and 3. Identify the level and cost of support provided by the DSO's for their clients to access health services.

METHODS. An online survey delivered via REDCap was developed with feedback from a steering group comprising a primary care clinician, health policy-makers, and representatives from participating DSOs. Targeted questions related to the type of health service that was accessed, which were defined as the following: 1. Primary health care 2. Dental health care 3. Community mental health 4. Community allied health appointment 5. Hospital outpatient appointment 6. Medical specialist 7. Emergency department 8. Hospital a. Admission b. Discharge For each occasion of service, the survey asked how the client was supported to access the service, impact on the organisation, and quality of HIE that occurred. The survey was implemented in six partner DSOs in Western Australia, with guidance from organisational management regarding the most suitable method for implementing the survey. Organisation-specific codes were used to deidentify client data. These codes were also used to provide quarterly reports to each DSO for planning and quality improvement purposes. The University of Western Australia Human Ethics Research Committee provided approval for this study.

RESULTS. All DSOs approached participated in the study, however, given the different structures and clientele of each organisation, the implementation of the processes to support the survey varied between organisations. There was a need for pragmatic decision-making and on-going support to ensure quality of data were collected. Preliminary findings for the first six-months of data collection (May-October) and implications for service design will be discussed.

LIMITS. Absence of a defined and standardised data set reduces opportunity for comparison within specific clientele contexts.

CONCLUSIONS. While there were challenges in implementing the survey, the approach taken was accepted within organisations because of the benefit of regular reporting targeted towards their planning and quality improvement needs. From the broader perspective, the collective dataset provides opportunity to further develop solutions and business models tailored to better meet the health needs of a vulnerable cohort, in a manner sustainable to both health and disability services.

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82. Training early career investigators in evidence-based research: the EBR training school

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BACKGROUND. Evidence Bases Research (EVBRES) is an international European-based network aiming to raise awareness of the need to use systematic reviews when planning new studies or placing results from a new study in the context of existing knowledge. Thanks to an EU COST Action programme, one of EVBRES's main goals is to provide training to Early Career Investigators and senior Clinical Health Researchers on how to be evidence based. With this goal in mind, a group of COST Action members have been working to develop an evidence based research training school – The EBR Training School.

AIMS. To assess the first stage of the development of the EBR training school for Early Career Investigators and senior Clinical Health Researchers and to evaluate its pedagogic approach.

METHODS. Following an initial meeting in Bergen, the EVBRES members have started developing the curriculum of the first training school, which, after a number of discussions and meetings with experts, will be piloted among COST Action members in Estonia in early October 2019. Focus groups will be used to evaluate the pedagogical approach of this first training school in order to feed back to the development of the next ones.

RESULTS. Results of the evaluation of the first stage of the development of the training school will be presented to the EBHC meeting in Sicily in November 2019. This is an ideal setting to receive constructive feed back and improve the structure and content of the EBR Training School.

LIMITS. The development of the EBR Training School is at a very early stage.

CONCLUSIONS. The development of the EBR Training School is a significant step in increasing awareness around evidence-based research among young researchers. Its successful development and delivery can provide useful insights into teaching in this area and can pave the way for more initiatives in evidence-based research training.

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83. EBP in bachelor health and social care education: the design of an online course in line with EBP Levels and learning outcome descriptors

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BACKGROUND. Evidence-based Practice (EBP) has become increasingly emphasised in Norwegian policies related to higher education. According to Regulations of Common Curricula for the Health and Social Care Educations (2017, § 2), a candidate who has completed his or her qualification should be able find, evaluate and refer to and communicate important academic subject matters; to update his/her knowledge in the field; to apply academic knowledge and relevant results of research and development work to practical and theoretical problems; and to make well-founded choices in line with principles for evidence-based practice. These regulations have underpinned the development of National Guidelines for Health and Social Care Education (2018) and levels and learning outcome descriptors related to EBP are now specifically stated in these guidelines. In 2017, at Western Norway University of Applied Sciences (HVL), local EBP levels and learning outcome descriptors were developed in line with national regulations and research evidence on EBP curricula. Academic staff from seven different bachelor programs (child welfare, nursing, occupational therapy, physiotherapy, radiograph, social education and social work) and academic librarians participated in this process. In 2018, this group was awarded strategic funding (160.000 NKR) from HVL to develop an online course to support the learning of EBP at bachelor level at Canvas, an international open-source learning management system.

AIMS. To design online course in accordance with EBP levels and learning outcome descriptors at Canvas.

METHODS. From December 2018 to June 2019, a project group at the Faculty of Health and Social Sciences, HVL, comprised of academic staff from the seven different bachelor programs, an academic librarian, a web-designer, a user representative for Universal Design, participated in the design and development of an online course in EBP. H5P, at https://h5p.org/, was used to create interactive online learning resources to be integrated in Canvas. H5P is a free and open technology. Project management: A detailed project schedule with a timeline and a plan for task management was developed. Project leaders met frequently to design and create content, whereas the project group as a whole met monthly to discuss and evaluate progress. In between monthly meetings, representatives from the different programs developed profession-specific resources.

RESULTS. Four modules were developed in the project period: 1) Introduction to EBP, 2) Reflecting on own practice, 3) Asking clinical questions, and 4) Searching for literature. All content was created in accordance with EBP levels and learning outcome descriptors at HVL, and content was linked to profession-specific resources where relevant (e.g. scenarios, podcasts on why EBP is important in a specific profession, tips for information sources). Design issues: For each module, we created content pages using text, video, podcast, links to resources and interactive content with opportunities for feedback (e.g. dialog cards, drag and drop, image slider, fill in essay, quizzes). When possible we reused online learning resources, provided by The Centre for Evidence-based Practice, HVL, and The Norwegian Institute for Public Health. Efforts were made to avoid overload of information on content pages; we used preambles to introduce pages and added helping statements to facilitate progression and a clear learning path. Experiences with the project and examples of content, including interactive content, and professions-specific content, will be presented at the conference.

LIMITS. Following the national requirements for Universal Design was challenging due to lack of competence and structural support in the organization.

CONCLUSIONS. We developed four EBP modules for an online course using the learning management system Canvas. General EBP content was linked to profession-specific resources to ensure relevance across professions. A variety of tools were used to create content, including text, video, podcast and interactive content. Efforts were made to create learning paths throughout the modules. The online course and its four modules will be implemented and evaluated autumn 2019 for a selection of bachelor programs at HVL. The next modules; critical appraisal, integration of research evidence and evaluation, will be developed in 2020.

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84. The evidence ecosystem as a tool to demonstrate the successful acceptance of EBP in an aid organization

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BACKGROUND. The Belgian Red Cross-Flanders (BRC-F) is an aid organization with a wide range of activities, from blood collection over first aid education to international development aid. Evidence-based decision-making is embedded in the long-term strategic vision of BRC-F.

AIMS. To scientifically underpin BRC-F activities by implementing the principles of Evidence-Based Practice (EBP) in all layers of this multi-faceted organization.

METHODS. Since 2010, The Board of Directors of BRC-F invested in a Centre for Evidence-Based Practice (CEBaP) where 10 highly-trained researchers in EBP support the Blood Services and the Humanitarian Services by conducting type A research (Monitoring and Evaluation of BRC-F activities), type B research (systematic reviews and evidence-based guidelines) and type C research (impact evaluations). Educational approaches have been used to implement EBP such as a blended learning approach (E-learning module + face-to-face moment) and journal clubs (presentation and discussion of primary research studies with local delegates from African countries). The Evidence Ecosystem will be used to demonstrate how we scientifically underpin the WASH (Water, Sanitation and Hygiene) activities of our International Cooperation Department (ICD).

RESULTS. CEBaP conducted a systematic review on approaches to promote handwashing and sanitation behaviour change in low- and middle-income countries ('Evidence synthesizers'). The conclusions of this review were disseminated by CEBaP/ICD via internal and external platforms: websites, social media, internal science day, stakeholder meetings, webinar, international conferences, publications in peer-reviewed journals ('Evidence disseminators'). The conclusions (e.g. use of community-based approaches) are currently implemented in the WASH programs by ICD and our African Red Cross Society partners (ARCS) (Tanzania, Malawi, Rwanda, Burundi) ('Evidence implementers'). These programs are consistently evaluated via output, outcome and impact indicators by ICD/ARCS with specific methodological support from CEBaP concerning the data-analysis (sample size calculations and statistical analysis in R software package) ('Evidence evaluators & improvers'). Based on an evidence gap map analysis, CEBaP and ICD decided to set-up a randomized controlled trial in Tanzania to investigate the (cost-)effectiveness of two add-on software interventions for improving handwashing and sanitation behaviour ('Evidence production').

LIMITS. The successful implementation of EBP in a Non-Governmental Organization is a long-term job that must have support in all parts of the organization (from Board of Directors to managers, staff members and volunteers).

CONCLUSIONS. The Evidence Ecosystem demonstrates that the EBP principles are successfully implemented in the BRC-F. A top-down managerial focus on EBP increased the awareness of all employees and volunteers and resulted in a positive attitude towards EBP throughout the different tasks in the Evidence Ecosystem.

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85. How can we rate the certainty of prediction modelling studies in a systematic review?

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BACKGROUND. Mass gatherings attended by large crowds are an increasingly common feature of society. In parallel, an increased number of studies have been conducted to identify those variables that are associated with increased medical usage rates.

AIMS. 1) To conduct a systematic review answering the PICO question "Which predictive models (I) are available for emergency services planning (O) during mass gathering events (P)?" 2) To apply the GRADE approach to rate the certainty of the included prediction modelling studies (body of evidence)

METHODS. Prediction modelling studies from 6 databases were retained following systematic searching. Predictors for patient presentation rate (PPR) and/or transfer to hospital rate (TTHR) that were included in a multivariate regression model were selected for analysis, and the evidence was summarized narratively. Methodological limitations were assessed by making a judgment on the risk of bias items of the CHARMS checklist (outcomes to be predicted, candidate predictors, missing data, model development). Indirectness, imprecision, inconsistency, publication bias and the 3 upgrade criteria (large effect, dose-response gradiënt, plausible confounding) were assessed by the GRADE guidelines when evidence for an effect is summarized narratively. The initial certainty level was set at 'high' (association between predictors and outcomes irrespective of any causal connection).

RESULTS. We identified 12 prediction modelling studies, performed in the USA (n=7), Australia (n=3), Japan (n=1) and Singapore (n=1), with a combined audience of >32 million people in >1500 mass gatherings. Statistically significant variables (p

LIMITS. Further formal guidance from the GRADE working group is recommended to use the GRADE approach on prediction modelling studies. This will enhance the formulation of recommendations based on a systematic review of prediction modelling studies, for example in the field of mass gathering medicine.

CONCLUSIONS. The GRADE approach and the CHARMS checklist allows researchers to rate the certainty of prediction modelling studies.

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86. The impact of science on medical education in Trinity College Dublin during the nineteenth century: from resistance to endorsement

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BACKGROUND. Trinity College Dublin was founded in 1592 by Elizabeth I. However, a medical school only emerged in the Dublin college following the appointment of the first professor of anatomy at the University of Cambridge in 1707. By 1813, Trinity began a process of appointing dynamic professors of medicine who had trained in Leiden, Padua, and Edinburgh. Emphasis was now placed on the utilization of the most recent research. Regular autopsies were conducted, pathology and midwifery were introduced, bedside clinical teaching was initiated, chemical experimentation was conducted, and English, rather than Latin, was used in the final medical examinations. However, science did not achieve its central position within medicine without resistance. There was unhappiness that medicine was not book-based, like Greek and Latin. The remote, disreputable location of the medical school on the campus, together with the building of a wall separating the school from the rest of the college, symbolized an antagonism towards the medical school that lasted until the end of the nineteenth century.

AIMS. This study will investigate the development of the medical school at Trinity College Dublin during the nineteenth century. This period saw a rise in the profile of experimental medicine. Cell theory triumphed, the word 'scientist' was coined, and medical advances were accompanied by considerable professional evolution. A scientific ethos was adopted at the Dublin medical school while education and research became a priority, in addition to bedside patient care. The overall aim of this project will be to explore how a medical school, initially perceived as foreign and progressive, had by 1900, become fully accepted.

METHODS. Data sources: Manuscripts and Archives Research Library, Trinity College Dublin; Manuscripts and Early Printed Books Department, Trinity College Dublin; Irish Architectural Archive; Irish National Archive; Library of the Royal College of Physicians in Ireland; the Medical College Library, St. Bartholomew's Hospital, London. Electronic databases will also be searched including the Lind Library, The Cochrane Library, Medline, and also Embase, using Google, Google Scholar, and AltaVista search engines.

RESULTS. This project will identify how medical education became increasingly informed by science during the nineteenth century. The study will have a number of key foci. Firstly, this project will aim to identify the significant impact of English, Scottish and Continental medicine on the Dublin school; secondly, to assess the important educational innovations introduced from 1800; thirdly, to explore the resistance to the medical school's emphasis on anatomical dissection, experimental chemistry, and bedside clinical teaching; and finally, to analyse the varied reasons behind the eventual acceptance of the medical school and its scientific ethos.

LIMITS. Historical studies are limited by the survival and availability of documentary evidence. However, in this case an extensive number of relevant documents are available and have already been systematically identified by this investigator who already has a doctorate in EBM.

CONCLUSIONS. This investigation is the initial stage of a wider study of the history of evidence-based medicine. The project will identify and highlight the important barriers and facilitators inhibiting or enhancing the role of scientific methodology in medical education and practice, in a specific medical school, during the course of the nineteenth century.

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87. Prioritizing Chinese medicine clinical research questions in cancer palliative care: a two-round international Delphi survey

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BACKGROUND. Chinese medicine modalities, including acupuncture and Chinese herbal medicine (CHM), are often used in cancer palliative care settings but their effectiveness is often clear.

AIMS. We aimed to prioritize Chinese medicine clinical research questions for cancer palliative care.

METHODS. Identified research needs from existing systematic reviews (SRs) and overview of SRs were translated into research questions. International experts, including physicians, Chinese medicine practitioners, nurses and clinical research methodologists, in cancer palliative care (n=3 from each category) were invited in a two-round Delphi survey. A total of twenty-nine research questions were presented. The experts were asked to i) rate clinical importance of answering the questions on a 9-point Likert scale; ii) provide qualitative comments for supporting the rating; and iii) suggest outcome measures.

RESULTS. Eight research priorities were established with positive consensus after the two-round Delphi survey. For the six priorities related to acupuncture and related therapies, median of clinical importance ranged from 7.0 to 8.0 (interquartile range (IQR): 1.00 to 2.50) on the 9-point Likert scale with a percentage agreement ranging from 75.0% to 91.7%. For the remaining two priorities related to CHM, median of clinical importance ranged from 7.0 to 8.0 (IQR: 1.00 to 1.50) with a percentage agreement ranging from 75.0% to 83.3%. Neither positive nor negative consensus was established among the remaining twenty-one research questions.

LIMITS. The study focused on clinical research questions identified from existing SRs and overviews of SRs, the scope of research priorities generated from the Delphi survey might be limited to those which has been previously evaluated. Some potential research questions focusing on other Chinese medicine interventions, such as Qigong and Tuina, might be included in future Delphi surveys for research priority setting.

CONCLUSIONS. International experts have achieved consensus on eight research priorities in Chinese medicine for cancer palliative care. By fostering the integration of different stakeholders' opinions, this study might inform the allocation of scarce research funding in exploring the effectiveness of Chinese medicine, especially acupuncture and related therapies, in managing high burden symptoms in cancer palliative care. Further research on herb safety and herb-drug interaction should be performed before conducting international trials on CHM.

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88. Development of Chinese medicine clinical service recommendations for cancer palliative care in Hong Kong: a Delphi survey

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BACKGROUND. The growing cancer incidence and advancement of cancer treatments lead to an increasing demand for timely palliative care. Some existing evidence support the use of Chinese medicine interventions for symptoms management among palliative cancer patients. Evidence-based service recommendations compatible to Hong Kong local context are yet to be developed.

AIMS. Guided by the GRADE-ADOLOPMENT approach, we aimed to establish consensus on developing Chinese medicine clinical service recommendations for cancer palliative care among Hong Kong experts.

METHODS. Twelve Hong Kong experts, including physicians, Chinese medicine practitioners and nurses, in cancer palliative care (n=4 from each category) were invited to conduct a two-round Delphi survey for generating consensus-based recommendations on appropriate Chinese medicine interventions. The evidence to decision (EtD) framework was used to guide the procedure considering the criteria, namely benefits, harms, equity, acceptability and feasibility. The experts were asked to i) give rating of recommendation for each intervention on a 4-point Likert scale; ii) provide qualitative comments for justifying the rating; and iii) assess the criteria listed in the EtD framework.

RESULTS. After the two-round Delphi survey, three out of seven interventions reached positive consensus as service recommendations. These recommendations were i) acupuncture and ii) acupressure for reducing fatigue among palliative cancer patients; as well as iii) moxibustion for reducing nausea and vomiting among patients receiving chemotherapy. Median rating of recommendation ranged from 2.5 to 3.0 (interquartile range (IQR): 0.00 to 1.00) on the 4-point Likert scale and the percentage agreement ranged from 83.4% to 91.7%. Neither positive nor negative consensus was established in the remaining 4 interventions.

LIMITS. The relationship between judgement on EtD frameworks criteria and the rating of recommendations provided by experts might be explored by conducting qualitative comparative analysis in the future.

CONCLUSIONS. A list of three evidence-based Chinese medicine clinical service recommendations for cancer palliative care which were relevant to Hong Kong healthcare setting were formulated. Existing evidence on the effectiveness of the Chinese medicine interventions were contextualized in the biomedically dominant, tax funded healthcare system, considering local acceptability and feasibility. This might guide healthcare policymakers in resource allocations and inform implementation of service recommendations in Hong Kong.

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89. An international network for evidence-based research: introducing the EVBRES initiative

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BACKGROUND. Research on research has shown that many redundant studies would have been avoided if a systematic review had been conducted prior to initiation of the new study. These apparently wasteful studies limit funding available for truly important and relevant research, diminish the public's trust in research, and are unethical. Evidence-based research (EBR), or the use of prior research in a systematic and transparent way to inform a new study so that it answers the questions that matter in a valid, efficient and accessible manner, is needed to ensure that studies are addressing worthwhile questions. To promote EBR, the Evidence-Based Research Network (www.ebrnetwork.org) was created in 2014. In April 2018, the Evidence-Based Research Network obtained funding from the European Cooperation in Science and Technology (COST) to create the EVidence-Based RESearch (EVBRES). EVBRES (www.evbres.eu), COST Action Network (CA-17117), represents a wide group of stakeholders committed to fully understanding the implications of an EBR approach across the whole evidence ecosystem of production, synthesis, and knowledge translation.

AIMS. The overall aim of the EBRNetwork and EVBRES is to establish an international network to further our understanding, as well as design and implement interventions, to encourage researchers and other stakeholders such as patients, ethics committee members, funders, and journal editors to use an EBR approach when conducting or supporting research.

METHODS. EVBRES consists of four Working Groups using a variety of quantitative, qualitative, and mixed methods (e.g. scoping reviews, systematic reviews, Delphi studies, quasi-experimental studies) to design and implement interventions to promote an EBR approach among various stakeholders. Working Group 1 will describe key stakeholders' role, such as ethic committees, funding agencies, journals and patient groups, in solidifying the evidence-based research approach. Working Group 2 will develop and organize activities aimed at educating researchers on how to systematically incorporate existing evidence when preparing new research. Working Group 3 aims to identify and prioritize tools that can improve efficiency in producing and updating systematic reviews. Working Group 4 will explore methods to detect redundant research as well as measurable outcomes of implementing evidence-based research approach that are relevant to researchers and key stakeholders.

RESULTS. EVBRES officially commenced in October 2018 with participations from researchers in more than 35 European COST Action member countries, in addition, more than 10 international partner countries was also involved. To assist in the organisation and realization of activities across Working Groups, an infographic has been created to identify where EBR and EVBRES fit within the "Evidence Ecosystem" in order to distinguish its crucial role in the wider ecosystem of evidence organisations through our promotion of relevant and necessary new knowledge, the need to synthesise knowledge, and the need to translate new knowledge to research practice.

LIMITS. None identified at this time.

CONCLUSIONS. EVBRES, a COST Action Network, was initiated by the EBRNetwork, and is funded to carry out activities until October 2022. The EBRNetwork and its work will lay the firm foundations for future endeavour to promote EBR. As a result of presenting at the International Conference for EBHC Teachers and Developers and International Society for EBHC, the EVBRES and EBRNetwork looks forward to the valuable input of EBHC experts to forward our thinking on how EBR fits in current Evidence Ecosystems.

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OTHER SELECTED ABSTRACTS (NOT PRESENTED)

90. **An analysis of reporting quality of prospective studies examining community antibiotic use and resistance**
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91. **Mapping the Triple Aims**
Baynouna Al Ketbi Latifa

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108. Beliefs and implementation of EBP among nurses: a descriptive study
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110. Analysis of the implementation of the Legislative Decree 14th March 2013 n. 33 concerning 6 Italian Local Health Authorities (ASL)
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112. Integrating patient experience in transforming healthcare delivery
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90. An analysis of reporting quality of prospective studies examining community antibiotic use and resistance

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BACKGROUND. Antibiotic resistance is a global problem, but the relationship between antibiotic use and resistance development and decay is not well understood. This knowledge is best provided by prospective studies, but to be useful they must be both conducted and reported well. Little is known about the reporting quality of these studies.

AIMS. This study aimed to assess the quality of reporting in prospective studies which investigated antibiotic resistance following antibiotic exposure in community-based individuals.

METHODS. The quality of reporting of prospective studies (17 randomised trials, 8 cohort studies) identified in a systematic review of the relationship between antibiotic use and resistance was assessed independently by two researchers using checklists (one for trials, one for cohort studies) developed from existing reporting guidelines for these designs and this field.

RESULTS. The mean percentage (SD, minimum-maximum) of mandatory items that were adequately described by the included studies was 59% for trials (14%, 36%-84%) and 52% for cohort studies (17%, 13%-70%). Most studies adequately described the study background and rationale, the type, combination, and duration of the antibiotic intervention, and the sampling procedures followed to isolate resistant bacteria. Most studies did not report the incident numbers of resistant and susceptible isolates analysed at each time-point. Blinding and sample size calculation was inadequately reported in almost half of the trials and all cohort studies.

LIMITS. Our sample of studies is limited to those included in a systematic review of antibiotic resistance in individuals who were prescribed antibiotics in primary care, this may limit the generalisability of results beyond this setting. Additionally, the checklists used to assess the studies were modified from existing checklists and informed by the pragmatic experience of researchers assessing and synthesising these types of studies – the modified checklist have not been formally assessed.

CONCLUSIONS. The quality of reporting in prospective studies investigating the association between antibiotic exposure in the community and isolation of resistance isolates is variable. Some details were missing in over half of the studies, which precludes a complete risk of bias assessment and accurate interpretation and synthesis of results.

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91. Mapping the Triple Aims

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BACKGROUND. Triple aims were introduced as a holistic approach to describe ultimate best goal of healthcare delivery. To be achieved organizations' strategies and quality improvements efforts are driven in three dimensions: Improving the patient experience of care (including quality and satisfaction); Improving the health of populations; and reducing the per capita cost of health care.

AIMS. A framework is suggested to visualize these aims together. Aimed to or achieved outcomes are best described when triple aims are plotted in respect to each other. Ideally, the three must be achieved to say we reached the aim but when it is difficult to do so, localization of progress in each aim will help to plan the journey to achieve it.

METHODS. Figure (1) is one way that the triple aims can be visualized together. The three aims ultimate best ever targets are reached and meeting in one point. That is where "the ideal solution" lies with the maximum benefit, best safety with no cost or even cost saving and the patients are most satisfied of their experience. An addition in this framework is that harm prospective is added since benefit won't be meaningful without knowing and quantifying the harmful impact if any. Healthcare services interventions starts with the intention to do good, nevertheless, in health care setting most interventions have inevitable harm, minute or significant. Failure to inform end users of efforts in preventing this would not achieve the triple aims at its optimum target.

RESULTS. Transparency on harm issue when included as suggested represents the triple aim as a tool to inform patients and decision makers on outcomes that matter. Safety is not equal to nor part of effectiveness but different target with its own measures. As well, it cannot be separated when judgment of effectiveness is made. THE AIMER. Achieving the aim is aimer dependent. In healthcare, a competent, happy, caring and welling healthcare provider (HCP) is a necessity. All of these four prerequisites in the HCP have an influence on achieving the target aims.

LIMITS. -

CONCLUSIONS. In summary, visualization of the triple aim in dimensions of its parts with the bullseye being the health care target, figure (1) can introduce a systematic approach to meeting the goals and placing appropriate action plan to do so. More emphasis is needed in planning or reporting harm

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92. What do we know about the use of systematic reviews in informing future randomized controlled trials in healthcare research? A rapid review

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BACKGROUND. Appraising prior evidence before conducting a new study is a key step in avoiding waste in research. Yet evidence suggest we are far from achieving this goal. Fewer than 25% of preceding trials were cited in future randomized-controlled trials (Robinson & Goodman, 2011) and results from prior Cochrane systematic reviews had not been used when designing new studies (Cooper, Jones, & Sutton, 2005). What is it more, authors are not always aware of the existence of systematic reviews that may be relevant when designing new studies (Cooper, Jones, & Sutton, 2005).

AIMS. The aim of this paper is to systematically explore the use of systematic reviews in informing new research.

METHODS. To address this aim, we will conduct a rapid review. We will search for methodological papers focusing on the use of systematic reviews in randomized-controlled trials looking at Embase and Web of Science using a prespecified search string: "systematic review" OR meta-analy* OR "randomized-controlled trial" OR RCT AND "research waste" OR "prior research" OR "previous research" OR "prior knowledge" NOT editorial* NOT animal NOT; Limit: 2008-2018. One reviewer will go through each stage of the methods of a standard systematic review including title and abstract, full-text screening, data extraction, and risk of bias. A second impendent reviewer will complete each step from the full-text (inclusive) onward. Selection criteria: Inclusion criteria: 1. Studies exploring whether randomized controlled trials cite systematic reviews in their introduction 2. Studies published between 2008 and 2018 3. Studies in English Exclusion criteria: 4. Studies that explored other forms of prior knowledge other than systematic review such as citation indexes 5. Editorials, letter, non-peer-reviewed studies, and grey literature 6. Studies outside the field of healthcare 7. Animal studies Synthesis of results We will present a narrative synthesis of the results by providing a summary of current state of the knowledge surrounding application of prior knowledge in the form of systematic reviews in designing future research.

RESULTS. The study is ongoing, and we plan to provide a final assessment of our results by start of the conference on the 6th of November 2019. However, a preliminary search revealed only one study that appeared to meet our selection criteria.

LIMITS. As this is a rapid review, the scope of this study will be limited to only two databases and as such, it may limit our reach for potential eligible studies. However, some preliminary search showed this field of research may be limited to a small number of studies and therefore, it is argued that conducting a full-scale systematic review not be justified.

CONCLUSIONS. In summary, the aim of this study is to explore whether there are studies which have investigated whether published studies have used prior systematic reviews to inform the design of new research. Currently, a preliminary search revealed only one study appeared to meet our selection criteria. This may indicate the extant literature could lack knowledge as to whether researchers apply prior knowledge by citing systematic reviews when designing new studies. Our results will inform whether there is a need to further explore whether randomized-controlled trials in a specific area of healthcare had cited systematic reviews in developing the design of their randomized-controlled trials. Cooper, N. J., Jones, D. R., & Sutton, A. J. (2005). The use of systematic reviews when designing studies. Clinical Trials, 2(3), 260-264. Robinson, K. A., & Goodman, S. N. (2011). A systematic examination of the citation of prior research in reports of randomized, controlled trials. Annals of internal medicine, 154(1), 50-55.

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93. Compulsory vaccination works: update on MMR and polio vaccine coverage in the AZIENDA ULSS 9, Verona, Italy

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BACKGROUND. In the last decade the Health Service of the Regione Veneto worked hard to encourage voluntary vaccinations by means of an accurate and responsible information. Unfortunately, since 2013 Nation-wide (thou important distinctions emerge among the Regions), a decreasing trend concerning the adherence to the vaccination schedule has been recorded, involving either the mandatory vaccinations or the recommended ones, thus increasing the risk of dangerous outbreaks. Facing this vaccination coverage reduction, stronger measures, such as a mandatory vaccination policy, turned out to be necessary. The n. 119 national law dated July 31st, 2017 concerning 'Urgent measures on vaccine prevention, infectious disease and controversies about drug administration' was drawn with the aim of reaching and maintaining the vaccine coverage threshold up to 95%, as recommended by WHO to guarantee herd immunity, and furthermore assuring the adequate safety conditions related to highly contagious, potentially epidemic infectious disease. Vaccination coverage represents the most effective indicator of the vaccination policies, because it reveals their actual execution in the different areas.

AIMS. Evaluate the effectiveness of national law n. 119/2017 concerning 'Urgent measures on vaccine prevention, infectious disease and controversies about drug administration'.

METHODS. The Hygiene and Public Health Service of the Azienda ULSS 9 Scaligera conducted an observational, cross-sectional study concerning the vaccination coverage, in particular the third dose of Polio vaccine and the first dose of measles-mumps-rubella (MMR) vaccine, given to the children born in 2014 and residents in the AULSS 9 Scaligera area. They investigated the results of the vaccination policies. The study was realized analysing data from the computerized vaccine registry of the Regione Veneto before and after national law was introduced (n.119, 31st July,2017).

RESULTS. Vaccine coverage for the third dose of polio vaccine and the first dose of MMR vaccine increased significantly after the introduction of the law, according to data concerning the 2014 cohort: as a matter of fact, the vaccine coverage of the above-mentioned cohort was respectively 93,5% for the third dose of polio vaccine and 91,5% for the first dose of MMR, according to data up to 31st July, 2017 (before the adoption of the law). The very same readings, recorded on July 31st 2018 (one year after the adoption of the law), showed a 1.7% increase for the third dose of polio vaccine, reaching a 95,2% coverage, and a 3.5% increase for the first dose of MMR vaccine, raising the coverage percentage up to 95%.

LIMITS. Only one cohort analyses.

CONCLUSIONS. At almost a year after the national law regarding the compulsory vaccination for educational services came into force, a positive trend in the vaccine coverage has been recorded after 36 months for Polio vaccine and MMR in children born in 2014 and residents in AULSS 9 Scaligera area. In particular in the health districts 1 and 2 of AULSS 9 the vaccine coverage reached the 95%, for both the third dose of polio vaccine and the first dose of MMR, gaining herd immunity for this kind of infectious diseases in this study cohort.

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94. Disruptive innovation: a global challenge in the evidence healthcare ecosystem

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BACKGROUND. Healthcare has evolved differently across the globe resulting in differences in opportunities for innovation, interdisciplinary collaboration, and research. Disruptive innovation can be thought of as a product, service performance, or process that enables users to shift a paradigm in the way they think, interact with each other, engage with emerging technology, and adopt a worldview. Understanding how disruptive innovation challenges the unwary traveller in the evidence ecosystem is applicable to healthcare and facilitate substantial improvement in the quality and access to care.

AIMS. Our aim was to discuss the potential impact of disruptive innovation in creating paradigm shifts in healthcare systems. The evolution of the theory of disruptive innovation is examined along with exemplars of disruptive innovation that accelerate change and promote improvements in healthcare systems globally. Challenges and opportunities to the healthcare evidence ecosystem are described along with strategies to accelerate the process through the use of multidisciplinary teams and engagement of communities of interest and stakeholders. An example of an intervention to reduce intimate partner violence is used to highlight key features of disruptive innovation. Global interdisciplinary research will be used to illustrate the potential for creating dramatic change in healthcare systems and processes that have lasting beneficial impacts on global communities.

METHODS. We reviewed the literature on disruptive innovation related to healthcare by nurses between 2016 and 2018. We found that disruptive innovation in healthcare includes a wide-ranging focus from medical devices, diagnostics, mobile applications, and care improvement initiatives as well as infrastructures to support bringing these ideas to fruition. Their value is recognized not only in high technology settings but also in settings with fewer resources. MakerHealth, for example, is a company that includes the MakerNurse project, which is designed to facilitate the creativity and innovativeness of nurses by bringing the tools of invention close to the user, and site of clinical practice from high technology locations such as hospitals and low resources environments in LMICs.

RESULTS. We found disruptive innovation in healthcare takes the innovation process to the next level. It goes beyond the invention or designing of a device or drug. Disruptive innovation is a theory and process that describes how innovation transforms an existing market or sector. The theory of disruptive innovation developed by Clayton M. Christensen describes how an innovation introduces simplicity, convenience, accessibility, affordability, and ultimately displaces the established competitors or processes and so does disruptive innovation in healthcare. Disruptive Innovation in healthcare exemplars will be presented. For example, an innovation that focuses on integrating the use of sensors in the homes of older persons and monitoring by registered nurses, which allows for care coordination, and early recognition of illness or of safety risks. This model allows older persons to stay in their own homes longer, safer, and freer. It has not exceeded the costs associated with nursing home care and doubles the length of stay in residential senior housing. Other innovations include geographical information systems (GIS), HealthMAP, Internet tracking of potential disease outbreaks, and communication via mobile networks. The HealthMAP communicate public health surveillance data as well as data acquired from the monitoring of informal sources to public health officials so that threat assessments can be made in a timely fashion. Other examples will be presented.

LIMITS. We could make our literature review on disruptive innovation in healthcare by nurses, systematic or integrative while making clear and convincing our understanding of disruptive innovation in healthcare such as one that creates a new market by providing a different set of values and users which ultimately overtakes and displaces unexpectedly and irretrievably, an existing market. We realize that disruptive innovation in healthcare is remarkably slow with recalcitrant focus on profits and the bottom line. Furthermore, extreme competition, complexity, and a lack of demand in the market for disruptive innovation exist. In this paper, we recognize that disruptive innovation in healthcare will come from small, unassuming, silent start-ups made up of underestimated, underrepresented diverse individuals (healthcare providers and consumers) and companies. As far as we know, this could be the first paper of its kind of disruptive innovation in healthcare by nurses.

CONCLUSIONS. Leaders of large healthcare systems are making efforts to harness the potential powerhouse of disruptive innovation from within their organizations, just as large corporations invest in research and development. Accordingly, a strategy that can be used by healthcare systems is to bring the outside in and then scaling up.

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95. Crowdsourcing critical appraisal of research evidence (CrowdCARE): an innovative approach to assessing research quality

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BACKGROUND. Evidence-based practice (EBP) is a dominant paradigm in healthcare that aims to deliver the highest quality patient care. EBP requires clinicians to integrate the best-available, current research evidence, with their own clinical expertise, and to consider patients' needs and preferences, when making clinical decisions. Consideration of the 'best' evidence requires clinicians to evaluate the scientific quality of published studies (i.e., undertake critical appraisal). However, recognised barriers to this process include a lack of skill, a lack of time, and the quantity of published research.

AIMS. To overcome these established barriers to EBP, we developed a free, online tool that teaches critical appraisal and facilitates the sharing of appraisals amongst a global community of clinicians (CrowdCARE, Crowdsourcing Critical Appraisal of Research Evidence: crowdcare.unimelb.edu.au). Our aim was to investigate the rigour of crowdsourcing critical appraisal from trained novice raters using CrowdCARE.

METHODS. Systematic reviews (n=71) were critically appraised in CrowdCARE by five trained novice raters and two expert raters. For each article, the appraisal was performed using a validated tool (Assessing Methodological Quality of Systematic Reviews, AMSTAR) to yield: (i) an aggregate quality score (range: 0-11), and (ii) domain-specific responses for each of the 11 assessment items. After performing independent appraisals, experts resolved any disagreements by consensus (to produce an 'expert consensus' rating, as the gold-standard approach for appraisal in systematic reviews). For novices, the aggregate mean score was calculated. Critical appraisal quality was investigated by: (i) assessing variability in AMSTAR scoring both between experts and between the expert consensus and mean novice ratings; (ii) calculating the concordance of ratings using Cohen's Kappa (?); and (iii) identifying "contentious AMSTAR items," defined as when more than half of the novice raters provided a different response to the expert consensus rating.

RESULTS. The variability in aggregate AMSTAR scores was similar between expert raters, and between the expert consensus and mean novice ratings. Comparing the expert consensus rating with individual expert ratings, the AMSTAR score was within ±1 unit for 82% of studies. Comparing the expert consensus rating with the mean novice rating, the score was within ±1 unit for 87% of studies. A strong correlation was evident between the expert consensus rating and the mean novice rating (Pearson's correlation coefficient, R-squared=0.89, $p < 0.0001$). Rating concordance, evaluated using Cohen's Kappa (?), indicated good overall agreement (? = 0.67, 95% CI: 0.61 to 0.73) between the aggregate score of the expert consensus rating and mean novice rating. Furthermore, for 82% of articles, the mean novice assessment was consistent with the expert consensus assessment for at least nine out of 11 the individual AMSTAR assessment items.

LIMITS. As a proof-of-concept study, this project only considered the evaluation of systematic review quality. These promising findings provide rationale for further exploration into the application of crowdsourcing to undertake critical appraisal across the spectrum of research question types (e.g., diagnostic test accuracy, prognosis, etc.) and study designs (e.g., RCTs, cohort studies, etc.), across the breadth of healthcare disciplines. Future research could address the overall time efficiency of the crowdsourcing approach, by comparing the time taken by members of the "crowd" to complete appraisals, relative to expert appraisers.

CONCLUSIONS. These data demonstrate the merit of crowdsourcing for assessing research quality. We find that novices can be trained to critically appraise systematic reviews in CrowdCARE and overall achieve a high degree of accuracy relative to experts. CrowdCARE provides clinicians with the essential skills to appraise research quality and contributes to making EBP more efficient by removing the substantial duplication of effort made by individual clinicians across the globe. The CrowdCARE datastream can support efficient and rapid evidence synthesis for clinical guidelines and systematic reviews, to inform practice and/or policy, based upon the best-available research evidence.

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96. Implementation fidelity and the state of evidence in South Asia

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BACKGROUND. Intervention programs are designed and implemented with the expectation of ultimate satisfaction of designers, developers, implementers and beneficiaries. These are also expected to enrich the related agencies with the knowledge and understanding that would be useful in the designing and implementation of further interventions. In reality, however, the opposite often happens. Interventions fail to perform as expected and leave many unanswered questions on the effectiveness of planners, developers, implementers and evaluators. The state of evidence generated by such researches in South Asia is not very clear and dependable. The generated evidence is often not representative of the reality as most of those do not consider to report integrity.

AIMS. Through a rapid assessment of published literature, to determine if the programs and major studies across eight nations of South Asia provide robust evidence by maintaining and reporting integrity.

METHODS. A PICO was set out to run a non-exhaustive database search: Types of studies: Included studies followed randomised controlled trials (RCTs), quasi-randomised controlled trials (QRCTs), controlled before and after studies (CBAs), and interrupted time series (ITS) with at least three time points before and after the intervention and other intervention studies. The author defined QRCT as a controlled trial in which the participant allocation is not truly random, such as allocation by date of birth or the order in which participants are included in the study. Author included QRCT, CBA and ITS designs in the expectation that only a small number of studies report implementation fidelity. Context/objective of studies: Studies conducted at municipal, district, state and national levels in the countries viz. India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, Afghanistan and Maldives with the objective of evaluating public policies. Types of interventions: Any public interventions falling in the areas (but not limited to) Health, Agriculture, Education, Rural or Urban Development, Social/economic Development Types of Comparisons: 'Before' and 'After', 'With' and 'Without', 'More' and 'Less' interventions as comparisons were considered. Outcomes focused: The author was mainly looking for any reporting of implementation fidelity or barriers and facilitators of implementation. If needed personal contact or inquiry was also done. Search strategy: The author systematically searched electronic resources such as ISI Web of Knowledge, SCOPUS ScienceDirect, EBSCO Greenfiles, CINAHL, PubMed, PsycINFO, and Web of Science, search websites such as google and google scholar, organizational resources such as CSA Natural Sciences Document Repository, Asian Development Bank (ADB), Overseas Development Institute and CEE, Sources of print journals and grey literature were not explored.

RESULTS. Evidence related to major public intervention programs across eight South Asian nations was difficult to retrieve from electronic resources. Most of the identified studies did not consider to report fidelity issues and their management. The parallel inquiry provided the impression that generation of robust and dependable evidence is not the priority of researchers but to fulfill the task.

LIMITS. The study followed a rapid review approach that is a self-limiting methodology and doesn't yield a representative data. In South Asia, the government sector doesn't prioritize to make their research reports available electronically. This limits the author in retrieving the absolute evidence-base.

CONCLUSIONS. Research activities specially impact evaluations are heavily influenced by bureaucratic pressures and do not reliably represent the real evidence. this limits the evidence-based practitioners and systematic reviewers to arrive on constructive conclusions and replication of successful programs.

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97. Evidenced-based prevention for HIV infection: changing clinician practice

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BACKGROUND. the care and treatment of persons with HIV infection has changed dramatically due to available treatment. Significant changes in treatment occurred in 1996 with the advent of "combination HIV treatment" which resulted in reduced morbidity and mortalities. Subsequent studies have shown that adherent patients taking antiretroviral combination treatment cannot transmit to others. Furthermore, providing antiretrovirals to those uninfected and at risk for acquisition can be prevented from being HIV infection. These finding are important and critical to be disseminated to providers across all clinical settings. Developing interventions to change clinician practice regarding HIV testing, linkage to care, and use of pre-exposure prophylaxis is a major step in eliminating new HIV infections.

AIMS. The AIDS Education and Training Centers, funded by the HIV/AIDS Bureau at the US Department of Health and Human Services aim to rapidly and effectively translate scientific evidence and clinical research into practice is essential for quality HIV care delivery. The mission of the AETCs is to build and maintain a well-educated, skilled and culturally sensitive health professions workforce. This requires that there is development of a comprehensive model of intervention to increase the likelihood that new guidelines, best practices, and evidenced-based approaches to prevention and treatment are adopted without delays.

METHODS. 1. Utilization of on-site training in clinical practice settings 2. Use of distance-based technologies to deliver education to health care teams 3. Development of communities of practice for peer learning 4. Use of distanced-based technology to provide clinical consultation by experts 5. Dissemination of current best practices and guidelines 6. Coordination and dissemination supported by the Learner Education and Practice Portal (LEAPP).

RESULTS. Competencies of individual clinicians, clinics, and institutions differ and require customized training to change clinical practice and assure a standard of care that maintains wellness and prevents disease progression. The comprehensive capacity building model, which includes all components necessary for clinician, clinics and system transformation through dissemination of DHHS and CDC guidelines, HRSA clinical performance measures, standards of care, CQI, service integration, evidenced based practice and coordination. The approach includes continual assessment, longitudinal training, coaching, preceptorships, mentoring, protocol development, interprofessional education and other approaches which have shown to change clinic, clinician, and system practice and dynamics. Our follow-up studies of interactive training, preceptorships, and clinical coaching/consultation demonstrate that with the support of the programming, clinicians change practice, clinic develop new policies, procedures, and workflow, and communication and collaboration between and among care systems is enhanced.

LIMITS. The data related to these studies is limited to the Midaltantic region of the US.

CONCLUSIONS. The use of face-to-face engagement, distance-based technology, peer and expert support can contribute to the dissemination and implementation of best practices, standards of care, and adoption of new approaches to HIV prevention and treatment.

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98. Efficacy of the presence of the nurse within the school in raising the vaccination coverage rate: a systematic review

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BACKGROUND. Vaccinations have been indicated by the Centers for Disease Control and Prevention as one of the ten most important public health achievements of the century, however coverage rates of vaccination for some of the vaccines recommended in children and adolescents remains far lower than that advocated as goal from the Healthy People 2020 project. The low rate of adherence to vaccinations and the consequent return of some epidemic infectious diseases has led, some states to introduce more or less stringent laws to compel parents to subject their children to vaccinations included in the laws. The life phase in which we focus most on the administration of vaccines is that which goes from two months to two years, with the result that the age of school attendance is neglected creating a lowering of the level of adhesion for those who are vaccines of this age and for booster doses. Many studies have shown that projects involving the administration of vaccines in the school environment reach the goal of increasing the rate of adherence to the vaccination calendar. Today the school nurse is a figure that stands at the crossroads between the world of care and the school community, so it can be considered an opinion leader in providing health advice to students and parents. In this context the National Association of School Nurses has indicated in its own position statement the central role of the school nurse in influencing decisions regarding vaccinations. Although systematic reviews exist regarding the effectiveness of vaccination programs located in schools, no secondary literature article has been found that evaluates the effectiveness of the presence of school nurses in increasing the rate of vaccine adherence in school age.

AIMS. To determine if the school nurse, within the school vaccination projects, increases the rate of immunizations compliance.

METHODS. Systematic review. Studies of primary and secondary literature were included, researched on Cochrane Central Register of Controlled Trials, MEDLINE, EMBASE, CINAHL, Science Citation Index and Web of Science; gray literature also has been revised between February and May 2018. The primary outcome was the rate of vaccine administration, regardless of whether they were single or multiple vaccines, required by law or recommended by a specific date or age. Two authors independently conducted the screening of qualifications and abstracts. They then verified that the full texts of the included articles met the criteria. The risk of bias of the studies was assessed using the Cochrane risk-of-bias tool for randomized trials (RoB 2) and Risk Of Bias in Non-Randomized Studies - of Interventions (ROBINS-I).

RESULTS. Nine articles based on studies conducted predominantly in the United States in different levels of educational institutions (from kindergarten to high school) were included in the review. Two of the nine researches were RCTs, the other quasi-experimental studies. All the articles included in the review showed that the interventions conducted by the school nurse, aimed at increasing the rate of adhesion to vaccinations, are effective. The literature related to the topic of the present study shows that the school nurse plays a key role in increasing the rate of adhesion to immunization for school-age children / adolescents. In Italy and in other countries where the school nurse does not exist, it is necessary to implement strategies that emerge from the present studies such as the introduction of educational projects in schools and more attention to written and telephone reminders to parents.

LIMITS. The studies included in the review showed heterogeneous characteristics both in terms of study designs and in terms of population, vaccines and follow-up time so it was not possible to do a meta-analysis.

CONCLUSIONS. The literature on the topic of this study shows that the school nurse can play a key role in increasing the rate of adherence to vaccinations for children / school-age children. It is to be hoped that the States where the school nurse already exists and where the vaccination coverage rates among students do not reach a satisfactory percentage concentrate further efforts to increase the projects involving the nurse in this activity. The knowledge of the barriers and obstacles that determine the failure to adhere to vaccination programs can facilitate the structuring of targeted interventions. It is also of fundamental importance to design studies that analyse the reasons that push parents not to stick to the vaccination schedule, in order to direct efforts in the most appropriate direction. The literature shows that the obligation to adhere to vaccination programs is not the best choice. The data highlight rather the need for campaigns to promote a culture and health literacy that make the population understand the importance of immunization.

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99. The space between screening and synthesis: using the CART criteria in selecting studies for qualitative evidence synthesis

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BACKGROUND. Qualitative evidence synthesis (QES) is a robust approach to synthesising primary qualitative research to capture experiences, perceptions, and factors that impact on phenomena. In the context of interventions, QES can inform effectiveness by deeper understanding individual characteristics and attitudes towards interventions (Noyes 2017). The challenges of trial recruitment are well documented, with limited evidence of the effectiveness of strategies to improve recruitment (Treweek 2018). Previous qualitative reviews have examined why people decline participation; this review adds to this by considering evidence around why people want to take part as well. This can inform the development of meaningful and participant-centred recruitment strategies. The aim of this qualitative evidence synthesis (QES) was to explore potential participants' views and experiences of the recruitment process for participation in trials. Following the search and screening stages of the review, we identified 85 potential studies for inclusion in the review. This is not a manageable number for QES, where the emphasis of synthesis is on depth of insight, rather than generalisability.

AIMS. In this presentation, we will discuss the value of using the CART criteria for purposeful sampling studies for inclusion in QESs. We will illustrate the stages of this process using the recruitment QES as a working example.

METHODS. The QES exploring recruitment to trials was conducted within the Cochrane Methodology Review Group. The Cochrane Qualitative Implementation Methods Group guidance was adhered to and the search strategy was comprehensive using strategies outlined by Booth (2016). On completion of full text screening, 85 papers were identified as suitable for inclusion in the review. The CART criteria were previously used in a QES by Aslam (2017) and was considered an appropriate strategy to be applied in our review. Applying the CART criteria (Completeness, Accuracy, Relevancy and Timeliness) to each study, resulted in identification of 30 studies that would ensure a meaningful, focused synthesis. Thematic synthesis was utilised and the confidence in our findings was assessed using GRADE CERQual.

RESULTS. Using the CART criteria to purposefully sample studies for inclusion resulted in a cohesive and relevant body of evidence and we were able to determine moderate to high confidence in the majority of our findings. Our synthesis determined that the decision to participate in a trial arises from the question, "what's in it for me?" the decision to participate in a trial was very much dependent on the question, "what is in it for me?" This ultimate question was preceded by decisions about "What have I got to gain?" or "What have I got to lose?" This consideration of risk and benefit was dependent on the individual's diagnosis and well as the nature of the trial. This was independent of the type of trial itself, in so far as there was no particular trial considered more risky; but rather the individual's perception of their current health status, ranging from healthy to life-limiting. These considerations were synonymous with the perceived impact of the trial in terms of personal benefit but also altruism and contribution to science. The individual could be influenced in their decision whether to participate or not however. These influences included other people, such as family, friends and their HCPs. Other influences included the recruitment strategies used and the nature of the trial in terms of randomisation and perceived burden.

LIMITS. Using the CART criteria for sampling did not ensure heterogeneity and representation from population types (participants/decliners), trial setting (oncology, psychosocial etc.), or specific geographical areas. However, there was a similar heterogeneous profile of studies as found in the original screening; and the confidence in our findings was generally high due to a sample of complete, accurate, relevant and timely studies.

CONCLUSIONS. This presentation explains the challenges, but also the benefits of using the CART criteria in QES reviews. Through sharing our experiences, we may encourage others to consider this as a potential approach in future qualitative syntheses.

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100. Explaining fostering hand hygiene compliance and infection control guidelines among healthcare workers at Mutoko and Mudzi districts in Zimbabwe: an integrated approach of precede-proceed model and theory of planned behaviour

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BACKGROUND. Health care workers' (HCWs) hand hygiene is a key pillar because it prevents and controls infections. Precede-Proceed model with the Theory of Planned Behaviour guides the article.

AIMS. This article explains fostering hand hygiene compliance and infection control guidelines among HCWs.

METHODS. An integrated approach was used. The hand hygiene compliance of HCWs was observed. Hand Hygiene moments with respect to Hand Hygiene Opportunities were observed. Compliance rates were calculated.

RESULTS. Total compliance rate from the Hand Hygiene Opportunities and moments observed was 403 (70.7%). Non-compliance rate was 167 (29.3%). From the observed HCWs levels of compliance and non- compliance 70(73.6%) complied before patient contact; 25 (26.4%) did not; 77(81.0%) complied after patient contact; 18(19.0%) did not; the compliance after touching patient surroundings was 31(32.6%); 64(67.4% did not. Whilst the rate of compliance before aseptic contact was 37(38.9%); 58(61.1%) did not. The compliance rate after body fluid exposure risk was 94(98.9); 1(1.1%) did not cleanse hands after body fluid exposure risk. Furthermore, HCWs 94(98.9%) dried their hands, and 1(1.1%) did not dry hands. The general trend of the levels of linear compliance increased up to the last moment of hand hygiene (drying). The level of linear non-compliance generally decreased.

LIMITS. HCWs mainly used soap and water to clean hands. Alcohol gels were a scarce commodity in the Mutoko and Mudzi districts. Frustratingly unacceptable, most HCWs do not clean hands "after contact with patient surroundings" and "before aseptic contact" and it appears that low hand hygiene leaves gaps for HCAIs spread. Fostering hand hygiene compliance is supported by the literature. HCWs hand hygiene compliance is sub-optimal. Mortalities remain high in which HCAIs are a hidden danger in Zimbabwe.

CONCLUSIONS. HCWs guidelines for behavioural change in hand hygiene conclude the article. Guidelines for HCWs are outlined to improve compliance especially in remote rural areas at the helm borders region of Zimbabwe with limited resources and facilities.

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101. After the harvest: a novel use of harvest plots to summarise a large and complex body of evidence

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BACKGROUND. There is a vast and heterogeneous literature base on Emergency Department (ED) crowding and its association with quality of care. Multiple metrics have been suggested to measure crowding, scores of different outcomes reported, and a wide variety of descriptive and statistical methods used to report associations. Diverse study designs have been used, with units of analysis ranging from individual patients, departments, hospitals, regions and countries. Previous systematic reviews have attempted to determine the 'best' measure of ED crowding with little success. These have been limited to narrative synthesis, with only one making clear conclusions based solely on the number of studies reporting outcomes for each measure, with no consideration of study quality or strength or direction of effects. In other settings, harvest plots have been used to show the quality and direction of evidence provided by individual studies within a body of evidence. However, due to the visual complexity of the matrix generated when each study is represented individually, these may be difficult to interpret when there are more than a handful of studies and a small number of outcomes considered.

AIMS. The present case study shows how harvest plots may be used to summarise a large and complex body of evidence by combining the evidence from multiple studies into single bars representing each outcome. This novel approach simplifies the traditional harvest plot matrix by summarizing the number of studies and the quality of the body of evidence; while simultaneously summarising the strength and direction of associations with each outcome.

METHODS. This case study presents the second phase of a systematic review of the association between ED crowding and quality of care, which was concerned with summarising the evidence from the included studies. After data was extracted from the studies, the GRADE approach was used to determine the quality of evidence for the association between crowding metrics and each process or outcome. Clinical importance rather than the degree of statistical significance was used to determine strength of association. Where some studies showed a strong association and others a weak or no association, the overall association was reduced to moderate, representing the 'average' association. This is subjective but similar to what happens mathematically in a quantitative meta-analysis when effect sizes differ between studies (the 'true' estimate of effect is assumed to lie somewhere between the high and low extremes in individual studies). Where studies found associations in opposite directions, the highest quality evidence was shown as the more likely association, with the quality of evidence downgraded for inconsistency. Where studies with the same quality of evidence provided results in opposite directions, or the settings were markedly different, the evidence was considered too heterogeneous to combine and results were shown separately in the plots with a data label indicating the differences. In the graphs, bar height represents the quality of evidence; the number of studies providing the evidence is shown at the base of each bar; the colour represents the direction of effect (red=worse; white=neutral; green=better) and the depth of colour represents the strength of effect (weak, moderate or strong, with dark=stronger effect).

RESULTS. Data from 198 studies reporting 20 different crowding metrics and 15 different outcomes are presented. The source studies included more than 42 million patients, 1208 staff, 9,128 hospitals and 102,977 sampling times. Graphs show which metrics of crowding were most strongly associated with which dimensions of quality of care. Bar height represents the quality of evidence; the number of studies providing the evidence is shown at the base of each bar; the colour represents the direction of effect (red=worse; white=neutral; green=better) and the depth of colour represents the strength of effect (weak, moderate or strong, with dark=stronger effect). The results of this synthesis were used together with a critical appraisal of each metric as a quality indicator to facilitate making a recommendation on which crowding metric should be used at a national level as an indicator of quality of care.

LIMITS. As a subjective synthesis of data by a single author, the use of harvest plots to summarise the body of evidence for the association between metrics of crowding and quality of care processes and outcomes in this case study is at high risk of bias. This risk would have been mitigated by two reviewers independently summarising data and resolving differences by consensus, however this was not feasible in the present case study, which is part of the author's PhD research.

CONCLUSIONS. This case study demonstrates how harvest plots may be used to succinctly summarise a complex body of evidence to facilitate a review recommendation. This method is likely to be generalisable to other complex healthcare settings.

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102. A methodology for teaching critical appraisal of qualitative, quantitative and mixed methods research

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BACKGROUND. The ability to deliver practice that is informed by research is an educational, professional and workplace necessity in health care in Australia. A main theme of this conference is the need for an evidence-based health care (EBHC) core curriculum for all health professionals. This paper presents an aspect of the evidence-based core curriculum within the Monash University occupational therapy undergraduate and graduate entry courses. Occupational therapy is an allied health discipline specialising in the application of activities and occupations for those living with illness and disability to promote recovery, participation, health and wellness. In their practice occupational therapists think beyond the medical condition and take a person-centred, holistic perspective of the person, their occupations and their environment or context. Hence research evidence from both quantitative and qualitative paradigms needs to be conducted and evaluated to inform practice. Due to the lack of critique guidelines at the time The Monash Occupational Therapy Research Evidence Critique Form (MOTRECF) was developed and introduced at second year level of the undergraduate four year degree course in 2012.

AIMS. This paper presents an aspect of the evidence-based core curriculum within the Monash University occupational therapy undergraduate and graduate entry courses that has been designed to develop student knowledge, skills and understanding of the research concepts, methods and processes necessary to critique a broad range of research approaches. The paper will outline the sections of the MOTRECF form and the process the students are taken through when using the form to evaluate research articles.

METHODS. The Monash Occupational Therapy Research Evidence Critique Form (MOTRECF) is a combination information extraction form and research critique form. It is suitable for application with studies that use a quantiative, qualitative and mixed methods research methodology.

RESULTS. The MOTRECF has been refined over several years since it was introduced and now serves as the foundation for students to transfer evidence-based concepts and practices into occupational therapy intervention units in the curriculum. The form has also been used in evidence-based practice continuing education sessions with occupational therapy practitioners. The form can also be used in systematic review methodologies.

LIMITS. Complexity of concepts related to understanding quantitative, qualitative and mixed methodology research paradigms.

CONCLUSIONS. This critique form and its place within teaching evidence-based health care core curriculum may be of interest to other health educators.

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103. Combining an evidence and gap map and systematic review of reviews to map and synthesise interventions addressing men, masculinities, and gender equality in sexual and reproductive health and rights

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BACKGROUND. Working with men/boys, in addition to women/girls, through Gender-Transformative programming that challenges gender inequalities is recognised by global health and development organisations as important for improving sexual and reproductive health and rights (SRHR) for all. Despite the rhetoric and programming efforts to engage men and boys, evidence on effective interventions and their impact in improving SRHR outcomes remain unknown.

AIMS. The aim of this paper is to report an EGM of the entire systematic review evidence on the effectiveness of engaging men/boys across the full range of World Health Organization (WHO) Sexual and Reproductive Health and Rights (SRHR) outcomes and to identify the prevalence of a Gender-Transformative approach in particular across economic context and SRHR outcomes. We further systematically review the quality of the Gender-Transformative review evidence. This paper will report aspects of the process of combining an EGM with a systematic review as well as the findings.

METHODS. Academic and non-academic databases (CINAHL, Medline, PsycINFO, Social Science Citation Index–expanded, Cochrane, Campbell Collaboration, Embase, Global Health Library, Scopus, Google) were searched using mesh terms related to SRHR, males/masculinities, systematic reviews, and trials. An evidence gap and map (EGM) was developed using EPPI Review Software. The EGM analysis is presented according to one or more of the seven categories of SRHR outcomes from the WHO Reproductive Health Strategy (2004).

RESULTS. The EGM categorised by SRHR outcome can be viewed here http://srhr.org/masculinities/rhoutcomes/ and by country income level here http://srhr.org/masculinities/wbincome/.We identified a large number (n=462) systematic reviews of rigorous evaluations of interventions engaging men and boys that had impact on one or more WHO SRHR outcomes. Of these, the majority of reviews focused on outcomes related to promoting sexual health, followed by desired family size, and adolescent SRHR outcomes. Fewer reviews focused on health of pregnant women, infants and girls, and violence against women and girls, and hardly any to no reviews address outcomes related to preventing unsafe abortion and SRH in outbreaks. Importantly, the review found that only 8.4% (n=39) were gender transformative (i.e. addressed unequal power relations between women and men, challenged harmful masculinities and men's privilege over women), but varied by economic context and health outcomes – being particularly prevalent in low- (n=157, 24.5%) and middle-income (n=242, 37.8%) countries, and in relation to violence against women/girls (n=18, 46.2%). For the gender transformative reviews of interventions with men/boys was low or critically low methodological quality (n=34, 97.1%) and inconclusive (n=23, 59%), but 15 reviews (38.5%) found positive results.

LIMITS. A general limitation of a review of reviews is there is a risk of missing newer evidence from interventions that have not yet been included in systematic reviews. Although language was not a limit applied, no non-English language reviews of Gender-Transformative interventions were identified, possibly a result of only English language search terms used. The focus on effectiveness limited our selection to experimental and quasi-experimental studies, omitting cross-sectional and solely qualitative studies.

CONCLUSIONS. This review highlights that the next generation of programming and research on the engagement of men and boys needs to be strengthened to address the key gaps identified in terms of SRHR outcomes, and also explicitly includes gender transformative interventions that are evaluated with greater rigour and thought to theories of change. Use of the EGM as a strategy to synthesise the larger body of SRHR review evidence in conjunction with the more traditional systematic review synthesis of gender transformative evidence demonstrated the broad areas in which evidence was lacking in the field of men and SRHR, and facilitates deeper understanding of the weight and quality of evidence for gender transformative evidence relative to the field

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104. Managing conflicts of interest from involvement of stakeholders in evidence-based guidelines development: the case of the Spanish Fabry diseases guideline

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BACKGROUND. The great variability in the clinical multi organ presentation of Fabry Disease (FD), the difficulties for its diagnosis, and the availability of several alternatives for its treatment, are a great challenge for the professionals who treat patients with FD, that justify the elaboration of a clinical practice guideline (CPG) to help decision-making in the management of Fabry Patients. However a CPG worthy to be trust must be grounded in a process of transparency and rigour to strength its credibility.

AIMS. To analyse the errors in managing conflict of interest from stakeholders and experts involved in the development of guidelines. To analize how it is compromised the diffusion of guidelines, although not their credibility.

METHODS. To develop these guidelines, we applied both the guidances from NICE guideline development methods and GUIASALUD (Spanish NHS Guideline Methods). We incorporated GRADE methodology (Grading of Recommendations Assessment) for the evaluation of quality of scientific evidence and the development and weighing of recommendations. The process was guided by the 23 AGREE ítems. . To arrange the developer team we gathered two groups, developers and 9 external experts proposed by their respective scientific societies. To be included in both groups, members were required an explicit statement of potential conflict of interest. . We conducted a systematic search of the main reference databases using strategies adapted to each of the 32 clinical questions considered. . We prepared tables to synthesise the evidence and assess its quality for each of the questions. Balance between benefits and risks, values and preferences of patients, equity and use of resources were considered to score the quality of the evidence. . Each member of the expert panel gave a written acceptance of the high quality and reliability of the evidence summary. . For the final recommendations, a structured consensus process was carried out using the Delphi-RAND method with a panel of 9 experts proposed by different scientific societies, and a representative from patients' associations. Finally the proposed guideline was reviewed by stakeholders (pharma industries, scientific societies and patient associations).

RESULTS. In the panel process one expert insistently proposed to change one recommendation regarding to preference between two drugs treatment. In order to keep the consensus, the whole panel accepted to modify the recommendation with a smooth preference between both drugs. At the steps of review by stakeholders of the final guideline three scientific societies, and their experts nominated for the panel, decided not to disseminate the CPG, due to the pressure of the pharma company of one of the drug involved in the controversy of the panel. However, these 3 experts wanted to be maintained as co-authors of the guideline. . The guideline has not been endorsed neither disseminated by 3 scientific societies that participate in its development, even acknowledging that their own views are well reflected in the final product. As a result we identified at least 3 aspect in managing conflict of interest: - economic interest from the author/ experts - role / prestige /leadership played within their respective scientific societies - funding competitiveness between colleagues or groups of experts

LIMITS. Because of confidentiality it is not possible to display the conversations with the experts and scientific societies involved

CONCLUSIONS. The guideline maintains a living process for annual updating by January 2020. In the update process we changed the explicit disclosure of conflict of interest, incorporating acceptance and support of the final guideline and its diffusion from the scientific societies participating as developers. The potential conflict of interest should be managed and discussed in all their aspects in advance with the participants as developers of a Guideline.

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105. Evidence-informed decision making & knowledge translation: designing an innovative master's program for clinicians and policy-makers

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BACKGROUND. In an era of fake news, discrepant evidence, publication bias, big data, artificial intelligence, over- reliance on the p-value and other simplistic decision-making defaults, uninformed clinicians and policy-makers are at risk of disillusionment with 'evidence'. This is an especially crucial time to develop realistic and socially-relevant capacity in evidence-informed decision making and knowledge translation. Future-proofing clinical decision-making and policy-making with advanced skills in evidence appraisal, application, and knowledge translation will require innovative approaches to teaching and supporting those in the field.

AIMS. 1. To explore traditional versus contemporary concepts in evidence-based decision-making, and to develop an inventory of skill requirements for clinicians and policy-makers navigating decisions at the patient-level, institutional-level, and policy-level. 2. To propose an innovative approach to providing capacity development in these skills through a new Masters program at the University of Western Ontario.

METHODS. Current Masters programs in evidence-based decision making were reviewed, and courses examined. Skills and concepts were mapped to explore areas of inter-related expertise drawn from existing master's programs, relevant to clinical and policy related decision-making. Innovative approaches to delivering Master's programs for working health professionals and policy-makers were also explored. Consultation with clinicians and administrators was performed by one-on-one visits with Clinical Chairs in our School of Medicine & Dentistry, and by consulting with other allied health disciplines, and expanded disciplines including engineering, computer sciences, social sciences, and media sciences. Overlapping skills were identified for 'evidence producers' and 'evidence users'.

RESULTS. Clinical chairs, senior leadership, and local policy-makers expressed near unanimous interest in developing a Masters program to build capacity in evidence-informed decision making. Interest in providing flexibility through modular courses to accommodate working practitioners and policy-makers was high priority. Concern was expressed that distance education may be less effective than in-person modular courses. An inventory of skills was initially drafted, and will be mapped at upcoming stakeholder engagement sessions with interested clinicians, administrators, and students to explore aspects related to clinical decision-making, institutional decision-making (hospitals), and policy-making (local and global health authorities). Interest in developing international partnerships with other universities, NGOs, or multi-lateral institutions was expressed, to support the growing international need for capacity in evidence-informed decisions-making for universal health care and other sustainable development goals. A recurring theme was the need to differentiate different types of evidence (epidemiologic/observational, interventional, diagnostic, predictive, contextual, colloquial, 'big data' vs 'little data'), and how to deal with uncertainty and mitigate risk of bias. Furthermore, the need to develop broader skills in knowledge translation conceptual and practical models, with capacity to measure impact and meaningful change was communicated. Furthermore, the need to build evolving and 'real' cases, with applied decision-making in 'real-time', was expressed. Ability to integrate students into real decisions, with feedback on actual impact over time, was also high priority. A mix of didactic, case-based, and flipped approaches to teaching has been proposed. Engagement with current policymakers and clinical problems, locally and internationally was proposed.

LIMITS. This program is still in the planning stages, and will be submitted to University Senate in late 2019. Success of the program, and impact on clinical and policy-decision-making will be of interest, and will require development of tools to assess whether intended outcomes were achieved.

CONCLUSIONS. Traditional approaches to teaching evidence-informed decision-making remain insufficient to address some of the biggest trends in medicine and society more generally. There is a recognized need for contemporary approaches to teaching evidence-informed decision making. This Masters program attempts to address some of these gaps through an innovative approach to identifying decision-maker gaps, mapping those gaps, and building capacity to address those gaps through contemporary cases and involvement in decisions in real-time. Local and international relevance will be key. Tools to measure the success of the Masters program will be required.

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106. Monitoring of "off label" Salbutamol prescriptions in children less than 2 years in the province of Lecco

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BACKGROUND. In October 2014, the Italian medicines agency (AIFA) banned the use of Salbutamol Nebuliser Solution (drops) in children under 2 years, as a measure to minimize the risk of overdose due to therapeutic error and to improve clinical appropriateness. Prescription of Salbutamol in solution to nebulize in this age group is configured as an off-label use; only the prescription of medicines in compliance with the marketing authorization guarantees efficacy and safety, limiting or avoiding exposure to potential health risks, especially for "fragile" patients such as children and elderly people.

AIMS. The aim of the study is to evaluate the prescription of Salbutamol Nebuliser Solution (drops) in children under the age of 2 years in the population of the province of Lecco and to compare it with the onset of Adverse Drug Reaction (ADR) in the same period.

METHODS. The study was performed through a qualitative-quantitative analysis of the National Health System prescriptions quering regional databases "SAS-Portal" and "Farmalmaging". Off-label prescriptions for Salbutamol drops were evaluated in a cohort of paediatric population (

RESULTS. Total paediatric population (age 0-17) 57.389, 5.589 of which aged 1 year old n°. 390; 4.3% of children 1 year old received at least one inappropriate prescription; 9.14% of children

LIMITS. This analysis was conducted only in the province of Lecco and could be expanded on the territory of the new "ATS Brianza" Agency (province of Lecco e Monza Brianza) for the same purposes.

CONCLUSIONS. The results show that about 10% of the cohort received inappropriate prescription from 71% of Family Paediatricians or other prescribers; no adverse events were reported in the Province of Lecco (probably due to under-reporting). The ADRs' data of the Lombardy Region confirm that the inappropriate use of Salbutamol drops can lead to severe ADR or ineffectiveness of the drug. Therefore, it is necessary to share these important data with paediatricians and family physicians by starting a multidisciplinary informative and training course in order to sensitize the prescribers to the appropriateness of the therapies according to the indications described in the SPC, which came from clinical studies for the evaluation of benefit-risk balance (efficacy-safety), in a specific age group.

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107. Quality of evidence and strength of recommendations for stroke management in India

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BACKGROUND. Guidelines for stroke management in India are out-of-date. Some interventions approved for use only in India have not been assessed for quality of evidence and strength of recommendations.

AIMS. Our aim was to develop evidence-based recommendations for thrombolytic therapy, with special focus on tenecteplase, which is approved for use in acute stroke care only in India, where patients have to pay out-of-pocket for drugs.

METHODS. We applied GRADE methodology to assess for quality of evidence and strength of recommendations for or against the use of tenecteplase in acute ischaemic stroke from Indian perspective, considering the cost from patients' perspective.

RESULTS. For acute ischemic stroke presenting within 4.5 hours, it is recommended to use intravenous tenecteplase (0.25mg/kg given as bolus) for which the quality of evidence is 'moderate' (weak recommendation in favour).

LIMITS. The results of meta-regression could not be incorporated in assessing the quality of evidence.

CONCLUSIONS. Stroke management guidelines in India should include a conditional recommendation to use tenecteplase as an option for thrombolytic therapy within 4.5 hours of onset of ischemic stroke.

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108. Beliefs and implementation of EBP among nurses: a descriptive study

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BACKGROUND. Evidence-based practice (EBP) is rapidly becoming the new standard in healthcare, bridging the gap between medical research and clinical practice. Although EBP is systematically being integrated into healthcare all over the Australia, multiple barriers and challenges confront healthcare professionals in actual implementation at the point-of-care.

AIMS. The aim of this paper is to provide an analysis of evidence-based practice (EBP) from the perspective of nurses working two major hospitals in Australia and to assess their competency and beliefs and to explore avenues for further study based upon their feedback.

METHODS. EBP beliefs and level of implementation were measured using a validated tool developed by Melnyk 2008. Data was analysed using descriptive and inferential statistics.

RESULTS. From the respondents, 74% stated that they learned about evidence-based practice in nursing school and 92.6% believed that EBP results in best clinical care for patients. While 81% stated that they are sure that they can implement evidence-based practice. However, the rate of implementation of EBP in daily practice in the eight weeks before the survey was poor. Statistically significant positive associations were found between beliefs and how they heard about EBP.

LIMITS. One limitation of this study is its low response rate, which may have not captured the entire view of the nurses working in South Australia. It is also not possible to know the characteristics of the respondents compared with those of non-respondents. Therefore, caution should be used in generalising these findings to all nurses across South Australia.

CONCLUSIONS. The study identified that despite positive belief in EBP, the implementation remains low. The presentation will discuss the results in detail. The findings of the study will be of value to policy makers and healthcare institutions in developing and improving upon frameworks of EBP implementation in clinical practice.

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109. Update on Legionella cases in the Azienda ULSS 9 SCALIGERA between 2016 and 2018

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BACKGROUND. Legionella is an infectious disease transmitted through the inhalation of virus in aerosol. Today it is an important public health issue: in fact the health surveillance is monitoring the spread of the infection locally, as well as Nation-wide and at a European level. This health surveillance system, through reporting requirement, thanks to the consequent epidemiological enquiry, allows the analysis of the most likely epidemiological risk factors to promote the infectious disease, their importance and the characteristics of the population likely to be infected by Legionella.

AIMS. Identify possible risk factors for Legionella in the cases previously notified in the residents belonging to the AULSS 9 Scaligera area.

METHODS. By means of the analysis of the regional database SIMIWEB, the Prophylaxis Unit of Infectious Disease of SISP in the Azienda ULSS 9 Scaligera carried out an observational, cross-sectional, epidemiological study to identify possible risk factors for Legionella in the cases previously notified between 2016 and 2018 in the residents belonging to the AULSS 9 Scaligera area

RESULTS. 149 cases of Legionella were notified in the residents and people living in the Azienda ULSS 9 Scaligera area, between 2016 and 2018. The District 1 detected the major number of cases, with a total amount of 59, equal to 39.6%, followed by District 4 counting 42 cases, equal to 28.2%, District 2 and 3 counting respectively 38 and 10 cases, equal to 25.5% and 6.7%. The major number of cases (61) was recorded in 2018, followed by 46 cases in 2017 and 42 in 2016. The largest number of cases affected people aged =55 (65 being the age average), equal to 73.2%. The study showed male gender as slightly prevailing (65.8%) compared to female gender (34.2%). The majority of the cases (121, equal to 81.2%) are community-acquired infections, while 17 cases (11.4%) are travel-related infections, and 12 cases (8.1%) are health-care-associated infections. In all of the three groups, the Italian population was more involved compared to foreigners, reaching 94.6% of the total amount of notifications. The main environmental risk factors associated with Legionella are: gardening (18.1%), recent heating/plumbing implant maintenance (12.8%) and high risk activities (12.7%). According to this study, the non-environmental risk factors associated with Legionella are age =40 (92.6%), chronic diseases compromising the immune system (30.2%), immunosuppressive treatments in the previous 30 days (26.8%) and respiratory system chronic disease (14.8%). To be more specific, 13.4% of the cases had not optimally controlled diabetes, 10.7% was affected with COPD, 8.1% had an autoimmune disease, 8.1% had chronic kidney failure, 7.4% had cancer. Furthermore, 47.0% were smokers, with an average cigarette consumption of 1 pack/die and 24.2% stated a rather high alcohol consumption. From the sample of the residents, 11 deaths were recorded, equal to 7.4% of the total amount. The 54.6% of the latter was affected with one or more chronic diseases compromising the immune system, while 36.4% received immunosuppressive treatments in the 30 days preceding the onset of the infection.

LIMITS. study limited to notifications only to patients resident or domiciled in the Azienda ULSS 9 Scaligera.

CONCLUSIONS. The study pointed out that the average rate of notification in the time and place taken into account, was of 5.39 cases/100000 residents (resident population in AULSS 9 in 2018 corresponding to 921200 residents), higher than the national average (Italy 2017: 3.32 cases per 100000 residents). Furthermore, it appears evident that Legionella affects mostly elderly people with one or more chronic diseases, especially the ones involving the respiratory and immune system (chronic diseases requiring long extended immunosoppressive therapy, mismanaged diabetes, chronic kidney failure).

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110. Analysis of the implementation of the Legislative Decree 14th March 2013 n. 33 concerning 6 Italian Local Health Authorities (ASL)

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BACKGROUND. The introduction of the legislative decree 14 March 2013 n.33 stated that that the Health Authorities, including Local Healthcare Units (ASL), have an obligation to publish transparency and prevention-of-corruption data on a dedicated section called 'Amministrazione Trasparente' which must be presente on each institutional website. The Health Authorities are also responsible also responsible for the quality of information they report, their integrity, updating, completeness and comprehensibility. The information must be accessible and easy to consult as well, not to mention that these documents must be in line with the originals belonging to the Administration.

AIMS. Valuate the effective application of the legislative decree 14 March 2013 n.33 by analysing the specific section 'Amministrazione Trasparente' of the institutional websites of 6 Local Healthcare Units.

METHODS. An observational, cross-sectional study examined the section called 'Amministrazione Trasparente' of the institutional websites of 6 different Local Healthcare Units Nation-wide: Azienda ASDAA-Bolzano, Azienda Asl 3 Genovese, Azienda ASL Umbria 1-Perugia, Azienda Usl Toscana Centro (comprehensive of Firenze, Empoli, Prato and Pistoia provinces), Azienda ASSL Cagliari and Azienda ASP Catanzaro, in the period of time between 05.07.2018 and 24.09.2018. The study assessed the compliance of these Health Authorities to the above-mentioned legislative decree, analysing the legal provision of the articles n.13, 32 and 41.

RESULTS. In the period of time considered in this study, we searched for the application of the article n.13 (Capo II del D.Lgs. n.33) in the section 'Amministrazione Trasparente', looking for the presence of business record, organisation chart and institutional addresses and phone numbers. 2 websites out of 6 resulted lacking in the business record which should be easily found on the section 'Amministrazione Trasparente'. The same situation was detected concerning the organisation chart (2 out of 6). On the contrary, the institutional addresses and phone numbers were identified in all 6 websites of the Local Healthcare Units. Furthermore, the study assessed the presence of the evidence of the article n.32 ('Requirements to publish about the provided services'): to be more specific, it stated the presence or lack of the Service Charter and a document about the accounted costs of the services. 4 out of 6 Local Healthcare Units did not make available any Service Charter, while 2 out of 6 published the accounted costs. Last but not least, the study analysed the evidence of the article n.41, about the waiting lists (criteria, timing, mean waiting time for each medical service). 4 out of 6 Local Healthcare Units published their documents concerning the criteria for waiting lists and the same proportion also applies for the document on mean waiting time for each medical service.

LIMITS. Website analysis for a brief period of time. Continuous websites updating. Small sample size.

CONCLUSIONS. The study highlighted the incomplete adherence to the law D.Lgs. n.33, 2013 from the 6 Local Healthcare Units. If these same data would be assessed in a wider study, it would be a proof of a much more needed attention to the transparency national law, improving guarantees of individual or collective freedom, civil, social and political rights in order to realize a clear administration at the service of citizenship.

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111. Automation technologies in systematic reviews: guidance for researchers and EBM educators

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BACKGROUND. Systematic reviews are widely used to guide policy and practice. However, the ever-growing body of scientific literature poses substantial challenges to maximize comprehensiveness and currency, prohibiting a timely full systematic approach to synthesis. There are many tools to help automate the process of systematic reviews and the use of machine-assisted technology (MAT) is widely accessible. There is substantial research supporting these tools as viable options to facilitate and reduce resources associated with the systematic review process, including several applications using machine learning (ML) to aid citation screening. Despite this, evidence suggests that automation tools are not widely used. To help increase collaboration, innovation and dissemination of information regarding MAT for systematic reviews, the International Collaboration for Automation of Systematic Reviews (ICASR) was established. In a recent meeting, the panel discussed some of the barriers to adoption of MAT, identifying a need for education as a key factor.

AIMS. We aim to provide researchers and evidence-based medicine (EBM) educators with an overview of MAT/ML and their application to systematic reviews and evidence-based health care.

METHODS. Based on the work of the ICASR and a review of available literature we will present the following: • The basics of MAT/ML functionality and terminology • An overview of MAT/ML in the context of systematic reviews and evidence-based health care • Current research with a specific focus on ML applicability for citation screening and MAT-assisted navigation. • Key points for EBM educators teaching about the conduct and use of systematic reviews • Challenges and next steps for the community.

RESULTS. Attendees will be provided with a general overview of MAT/ML functionality and evidence-led guidance for implementing MAT in components of the systematic review process. Attendees will expand their knowledge of MATs for use in their own reviews, for assessment of other reviews and areas for further methodological research.

LIMITS. MAT/ML research in the context of systematic reviews is growing substantially. We will provide an overview of the landscape and highlight areas of specific applicability. We will discuss limitations and validity considerations when implementing and assessing the use of MAT/ML in reviews based on the current evidence.

CONCLUSIONS. This presentation will help educate researchers and EBM educators on the terminology, state of the science and current applicability of MAT/ML in systematic reviews.

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112. Integrating patient experience in transforming healthcare delivery

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BACKGROUND. It is becoming more and more recognized how important the patient voice is, as healthcare delivery systems continue to reform and innovate. As we move forward in developing and applying a more patient-centered approach, it is important to inform medical providers and policy makers about the patient; their preferences, fears, wants, and satisfaction as they relate to healthcare, and especially the patients' values, as they relate to emerging healthcare delivery models.

AIMS. This study presents proactive research that will lead to a better understanding of the patient and hopefully, to a more patient-centered approach to evidence-based healthcare delivery.

METHODS. Our methodological approach is centered on the idea of reframing real-world evidence through the eyes of the patient, using both qualitative and quantitative aspects of the patient experience, including patient experience maps of their journey, storytelling, and assessment charts of their wants, needs, pains and gains. Data collection will also include surveys, interviews, empathy maps, and compassion report cards from a selected sample of health service organizations. We will further correlate data on variables such as length of stay, wait times, readmission rate, nosocomial infections, incident rate, near miss rate, friendliness, helpfulness of staff, and understanding of patient needs.

RESULTS. The study is in progress and findings will be presented at the EBHC Conference. Key learnings will be presented regarding the extent to which health service organizations can positively impact patient experience, not only in the clinical domain but also on all aspects of care.

LIMITS. A limitation of the study is that it uses convenience sampling in a tertiary care institution.

CONCLUSIONS. In time, the need to center conversations and innovations on the experiences of patients will only be heightened. This study contributes to our understanding of the ways in which the sum of interactions during the overall healthcare experience relates to patient perception of those experiences, and provides feedback to health service organizations to continuously improve performance.

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