5th International Conference of Evidence-Based Health Care Teachers & Developers
Models of Practice in Hospital and Primary Care
Taormina (Italy), 28th October - 1st November, 2009
Hosted by GIMBE®
in cooperation with Oxford Centre for Evidence-based Medicine, Critical Appraisal Skills Programme

ABSTRACT BOOK

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Conference Program

Wednesday, October 28th

06.00 pm **CONFERENCE INAUGURATION**

The 5th edition of a stellar Conference: welcome to Sicily
Nino Cartabellotta (IT)

Opening talk. 1991-2001, eighteen years later. Is Evidence-based Practice really adult?
Paul Glasziou (UK)

Architecture of the Conference
Janet Martin (CA)

Thursday, October 29th - Morning

9.00 am PLENARY SESSION 1

Evidence-based Practice: teaching tools and curriculum (I)

Long Presentation (20')

- Jonathan Underhill (UK). An e-learning tool on therapeutics and medicines management – NPCI **(26)**

Short Presentations (10')

- Bente Frisk (NO). Evaluating the impact of implementation of EBP in physiotherapy clinical education **(10)**
- Crystal Bennett (USA). Developing and implementing a staff nurse Evidence-based Practice fellowship program **(5)**
- Dragan Ilic (AU). Medical students' attitudes and use of Evidence-based Medicine: a qualitative study **(15)**
- Vladimir Mihal (CZ). Real-life case scenarios as a tool to facilitate EBP skills in paediatric education **(18)**
- Julie Tilson (USA). Validation of a modified Fresno test to assess Evidence-based Practice skills **(25)**

10.30 POSTERS, break

11.30 PLENARY SESSION 2

Evidence-based Practice: teaching tools and curriculum (II)

Short Presentations (10')

- Hamid Reza Baradaran (IR). Comparing Up-to-Date and Pubmed clinical queries in answering clinical scenarios: a randomized cross-over study **(2)**
- Yhuri Carreazo (PE). CASP experience in Peru **(7)**
- Antoniette Conca (CH). Blended learning of Evidence-based Practice skills in further education of nurses and allied health professionals **(8)**
- Piersante Sestini (IT). Exposing the P value fallacy to young residents **(22)**
- Nina Rydland Olsen (NO). An EBP tool for teaching and assessment **(20)**
- Sandra Emily Zwolsman (NL). Validation of the Dutch translation of the Berlin questionnaire on EBM knowledge and skills **(28)**
- Karen Kearley (UK). Do journal clubs enable transfer of evidence into practice? A realist synthesis **(16)**

1.00 pm Lunch

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Thursday, October 29th - Afternoon

2.30 pm PLENARY SESSION 3

GIMBE® EBHC International Library
Nino Cartabellotta (IT), Marco Mosti (IT), Andrea Nuzzolese (IT)

3.30 POSTERS SESSION, break

4.00-6.00 PARALLEL SESSIONS: THEME GROUPS and WORKSHOPS

Theme Group 1
EBP Curriculum
Paul Glasziou (UK)

Theme Group 2
EBP Assessment
Julie Tilson (USA)

Theme Group 3
Practice based learning and improvement – EBHC at the bedside: challenges of the teachers
Dan Mayer (USA)

Theme Group 4
How should we teach the focused diagnostic question?
Kevork Hopayian (UK)

Theme Group 5
Making decisions better
Neal Maskrey (UK)

Theme Group 6
Library resources and evidence tools and technologies
Lubna Al-Ansary (KSA)

Workshop 1
Using the GATE frame: a graphic appraisal tool for epidemiology (2 h)
Rod Jackson (NZ)

Workshop 2
Know4Go: A Tool to Facilitate Decision-Making when Evidence, Ethics, Economics, and "Everything Else" Needs to be Considered (1 h)
Janet Martin (CA)

Workshop 3
Comparing Evidence-based Practice with complementary and allied medicine: the demarcation between science and non-science in healthcare (1 h)
Michael Power (UK), Kevork Hopayian (UK)

Friday, October 30th - Morning

9.00 am PLENARY SESSION 4

Evidence-based Practice in the real world

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- Amanda Burls (UK). A pragmatic internet-based randomised controlled trial of stretching to reduce injury and soreness in people who exercise **(6)**
- Janet Martin (CA). A randomized controlled trial of patient involvement in evidence-based decision-making versus usual care: the Goal-Oriented Medication Assessment Program (GOMAP) **(17)**

Short Presentations (10')

- Jolita Bekhof (NL). How to prepare a critically appraised topic (CAT) in less time: factors influencing the time costs for preparing a CAT **(3)**
- Andrew Hutchinson (UK). Introducing a comprehensive support, development and quality assurance programme for National Prescribing Centre Therapeutics trainers **(14)**
- Gloria Gianesini (IT). Research use from Italian nurses to increase their knowledge in the clinical practice: comparison of three Italian hospitals **(11)**

10.30 POSTERS, break

11.30 PLENARY SESSION 5

Knowledge translation and change management

Short Presentations (10')

- Ann Homer (UK). Leading through the mist with a compass: the successful implementation of evidence into primary care practice **(12)**
- Daniela Mosci (IT). Health professionals' perceptions of Evidence-based Practice **(19)**
- Kathleen Beniuk (UK). Developing a conceptual model of Evidence-based Practice **(4)**
- Nynke van Dijk (NL). Motivating factors for Evidence-based Practice in GP-trainees and their trainers **(27)**
- Barbara Hürlimann (CH). Implementing Evidence-based Practice: evaluation of professionals' knowledge and skills development over three years **(13)**
- Christine Thrasher (CA). Making assessments "in the dark": evidence-based teaching strategies to assist nurses making triage decisions via the telephone **(24)**
- Paola Rosati (IT). The advent of systematic reviews in a critical appraisal world: the Group for Appraisal of Literature and Implementation of Levels of Evidence in the HOspitals (G.A.L.I.L.E.HO) **(21)**

1.00 pm Lunch

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Friday, October 30th - Afternoon

2.30 pm PLENARY SESSION 6

Future horizons for Evidence-based practitioners

From health needs to published research: how can we improve the evidence?
Paul Glasziou (UK)

EBM as a Clinical Competence: Teaching Clinical Trainers
Khalid Khan (UK)

Oxford International Programme in EBHC
Amanda Burls (UK)

3.30 POSTERS, break

4.00-6.00 PARALLEL SESSIONS: THEME GROUPS and WORKSHOPS

Theme Group 1
EBP Curriculum
Paul Glasziou (UK)

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Making decisions better
Neal Maskrey (UK)

Theme Group 6
Library resources and evidence tools and technologies
Lubna Al-Ansary (KSA)

Workshop 1
Team based learning (2 h)
Dan Mayer (USA)

Workshop 2
Statistics in small doses (1 h)
Amanda Burls (UK)

Workshop 3
Rating the Evidence: Using GRADE (1 h)
Jeff Andrews (USA)

Saturday, October 31st

9.00 am PLENARY SESSION 7

Methodological issues

Long Presentation (20')

- Leonila Dans (PH). Teaching Evidence-based Practice in resource-poor settings: obstacles and future challenges

Short Presentations (10')

- Suzana Silva (BR). Scientifically Informed Medical Practice and LEarning (SIMPLE) **(23)**
- Lubna Al-Ansary (KSA). Innovative teaching methods for capacity building in knowledge translation **(1)**
- María Jesús Esparza Olcina (ES). Impact of an evidence-based paediatrics electronic journal **(9)**

10.30 Break

11.00 Reports of Theme Groups

12.00 pm Organisational issues and votes

12.45 Conclusions

1.00 Lunch

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Oral Presentations

Note: all abstracts have been printed as submitted by authors, without any change

ORAL PRESENTATIONS

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2. **Baradaran Hamid Reza (IR)**. Comparing Up-to-date and Pubmed clinical queries in answering clinical scenarios: a randomized cross-over study
3. **Bekhof Jolita (NL)**. How to prepare a critically appraised topic (CAT) in less time: factors influencing the time costs for preparing a CAT
4. **Beniuk Kathleen (UK)**. Developing a conceptual model of Evidence-based Practice
5. **Bennett Crystal (USA)**. Developing and implementing a staff nurse Evidence-based Practice fellowship program
6. **Burls Amanda (UK)**. A pragmatic internet-based randomised controlled trial of stretching to reduce injury and soreness in people who exercise
7. **Carreazo Yhuri (PE)**. CASP experience in Peru
8. **Conca Antoniette (CH)**. Blended learning of Evidence-based Practice skills in further education of nurses and allied health professionals
9. **Esparza Olcina María Jesús (ES)**. Impact of an evidence-based paediatrics electronic journal
10. **Frisk Bente (NO)**. Evaluating the impact of implementation of EBP in physiotherapy clinical education
11. **Gianesini Gloria (IT)**. Research use from Italian nurses to increase their knowledge in the clinical practice: comparison of three Italian hospitals
12. **Homer Ann (UK)**. Leading through the mist with a compass: the successful implementation of evidence into primary care practice
13. **Hürlimann Barbara (CH)**. Implementing Evidence-based Practice: evaluation of professionals' knowledge and skills development over three years
14. **Hutchinson Andrew (UK)**. Introducing a comprehensive support, development and quality assurance programme for National Prescribing Centre Therapeutics trainers
15. **Ilic Dragan (AU)**. Medical students' attitudes and use of Evidence-based Medicine: a qualitative study
16. **Kearley Karen (UK)**. Do journal clubs enable transfer of evidence into practice? A realist synthesis
17. **Martin Janet (CA)**. A randomized controlled trial of patient involvement in evidence-based decision-making versus usual care: the Goal-Oriented Medication Assessment Program (GOMAP)
18. **Mihal Vladimir (CZ)**. Real-life case scenarios as a tool to facilitate EBP skills in paediatric education
19. **Mosci Daniela (IT)**. Health professionals' perceptions of Evidence-based Practice
20. **Olsen Nina Rydland (NO)**. An EBP tool for teaching and assessment
21. **Rosati Paola (IT)**. The advent of systematic reviews in a critical appraisal world: the Group for Appraisal of Literature and Implementation of Levels of Evidence in the HOspitals (G.A.L.I.L.E.HO)
22. **Sestini Piersante (IT)**. Exposing the P value fallacy to young residents
23. **Silva Suzana (BR)**. Scientifically Informed Medical Practice and LEarning (SIMPLE)
24. **Thrasher Christine (CA)**. Making assessments "in the dark": evidence-based teaching strategies to assist nurses making triage decisions via the telephone
25. **Tilson Julie (USA)**. Validation of a modified Fresno test to assess Evidence-based Practice skills
26. **Underhill Jonathan (UK)**. An e-learning tool on therapeutics and medicines management – NPCI
27. **van Dijk Nynke (NL)**. Motivating factors for Evidence-based Practice in GP-trainees and their trainers
28. **Zwolsman Sandra Emily (NL)**. Validation of the Dutch translation of the Berlin questionnaire on EBM knowledge and skills

1. INNOVATIVE TEACHING METHODS FOR CAPACITY BUILDING IN KNOWLEDGE TRANSLATION

Al-Ansary LA, Wahabi HA

College of Medicine, King Saud University, Riyadh, Saudi Arabia

Background: The knowledge-practice gap is an internationally recognized obstacle in translating evidence into practice.

Aims: To introduce new methods that enhance the abilities of Family Medicine trainers to disseminate the concept of Knowledge Translation (KT) and illustrate to them the obstacles facing KT and evidence implementation.

Methods: In a week-long training of trainers' workshop in EBHC and capacity building in KT, 2 methods were specifically introduced:

- Debate: Where the organization and level of evidence used by each of the opposing groups to address a given statement was evaluated.
- KT Project: Where the participants were expected to implement level one evidence in a medical facility (e.g. Preconception clinic for diabetic women). They were asked to convince the administrator(s) to implement this evidence using the KT cycle.

Their opinions were assessed at the end by a questionnaire and by an open interview; and 3 months later by a questionnaire only.

Results: The participants were 18 Family Practitioners representing different country regions. At the end of workshop, 80% of the participants said they will use the KT project in their future workshops and 100% thought it was useful and it gives new paradigm in their teaching of EBHC. Only two participants thought the debate was useful and 100% thought it was a difficult exercise. They suggested that a demonstration by the tutors of a debate would have been helpful on how to run the debate and organize the evidence. The results were the same 3 months later.

Limitations: -

Conclusions: Introducing new teaching methods which highlight diverse aspects of KT may help in closing the knowledge-practice gap. Debate, an old teaching-learning strategy, with its pros and cons, requires mastery of the content and is thought to encourage critical thinking, communication and logic. This adversarial model, however, is not popular among the participants. On the other hand, the KT project seems to be an acceptable method. This has to be substantiated by future studies.

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2. COMPARING UP-TO-DATE AND PUBMED CLINICAL QUERIES IN ANSWERING CLINICAL SCENARIOS: A RANDOMIZED CROSS-OVER STUDY

Baradaran HR, Sayyah Ensan L, Javanbakht A, Faghankhani M, Ahmad F

Iran University of Medical Sciences, Tehran, Iran

Background: Ready availability of current best evidence has been the most important part of successful evidence-based health care. Finding the current best evidence to manage clinical problems can be either quick and highly rewarding or time-consuming and frustrating to providers and consumers of evidence-based health care, so providers and consumers of evidence-based medicine should recognize the most evolved information services in the topic areas of concern.

Aims: To compare the proportion of correctly answered clinical scenarios and users' satisfaction using UpToDate (a point-of-care system) and PubMed Clinical Queries.

Methods: In a randomized, crossover study, 44 mostly first year residents in different residency programs in Iran university of Medical Sciences enrolled in a 4 hours information mastery workshop in February 2009 were randomly assigned to use UpToDate or PubMed Clinical Queries for answering 16 clinical questions. A total number of 16 clinical scenarios followed by formulated questions were randomly allocated among participants in each group; each participant received 2 scenarios including diagnosis and therapy, and asked for retrieving answers within the allocated database. After that participants crossed over to use the other database for answering 2 different scenarios which were also randomly allocated. Retrieved answers were recorded by special designed software. Also a questionnaire was used to record their satisfaction from each database. The researchers' team determined if each recorded answer addressed the question appropriately.

Results: Participants were from 10 different residency programs; 15 (36.6%) were female; 37 (90.2%) were in the first year of residency. Among 78 scenarios consulted in each database, 71.79% were answered correctly in UpToDate while this proportion was 42.30% in PubMed Clinical Queries ($P<0.001$). Overall satisfaction among UpToDate users was significantly higher than PubMed Clinical Queries users (Mean=2.05, SD=0.92 vs. Mean=3.10, SD=0.77, $P<0.001$).

Limitations: -

Conclusions: Teaching UpToDate was more productive in retrieving relevant answers and also more satisfying for participants of the workshop. The findings of this study challenges teaching PubMed Clinical Queries as the best database in EBM workshops which could be replaced by higher level databases such as point-of-care systems.

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3. HOW TO PREPARE A CRITICALLY APPRAISED TOPIC (CAT) IN LESS TIME: FACTORS INFLUENCING THE TIME COSTS FOR PREPARING A CAT

Bekhof J

Isala Clinic, Zwolle, The Netherlands

Background: One of the criticisms of EBP is that time restraints make it not feasible in a busy non-academic clinical practice.
At the department of paediatrics in de Isala Clinic in Zwolle, we pactively practice EBP since 2006. The Isala clinic is a large non-academical teaching hospital in The Netherlands. We organise a weekly EBM-seminar, after the morning report. During this short seminar (< 10 minutes) we systematically answer a clinically relevant, answerable question (PICO).

Aims: Evaluate the factors influencing the time it costs to answer a PICO.

Methods: Prospective observational study.

Results: We analyzed 70 critically appraised topics (CAT's). Consultants prepared 40% of the CAT's, residents 30% and medical students 30%. The average time spent on preparing a CAT was 4,5 hour (range 40 min – 16 hours). Half of the CAT's were prepared in less than 3 hours. The time costs are merely determined by 3 factors:
1. The experience of the person preparing the PICO. A person preparing his/her first PICO needs 5-6 hours, a second PICO 3-4 hours and after 3 CAT's the time to answer a PICO takes approximately 2 hours.
2. The domain of the question. Questions can be subdivided in 4 domains: therapeutic questions, diagnostic, etiology, and harm/prognosis. A beginner takes 4-5 hours to answer a PICO in the therapeutic domain and 8-9 hours for a diagnostic question.
3. The level of evidence found. In case a high level of evidence is found less time (2-3 hours) is needed to prepare a CAT than in the case of moderate, weak or absence of evidence (5 hours). PICO's with moderate evidence take the most time: 5-6 hours on average. Especially cohort studies or clinical trials of methodologically inferior quality take more time to appraise.

Limitations: -

Conclusions: It takes the practice of at least 3 PICO/CATs to lower the time spent on preparing a PICO/CAT to 2 hours. To avoid extreme time costs, one could advice "beginners" to start with a PICO in the therapeutic domain, with a good change of finding methodologically sound studies.

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4. DEVELOPING A CONCEPTUAL MODEL OF EVIDENCE-BASED PRACTICE

Beniuk K, Morris Z, Clarkson PJ

University of Cambridge

Background: Evidence-based practice (EBP) has been frustrating one, despite considerable efforts from health systems and educators: in 2006 “researchers from the United States and the Netherlands have estimated that 30%-45% of patients are not receiving care according to scientific evidence and that 20% to 25% of the care provided is not needed or potentially harmful”. It is often argued that implementation will be improved with a better understanding of the EBP process. Most research has focused on the knowledge transfer and adoption, yet these are only part of the overall process.

Aims: The aim of this research was to review existing models of EBP in order to formulate a model that describes the overall process of EBP from research to application. The purpose of this was to attempt to understand the linkages and leakages between stages, and to consider other models of knowledge creation and transfer which could bring helpful insights.

Methods: The literature was reviewed to locate models depicting the process of EBP. These were analysed to develop a conceptual model of the EBP process. This was an idealised model and in order to test it empirically, the final model was validated through semi-structured interviews with health care providers and managers.

Results: Eleven models were identified as adding something unique to the overall conceptual model. Two engineering design approaches, the product life cycle and the systems engineering approach, helped contribute to the understanding of the EBP process. Each model found in the literature represented certain parts of the overall system but none were found to accurately represent the process as a whole. Interviews with the health care providers validated the difficulty implementing EBP and the inadequacy of the models to accurately represent their processes of transferring evidence into practice.

Limitations: -

Conclusions: The model of the overall EBP process will be presented and areas of identified barriers will be discussed. By identifying potential barriers, there exists an opportunity to develop new targeted tools and strategies to help improve the development and implementation of evidence-based practice.

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5. DEVELOPING AND IMPLEMENTING A STAFF NURSE EVIDENCE-BASED PRACTICE FELLOWSHIP PROGRAM

Bennett C

Saint John's Health Center, Santa Monica, California, United States of America

Background: Dr. Archie Cochrane, a British epidemiologist, founded the evidence-based practice movement in which his influence and dedication was key in assisting individuals in making well-informed decisions about healthcare. 2-year program funded by UniHealth.

Aims:

- Integrate the EBP process into clinical practice by developing skills needed for development, implementation, and evaluation of a clinically relevant EBP project for use by a health care team
- Assist direct care Registered Nurses in applying EBP to promote quality care
- Foster professional growth and development of staff nurses
- Stimulate innovative thinking regarding practices that are efficient and effective in improving patient outcomes
- Facilitate recruitment and retention by creating and environment that supports professional nurses
- Provide staff nurses with opportunities and mentoring in making practice changes through research utilization and EBP

Methods: The EBP Fellowship Program is designed to create and support a culture of inquiry for nursing. The program focuses on education and promotion of utilizing best evidence to influence practice at the bedside. The program promotes a culture of inquiry through education of staff as EBP Fellows. Extensive education and mentoring provides assistance to staff nurses in understanding and utilizing the 5 steps of EBP. Guidance is provided in identifying a clinical problem; collecting the most relevant and best evidence to answer the clinical question; critically appraising the evidence; integrating the evidence with the nurse's own clinical expertise, assessment of patient's condition, along with the patient's preferences and values to implement a clinical decision; and evaluating the change resulting from implementing the evidence in practice. EBP Nurse Fellows are also mentored in dissemination of their projects. The program culminates with a graduation ceremony where the EBP Nurse Fellows present their projects.

Results: EBP Program commenced January 1, 2009.

Limitations: -

Conclusions: -

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6. A PRAGMATIC INTERNET-BASED RANDOMISED CONTROLLED TRIAL OF STRETCHING TO REDUCE INJURY AND SORENESS IN PEOPLE WHO EXERCISE

Burls A[1], Skinner K[1], Jamtvedt G[2], Herbert R[3], Flottorp S[2], Odgaard-Jensen J[2], Håvelsrud K[2], Barratt A[4], Mathieu E[4], Oxman A[2]

[1]ThinkWell, University of Oxford, Oxford, UK; [2]Norwegian Knowledge Centre for the Health Services, Oslo, Norway; [3]The George Institute for International Health & University of Sydney, Australia; [4]University of Sydney, Australia

Background: Systematic reviews showed evidence on stretching before and after exercise is inconclusive with some RCTs suggesting it may do more harm than good. Moreover, the genealisability of these to recreational athletes is poor.

Aims: To establish whether stretching before and after exercise reduces injury or soreness.

Methods:

- Pragmatic internet-based RCT
- Population: non-injured adults who undertake regular recreational exercise
- Recruitment: Awareness raised by radio, television, websites and email
- Informed consent and self-enrolment online
- Concealed allocation
- Intervention: stretching before and after exercise
- Control: no stretching
- Unblinded
- Self-reported outcomes once/week (e-mail reminders)
- Duration: 12 weeks
- Risk of injury analysed with Cox regression.
- Risk of bothersome soreness analysed with mixed effects logistic regression

Results: Recruitment: 2,377 people enrolled in this trial. Compliant- Stretch: 414 (38.4%) Control: 845 (80.8%) Total: 1259 (59.2%); Partially compliant-Stretch: 655 (60.7%) Control: 135 (12.9%) Total: 790 (37.2%); Non-compliant-Stretch: 10 (0.9%) Control: 66 (6.3%) Total: 76 (3.6%) Risk: Injury: HR = 0.97, 95% CI 0.84 to 1.13 (primary outcome); bothersome soreness: OR = 0.69, 95% CI 0.59 to 0.82; muscle/ligament/tendon tear: HR = 0.75, 95% CI 0.59 to 0.96 Other outcomes: Soreness-Stretch mean (SD): 2.5 (2.2) Control mean (SD): 2.9 (2.5) Effect Mean (95%CI): 0.4 (0.2 to 0.5); Looseness during-Stretch mean (SD): 3.0 (2.1) Control mean (SD): 3.3 (2.3) Effect Mean (95%CI): 0.3 (0.1 to 0.4); Looseness after-Stretch mean (SD): 3.2 (2.2) Control mean (SD): 3.7 (2.4) Effect Mean (95%CI): 0.4 (0.3 to 0.6).

Limitations: Hard to define sampling frame & monitor interventions in internet trials. Poor compliance . Self-reported outcomes can be biased (eg strong belief that stretching is beneficial). Stretching is time consuming and may displace or deter exercise.

Conclusions: Stretching may reduce some injuries & soreness but is time consuming. It had no effect on overall injuries.

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7. CASP EXPERIENCE IN PERU

Carreazo NY, Bada CA, Ugarte KE, Bernaola GM, Rojas RA

Critical Appraisal Skills Programme Peru

Background: In Peru, there is no policy to promote EBHC; with isolated attempts, mostly by individuals, to teach EBP. Being able to critically appraise research papers is a fundamental skill necessary for EBP, therefore, in 2007, with help from José Emparanza (CASP Spain) and Amanda Burls (CASPin), we established the Critical Appraisal Skills Programme Peru (CASPeru) and began running workshops using CASP methodology (problem-based, interactive, small group work, fun). The programme had no core support and was self-funding.

Aims: To describe the achievements of the first two years of operation of CASPeru and the dissemination of CASP philosophy and EBP culture at universities.

Methods: Teaching EBP was performed through the following ways: 21 CASPeru Workshops were run: 8 organised by CASPeru, 8 requested by hospitals and 5 requested by a School of Medicine. The number of participants in each workshop was around 20 persons. We measured participant satisfaction with a questionnaire. At university (post-graduate level), we also used the CASP tools for teaching EBP to Medical Auditors and Clinical Epidemiologists.We preferentially chose frontline clinical staff to become trainers, because we wanted to emphasise the importance of applying knowledge in daily practice.

Results: Of all healthcare professionals trained through CASP workshops, 89% said it had been a lot of fun during the workshops, and 87.5% thought that they had a good or excellent use of their time attending the workshop. 80% of the teachers were practicing clinicians.

Limitations: -

Conclusions: In Peru, CASP methodology is a friendly, cost-effective, bottom up approach for promoting EBHC. We believe that the participation of healthcare professionals as moderators and facilitators has helped this achievement. Although it is not possible to measure directly the impact of the learning by Medical Auditors and Clinical Epidemiologists, the cascade method means they are potential teachers who in turn will help others learn critical appraisal using CASP tools.

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8. BLENDED LEARNING OF EVIDENCE-BASED PRACTICE SKILLS IN FURTHER EDUCATION OF NURSES AND ALLIED HEALTH PROFESSIONALS

Conca A

University of Applied Science, Bern, Switzerland

Background: The use of different methods to teach/learn the basic knowledge for evidence-based practice is important to keep practitioner motivated to engage in the life-long learning process.
Not all health professionals have the same preferred learning style. Combining computer assisted learning with lectures and interactive exercise sessions helps the learners to raise their own questions and get stimulated through these different approaches.

Aims: With the objective of maximize the fun and the learning effect in mind we integrated computer assisted learning of basic statistics and examples of use to provide the background for evidence-based practice skills.

Methods: Participants of the evidence-based practice certificate of advanced studies are provided with a personal login for an internet-based learning program for statistics which allows them to work in their own pace and have access to all materials (presentations, exercises, interactive applets, lecture notes, glossary). On site the lectures and exercises are alternatively offered.

Results: The first experiences of the course show that the participants like the interactive format and are challenged with the intensive multi-medial working arrangements. At the end of the course they presented the results of their own practice project and completed on their own exemplarily the whole evidence-based practice process.

Limitations: Blended learning can help to optimize learning efforts in postgraduate courses but also takes the risk to overstrain busy practitioners. Learners need to also discuss their learning experience and their questions in the group and like to have some support at least in the beginning in using computer assisted learning programs.

Conclusions: Varied methods and tailored arrangements for different learning styles help to introduce the learners to evidence-based practice. The mastery experience to integrate the knowledge gained to answer a personally relevant clinical question in the practice context was a big gain.

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9. IMPACT OF AN EVIDENCE-BASED PAEDIATRICS ELECTRONIC JOURNAL

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Background: Evidencias en Pediatría is a quarterly secondary electronic publication first edited in 2005. The journal counts with 50 collaborators that review 70 journals published worldwide. The critical appraisal of papers of paediatric interest is its first aim.

Aims: To know the impact and acceptance of the journal.

Methods: We have used Google analytics to extract the most outstanding information.
We add also the results of an electronic survey made to the subscribers of the e-TOC (table of contents) bulletin.

Results: An amount of 379,955 visits have been received from September 2007 to May 2009, with 44,781 returning visitors (RV). RV visit more pages (2.45), spend more time per visit (2 minutes and 25 seconds) and have smaller bounce rate (66.42%). We have cross-checked the information from the 25 countries contributing with more RV, spending more time in the visit, consulting more pages per visit and with RV with smaller bounce rate. The RV that used the key words “evidencias en pediatria”, “aepap” or “evidencia en pediatria” (which are some of the ten more used key words) are the RV that produced smaller bounce rate (12.67%, 31.19% and 17.65% respectively); they are probably users that know the site and use it frequently. If we add up the orthographic variants of the journal’s name we find 1,191 visits that probably searched directly the name of the journal, all of them with very low bounce rates. The sources of traffic used by RV are: search engines 72%, reference web sites 15.39% and direct traffic 11.65%.

Limitations: Anonymous data not verifiable but trends are observable.

Conclusions: The electronic journal Evidencias en Pediatría, receives a big number of total visits and especially of returning visitors. They come mainly from Spanish-speaking countries, use most often search engines, especially google, and their preferred key word is just the name of the journal. All the previously stated makes Evidencias en Pediatría the first electronic journal of evidence-based paediatrics in Spanish in the world.

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10. EVALUATING THE IMPACT OF IMPLEMENTATION OF EBP IN PHYSIOTHERAPY CLINICAL EDUCATION

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Background: Teaching of evidence-based practice (EBP) generally occurs in academic settings at the Bachelor education in Physiotherapy at Bergen University College (BUC), Norway. A questionnaire survey among physiotherapy (PT) students indicated that they to some extent apply EBP knowledge and skills during clinical education. In addition, focus-group interviews conducted among students, their clinical instructors (CIs) and contact teachers revealed the need to prioritize EBP-teaching among CIs; the most important role models for students.

Aims: To evaluate the impact of an EBP educational program on EBP knowledge, skills, attitudes and behavior among CIs. In addition, we will assess EBP knowledge, skills, attitudes and behavior among PT students in clinical placement.

Methods: Participants: CIs (n=14) from hospitals in Bergen participated in the intervention group, and CIs (n=15) from hospitals outside Bergen were recruited to the control group. In total, 44 students agreed to take part in the study. Design: A controlled two-group pre- and posttest design was used. Intervention: The intervention involved a 7-month EBP educational program: four half-day sessions focusing on the steps of EBP and how to supervise students in EBP; supervision and written feedback on assignments and an oral examination. Outcome measurements: Three previously validated questionnaires: Adapted Fresno Test, EBP Attitude Scale and EBP Implementation Scale. In addition, we used questionnaires to evaluate satisfaction among the participants in the intervention group. Scales were administered before and after the intervention (October 08/May 09), and 6 months after the intervention (October 2009).

Results: Preliminary results from pre- and post-test data will be presented at the conference.

Limitations: Limitations of this study are mainly related to choice of design and sample size.

Conclusions: Description of the intervention and results from the study will be presented at the conference.

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11. RESEARCH USE FROM ITALIAN NURSES TO INCREASE THEIR KNOWLEDGE IN THE CLINICAL PRACTICE: COMPARISON OF THREE ITALIAN HOSPITALS

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Background: The exponential increase of biomedical literature has created the conditions for increase of EBN and EBM and increase knowledge but the transfer of research in the clinical practice is a very difficult process.
The failure to translate the theory into good practice is the main obstacle to the flow of evidence and the real risk of unequal and unsafe health care.
In the 1999 the Estabrooks published a survey that analyzed the knowledge source for nurses, discovering that research had a very little relevance in filling the knowledge gaps.

Aims: The Purpose of the study is to investigate the sources of knowledge for clinical nursing practice in three hospitals in northern Italy with different experiences of EBN / EBP.

Methods: Cross sectional survey in three hospitals in Northern Italy with administration of a 16 item questionnaire with 5 levels of response.

Results: Statistical analyses are currently in progress. We have used descriptive statistics to analyse the distributions of responses on the questionnaire items.

Limitations: -

Conclusions: The conclusion of the study will be presented at the 5th International Conference of Evidence-Based Health Care Teachers & Developers.

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12. LEADING THROUGH THE MIST WITH A COMPASS: THE SUCCESSFUL IMPLEMENTATION OF EVIDENCE INTO PRIMARY CARE PRACTICE

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Background: Evidence on how to prevent and manage falls in the elderly has existed for many years. However, the successful implementation of best evidence in to primary care practice presents a significant challenge due to the different ways of working that exist between multiprofessional teams and organisational systems. The question becomes "what leadership skills are needed to facilitate the transformation from knowing the evidence to changing practice in primary care?"

Aims: To define the key stages of the transformation process that underpins the implementation of best evidence in to primary care practice.

Methods: Established frameworks for leading change were applied to critically review a 3 year plan to optimise the management of falls in the elderly in a primary care setting in the UK. The determinants for success were reduction in falls and hospital admissions for fractures plus improved ways of working across the healthcare teams and systems.

Results: The evidence was used in multiple ways: to raise awareness about the need for the change (the what); educate about its purpose (the why); encourage shared decision-making and solution-planning (the how), and as a tool for negotiations about workload (the commitment). Initial resistance to change practice was overcome by effective communications and supported by the security offered by the medical lead. Early successes were celebrated and a trusting working environment evolved over time, in spite of the other multiple changes in primary care that were being experienced. The establishment of a unified and resilient complex care team lead ultimately to improved patient outcomes.

Limitations: -

Conclusions: Our experience has lead us to develop a leader-educator strategy to facilitate transformations in primary care. We recommend that education and training of evidence-based health care should incorporate knowledge and understanding of the change process.

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13. IMPLEMENTING EVIDENCE-BASED PRACTICE: EVALUATION OF PROFESSIONALS' KNOWLEDGE AND SKILLS DEVELOPMENT OVER THREE YEARS

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Background: To implement evidence-based practice (EBP) in nursing and allied health professions at the University Hospital Bern, a 5-year strategy for continuing clinical practice development and research has been followed since 2005. Ongoing evaluation has been one centre point of this strategy, focusing on the development of knowledge and skills of professionals.

Aims: To evaluate EBP related knowledge and skills of nurses and allied health professionals in the beginning phase of the project and after three years. To compare knowledge and skills levels of both measurement points to determine any development.

Methods: A standardised questionnaire has been used to evaluate knowledge and skills of all nurses and allied health professionals in 2006 and 2009. The questionnaire is organised in five parts:

- Demographics
- BARRIERS: The barriers to research utilisation scale
- Kinds and Sources of knowledge for practice
- Knowledge in English
- KAP: Knowledge, attitudes and practices of research utilization.

Data are analysed using descriptive statistics, ordinal regression, the marginal homogeneity and Wilcoxon-test to test for differences.

Results: In 2006, the return rate was 40%, with N=991. Generally, participants reported a high willingness to engage in, but low knowledge and ability to perform research utilisation. This was supported by the fact that scientific journals were only rarely used to inform practice and knowledge in English was insufficient. Lack of time was described as the most important barrier for research utilisation.
Data from 2009 and comparison results will be available for the presentation.

Limitations: -

Conclusions: From the results of the first data collection, it can be said that on one hand the staff is motivated and interested in research utilisation and evidence-based practice in general. On the other hand, the general conditions are described as problematic.
With the data of the second survey, the development of knowledge and skills can be described.

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14. INTRODUCING A COMPREHENSIVE SUPPORT, DEVELOPMENT AND QUALITY ASSURANCE PROGRAMME FOR NATIONAL PRESCRIBING CENTRE THERAPEUTICS TRAINERS

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Background: The NPC is an NHS organisation whose aim is to promote and support high quality cost-effective prescribing and medicines management. Among other activities 56 NPC trainers provide teaching in evidence-based therapeutics, in addition to their main jobs. Explicit demonstration of competence in an evidence-based discipline will increasingly be required as revalidation becomes an international requirement. The optimal approach by which to do this is uncertain.

Aims: The NPC has always supported and developed its trainers. In 2007 it was decided that existing elements should be reviewed and drawn into a more formal arrangement.

Methods: Trainers commented on a consultation document via facilitated groupwork. The final programme was introduced in April 2008 and includes a reflective diary, 360-like feedback, peer observation and annual knowledge test. In March 2009 trainers were invited to complete an anonymous electronic questionnaire.

Results: 33 (59%) trainers responded. Most said the programme had been moderately (66.7%) or very (12.1%) helpful to their development. 6 (18.2%) expressed a neutral view: 5 of these had not completed all aspects when they completed the questionnaire. 23 (69.7%) said it was a good or excellent use of their time. All components were judged moderately or very helpful by the majority of those who had completed them. Only 1 person expressed strongly negative views.

Limitations: The good response rate suggests the answers reflect trainer opinion. Some with very negative views may have felt inhibited in expressing them, even though the questionnaire was anonymous. Conversely, they may have been motivated to express them as this was an opportunity to shape future development.

Conclusions: A comprehensive support, development and QA programme has been successfully introduced. The clear majority of respondents to an anonymous questionnaire judged it moderately or very helpful to their development and a good or excellent use of their time. The programme will be review again after a further 12 months.

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15. MEDICAL STUDENTS' ATTITUDES AND USE OF EVIDENCE-BASED MEDICINE: A QUALITATIVE STUDY

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Background: The principles of Evidence Based Medicine (EBM) are increasingly being taught at medical schools as a standalone course, or integrated within the existing curriculum. Teaching EBM within such contexts increases student knowledge, skill and expertise in EBM. Few studies have explored student attitudes, beliefs and uptake of EBM principles.

Aims: The study aimed to identify undergraduate medical student perceptions and attitudes toward EBM, including their current use of EBM as students and perceived use as clinicians.

Methods: Five focus group discussions, as guided by grounded theory, were conducted with 3rd year undergraduate medical students. Criteria-based, volunteer sampling was used to recruit eligible participants. All focus groups were conducted by the same facilitator, with groups homogeneous to setting (metropolitan or rural). All discussions were transcribed verbatim, and analysed independently by the two investigators according to the principles of thematic analysis.

Results: Four central themes were identified, demonstrating a positive attitude toward EBM. Students perceived the need for integrating evidence in their daily practice, both as students and as future clinicians. EBM principles were perceived as relevant to medicine, however were practiced to different extents according to medical specialities. Perceived barriers to EBM implementation include a lack of relevance to a speciality, as expressed by older clinicians, and lack of resources to effectively implement an evidence-based approach to learning and clinical application.

Limitations: Use of criteria-based, volunteer sampling for recruitment may introduce a degree of selection bias.

Conclusions: Undergraduate medical students identify the need of utilising the principles of EBM as students and are optimistic at continuing its application as clinicians. Further research is required to identify methods of overcoming perceived barriers to facilitating and implementing an evidence-based approach to teaching, learning and practicing medicine.

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16. DO JOURNAL CLUBS ENABLE TRANSFER OF EVIDENCE INTO PRACTICE? A REALIST SYNTHESIS

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Background: Journal clubs are an increasingly popular way to promote the uptake of research evidence into practice. Although several reviews have investigated the effectiveness of evidence-based teaching and learning, the benefits of journal clubs have not been established.

Aims: This systematic review aimed to determine whether the journal club is an effective intervention in supporting evidence-based decision making in terms of learner reaction, change in attitudes, change in knowledge, change in skills, change in behaviour, or patient outcomes.

Methods: The search strategy included health professionals from undergraduate academic settings and postgraduate practice settings that participated in journal clubs. Study designs were included if they evaluated learner reaction, knowledge, skills, attitudes, behaviour or patient outcomes. Two reviewers selected abstracts. Data was independently extracted using criterion suggested by Reed et al (2005). Realist synthesis was used to identify the active ingredients and mediating factors that promote and limit the success of journal clubs.

Results: The eighteen included studies reported improvements in reading behaviour (N= 8/12), increased confidence in critical appraisal (N=6/6), improved test scores on critical appraisal (N= 5/7), and increased ability to use findings in clinical practice (N=4/6). The “active ingredients” that support a better learning process include mentoring, providing brief training, and using a structured critical appraisal instrument. Mediating factors include the level of learner, attitudes toward participation, satisfaction with the educational experience, attendance, and faculty support/participation.

Limitations: Self-report measures were used in 16 studies with little triangulation to strengthen the study design. Two studies noted a lack of correlation between self reported change and quantitatively measured improvement. Only three studies used validated tools to assess knowledge and little information on validity of knowledge tests was provided. Most of the studies lack detailed information on the educational intervention.

Conclusions: Results of the synthesis indicate a relationship between change in reading habits, confidence in ability to critically appraise, and objectively assessed critical appraisal skills. Studies need to provide adequate information on the journal club intervention to facilitate comparison of the active ingredients in the learning environment.

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17. A RANDOMIZED CONTROLLED TRIAL OF PATIENT INVOLVEMENT IN EVIDENCE-BASED DECISION-MAKING VERSUS USUAL CARE: THE GOAL-ORIENTED MEDICATION ASSESSMENT PROGRAM (GOMAP)

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Background: Healthcare providers often fail to explicitly involve patients in deciding amongst therapies. Choosing the "right" therapy depends on assessing the evidence for benefits and risks, and finding the option with greatest alignment to patients' goals, circumstances, and preferences.

Aims: To determine whether a patient-collaborative approach to evidence-based decision-making related to drug therapies improves health related quality of life, satisfaction with care, and reduces decisional conflict.

Methods: Consenting patients who presented to an outpatient pharmacy clinic with a prescription for arthritis, perimenopausal issues, or migraines were randomized to the Evidence-Based Patient Choice program (EBPC) or Usual Care (UC). EBPC consisted of 1) patient-pharmacist discussion of the individual's health preferences and treatment goals; 2) collaborative assessment of the patient's medication profile; 3) discussion of evidence for benefits vs risks of available therapeutic options using standardized forms outlining NNT (95%CI); 4) patients choosing preferred therapies to meet the their expressed goals and preferences. Usual care consisted of standard drug profile review and provision of drug information. Outcomes of interest included SF-36, patient satisfaction with care, and patient decisional conflict score at 6 months.

Results: Of 51 patients randomized, 49 remained in the study (EBPC=22;UC=27) at 6 months. SF-36 scores did not differ between groups at 6 months (113±7 vs 114±9; p=0.7). Change in decisional conflict score was significantly improved (-4.8 points vs +0.18 points; p<0.0001), suggesting that patients experienced less angst over drug therapy decisions when they were involved in EBPC. Patient satisfaction scores were significantly greater in the EBPC group (89.0±9.0 vs 82.3±9.2; p=0.01).

Limitations: -

Conclusions: Patient collaborative evidence-based decision making reduces decisional conflict related to drug therapy and improves satisfaction with care at 6 months, but without measurable impact on quality of life.

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18. REAL-LIFE CASE SCENARIOS AS A TOOL TO FACILITATE EBP SKILLS IN PAEDIATRIC EDUCATION

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Background: EBP taught during clinical training can prepare medical students to apply it at the point of care. Clinical teachers increase their own use of EBP when participating with students in EBP activities.

Aims: To demonstrate 2-year experience (2007-2009) with paediatric clerkship innovation, where EBP principles are facilitated by real-life paediatric scenarios under clinical supervision and supportive guidance of library staff, including e-learning.

Methods: Traditional disease-oriented classroom education was supplemented with EBP educational interventions: mandatory orientation workshop on applying EBP skills to patient care; elective interactive training in search skills; completion of patient file + searching for evidence + interpretation of 1 relevant article; presentation of the case; development of e-learning materials. A web-based model case reports elaborated by one of the students under faculty supervision is available for e-learning.

Results: The pilot stage (2007-2008) was evaluated by 106 5th-year students. After inevitable upgrades, the curriculum was officially launched in fall 2008. 131 students completed the EBP paediatric clerkship and gave feedback on: overall level of instruction, amount of study resources, teachers' willingness, impact on students' interest in discipline, perceived values of search skills training and usefulness of web tutorials. In general, the innovative clerkship was accepted positively. The detailed figures will be included in the poster.

Limitations: Among limitations of this project belong: short-time experience (1-year pilot stage + 1-year full implementation); application of EBP educational interventions to one medical specialty so far; students' gaps in edpidemiological thinking; different levels of students' motivation and IT skills.

Conclusions: EBP educational interventions help develop practical and effective approach to patient care. There has been a continuing need to sharpen EBP skills among clinical teachers and other faculty involved in EBP implementation.

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19. HEALTH PROFESSIONALS' PERCEPTIONS OF EVIDENCE-BASED PRACTICE

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Background: The introduction of evidence-based nursing at Azienda Ospedaliero Universitaria di Bologna S. Orsola Malpighi, Italy started in 1999 with different activities, including educational courses for nurses, physiotherapists, midwives, dieticians and speech language therapists. Currently 400 practitioners have attended the EBP courses.
After 10 years from the beginning of the educational activities we wanted to verify how much the EBP education has affected the health personnel practice, not studying their competence but verifying their perceptions of their real application of EBP methods in the everyday practice and the perceptions of the barriers to its implementation.

Aims: The aim of this study was to investigate the health professionals (nurses, physiotherapists, midwives, dieticians and speech language therapists) perceptions, attitudes and knowledge/skills associated with EBP.

Methods: The study had a descriptive, cross-sectional survey design using a psychometrically-validated measure of evidence-based practice (EBPQ, Upton & Upton 2006). The questionnaire was distributed to all practitioners who had attended an EBP course.

Results: We have obtained a response rate of 65.63%. Statistical analyses are currently in progress. We have used descriptive statistics to analyse the distributions of responses on the questionnaire items and subscales. Multivariate analysis of variance (MANOVA) will be used to measure variations in type of education (universitary or continuing medical education), qualification, clinical area, seniority by the three subscale scores.

Limitations: The limitation of the study is that we reach only the 65.63%.

Conclusions: The conclusion of the study will be presented at the 5th International Conference of Evidence-Based Health Care Teachers & Developers.

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20. AN EBP TOOL FOR TEACHING AND ASSESSMENT

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Background: Teaching and learning of evidence-based practice (EBP) should be interactive and related to clinical questions. Furthermore, students need tools to help them organize the learning process, and EBP educators need instruments to assess the competence of individual students, and to evaluate study programs. Existing critical appraisal tools are available. However, we have not identified a generic tool that covers all EBP steps and assess EBP behaviour.

Aims: To develop a generic EBP tool for learning and assessment purposes.

Methods: Characteristics of the tool: The tool is designed for health care students and professionals. It requires participants to document all EBP steps, based on real clinical questions. Thus, the tool allows assessment of self-reported EBP behaviour. Testing of the tool: The tool was tested in different settings; in the curriculum for medical students in their 5th year (n=90); in a post-graduate course for clinical physiotherapy instructors (n=14) and in continuous medical education (CME) for physiotherapists (n=8). Usability and layout of the tool was improved on the basis of feedback from teachers and students, as well as the researchers own experience. Development of a scoring instrument: To assess self-reported EBP behaviour a system for assessment was developed. The Adapted Fresno Test and its grading rubric were used as point of reference.

Results: The tool and scoring instrument will be presented at the conference. Feedback from participants and our informal evaluation suggests that the tool is easy to use, structures the learning process and enhances EBP skills and EBP behaviour. Scoring criteria were negotiated between teachers until consensus was reached. Using a standarised scoring instrument may give more accurate scores.

Limitations: -

Conclusions: The EBP tool shows promise for students' learning and teachers' assessment. However, both the tool and the scoring instrument need to be further tested and evaluated for feasibility, reliability and validity.

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21. THE ADVENT OF SYSTEMATIC REVIEWS IN A CRITICAL APPRAISAL WORLD: THE GROUP FOR APPRAISAL OF LITERATURE AND IMPLEMENTATION OF LEVELS OF EVIDENCE IN THE HOSPITALS (G.A.L.I.L.E.HO)

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Background: All truths are easy to understand once they are discovered, the point is to discover them. Galileo Galilei (1564-1642).
Systematic reviews (SR) appeared as a earthquake in the scene of medical literature. Actually, SR are an essential part in health care decision making because only few scientists have sufficient time, knowledge and interest to read carefully and to critically appraise (CA) scientific papers. Most scientists will therefore rely on SRs. This confidence inherits the considerable risk of a broad acceptance of potentially poor scientific information.

Aims: To exclude the risk of a prone acceptance of SR we appraised a Cochrane SR and 2 key papers of this SR, powdering the methodological details relevant for synthesis, as happen in a hourglass.

Methods: Last May 2009, 24 participants to a course aimed to disseminate secondary publications in a paediatric hospital, first CA a Cochrane SR on intervention for promoting booster seat use in 4 to 8 year olds traveling in motor vehicles, using the questionnaire delivered by the CASP. Second, 2 key papers of this SR were identified and distributed for CA by the same participants of the course. Third, a CA of the review and of the key papers was completed by using the CASP questionnaire.

Results: Following the first CA of the review with the CASP questionnaire all of the participants agreed that eligibility criteria for inclusion of the studies were subjected to abstracting bias and numerous flaws were detected and described in the review and in the 2 key papers, determining weakness for generalisability.

Limitations: -

Conclusions: G.A.L.I.L.E.HO. group is proposed as a broadly trained multidisciplinary group digesting details in a wide integrative thinking. This example demonstrates that it is absolutely necessary to do a systematic appraisal of the quality before scientific information can be used for a SR. As a SR is usually well received and earns a high degree of freedom, the CA of this information will be the more important.

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22. EXPOSING THE P VALUE FALLACY TO YOUNG RESIDENTS

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Background: The fallacy underlying the widespread use of the p value as a tool for inference in critical appraisal is well known, still little is apparently done in the education system to correct it.

Aims: -

Methods: We used a questionnaire to ask 16 residents in respiratory diseases (age range 26-38 yrs, average 30) about their use and knowledge of the P value. We then devised a simple intervention to present the real meaning of the P value and to introduce the Bayes Factor (Goodman, Ann Intern Med. 1999, 130:995 and 1005), using a simple worked example in which a P value of 0.05 was compared to a 5% probability that nobody is at home (the null hypothesis) when finding that the light is on, and trying to compute what would actually be the probability is that somebody is in (our hypothesis).

Results: All the residents reported to read at least one medical article per week (average 4), and to be regularly contacted by drug reps (average 3 per week). The P value was considered the more important index of the validity of a result by 75% and 93% reported that drug reps used it as an index of the importance of the results of clinical trials. All except 3 thought to have a sufficient knowledge about the P value. However, only 2 residents correctly identified the P as the probability of obtaining the observed result or higher under the null hypothesis, and all ot them wrongly believed that it implied a 95% probability that the hypothesis was true and/or a 5% probability that it was false.

After the course all except two identified the meaning of the P value, and all except one declared that they will use the BF in the future.

Limitations: -

Conclusions: The P value is frequently used by drug reps to promote the results of drug trials and by young residents for interpreting them. A simple, short intervention in a group with poor understanding of the P value is able to dramatically improve knowledge. However, such interventions are unlikely to have a significant impact, unless major changes occur in the medical community.

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23. SCIENTIFICALLY INFORMED MEDICAL PRACTICE AND LEARNING (SIMPLE)

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Background: Evidence-based practice (EBP) seeks a bridge between research and clinical decisions to enhance individualized care, and implies a medical practice model.

Aims: We seek integration EBP information skills within a larger framework centered on the patient-practitioner relationship.

Methods: SIMPLE includes two components a table of comprehensive and non-overlapping definitions of clinical action, called PACT, and a Road Map to evidence literacy. PACT stands for Problems and partnerships, Actions, Choices and Target objectives and defines therapy, diagnosis, prognosis, and harm, as actions generated through shared deliberation and interpretation.

Results: The PACT definitions provide a bridge between two domains: shared "problematization" of patient needs, and acquisition and assessment of relevant scientific knowledge by evidence-literate practitioners. The Road Map comprehensively elaborates the ask, acquire, appraise and apply skills, all governed by the unique characteristics of the action domains. It differs from previous presentations of EBP by representing the full scope of questions, study designs and sources reflected in today's world of clinical research, and it provides innovative tools of presentation and elaboration rendering this expanded scope accessible to clinicians. SIMPLE conceptualizes application of clinical evidence to practice on two levels. The first pervades the evidence-literacy cycle. The second unfolds within the framework of shared decision making. Integration of scientific knowledge with mutually interpreted patient priorities and values, and with narrative evidence, takes place within the second level of apply.

Limitations: Instructional approaches are still in the process of being developed.

Conclusions: Preliminary use of the SIMPLE model and its components at international workshops in EBP suggests that it may help to orient learners to the scope of skills required for evidence-literacy and suggests instructional approaches to teaching those skills.

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24. MAKING ASSESSMENTS "IN THE DARK": EVIDENCE-BASED TEACHING STRATEGIES TO ASSIST NURSES MAKING TRIAGE DECISIONS VIA THE TELEPHONE

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Background: Telephone triage and advice services are unlike traditional forms of nursing in that assessments are conducted via the telephone without visual cues. Despite the growth of these services, little is known about the decision-making process telenurses use and what factors facilitate or impede conducting high-quality assessments via the telephone.

Aims: We explore nurses' experiences with telephone triage and advice in order to (a) reveal the barriers and facilitators to conducting assessments, (b) develop a theoretical model that explains the decision-making process telenurses use, and (c) describe how this model can be translated into evidence-based teaching strategies to assist nurses working in telephone triage and advice services.

Methods: We conducted a systematic review and meta-ethnography synthesis of qualitative studies that explored nurses' experiences with telephone triage and advice. An electronic search of all published research studies on telephone triage and advice in primary care were sought from interdisciplinary research databases (1980 to 2008).

Results: Synthesis of the 16 studies revealed five factors that created barriers or facilitators to conducting assessments via the telephone: gaining and maintaining skills, autonomy, physical work environment, holistic assessment, and stress and pressure. A three-stage theoretical model that describes the decision-making process was developed. Importantly, performing high-quality assessments appear to depend upon the telenurses ability to "build a picture" of the patient and their presenting health issue.

Limitations: Limitations include heterogeneity of studies both in the context (e.g., year data collected) and methodology (e.g., data collection strategy). Also, this review used primarily UK data, thus the results may not generalize to other parts of the world.

Conclusions: Although telenurses experienced a range of common concerns and issues which either impede or facilitate the decision-making process, building a picture of the patient was key to making assessments using the telephone. Evidence-based teaching strategies for developing this picture-building skill, as well as ways to facilitate nurses' transition from traditional nursing to telephone triage and advice nursing, are discussed.

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25. VALIDATION OF A MODIFIED FRESNO TEST TO ASSESS EVIDENCE-BASED PRACTICE SKILLS

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Background: Health care educators need valid and reliable tools to assess learners' evidence-based practice (EBP) skills. The commonly used Fresno Test does not assess use of non-research sources of evidence and has only been validated among general practitioners and occupational therapists.

Aims: To test the reliability and validity of a modified Fresno Test.

Methods: The Fresno Test was modified to include content consistent with physiotherapist (PT) practice and two questions were added to assess integration of patient preferences and clinical expertise with research evidence. Five experts reviewed the test for content validity. A cross-sectional cohort (n=108), representing 3 EBP skill levels (novice PT students, trained PT students, PT Faculty), completed the test. Two blinded raters, not involved in test development, independently scored each test and re-scored 22 tests. Discriminative validity was determined by analysis of variance for linear trends. Inter and intra-rater reliability were calculated using intraclass correlation coefficient [ICC(2,1)]. Internal consistency was calculated using Cronbach's α. Item discrimination index and difficulty were calculated.

Results: There was a statistically significant linear trend for sequentially improved scores between groups ($p<0.0001$). Total score reliability was excellent [intra-rater (ICC=0.94 and 0.96); inter-rater (ICC=0.90)]. Internal consistency was acceptable (Chronbach's $\alpha = 0.77$). New items had acceptable discrimination indices (0.25 and 0.61) and moderate reliability [intra-rater range (ICC=0.29 - 0.66); inter-rater (ICC=0.41, 0.47)]. Mean ± SD time to complete the test was 37 ± 12 minutes.

Limitations: Cross-sectional design prevented analysis of sensitivity to change in EBP skills over time.

Conclusions: The modified Fresno Test provides a comprehensive assessment of skills described in the EBP model and has excellent discriminative validity and reliability among physiotherapists. Educators are encouraged to use this tool to objectively measure learners' EBP skills.

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26. AN E-LEARNING TOOL ON THERAPEUTICS AND MEDICINES MANAGEMENT - NPCI

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Background: NPCi was developed as an eLearning solution to provide access to NPC education materials other than through its network of accredited trainers. This has been extremely well received and demonstrates the potential of eLearning tools that embody sound educational theory and approaches.

Aims: Using the principles of "Information Mastery", NPCi was developed as both a foraging tool (alerts to new, relevant and valid pieces of evidence) and a "hot-synching" tool (to quickly update the user's understanding of the conditions they commonly see). Access was made freely available on the internet (no registration needed) to provide learners with "bite-sized chunks" of around 20mins/session to fit with the CPD habits of busy clinicians.

Methods: As a virtual building, each floor was designated a therapeutic topic with each room a different resource - recorded presentation; case study; quiz; key slides and notes; data-focused commentary; patient decision aid (PDA); and a library containing NPC bulletins. Access to a discussion room and noticeboard containing the latest news and "MeReC Blogs" was made via the reception. NPCi design and content was informed via feedback from a usergroup.

Results: By April 2009, NPCi had 48 therapeutics floors covering the topics commonly seen in UK general practice. There are over a million hits and over 20,000 unique visits per month. User feedback has been very positive, particularly for the PDAs and the "MeReC blogs" (consisting of a brief review of a clinical paper or guidance set in the context of the rest of the evidence and produced 2-3 times a week).

Limitations: Future developments - user feedback suggests a personal development log with the ability to "breadcrumb trail" previous access would be useful. Evaluation of the utility of the PDAs using a focus group of 50 GPs is underway.

Conclusions: Freely available on the internet, NPCi has provided access to a wider range of materials to new audiences. The virtual building design providing education in bite-sized chunks has been very well received.

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27. MOTIVATING FACTORS FOR EVIDENCE-BASED PRACTICE IN GP-TRAINEES AND THEIR TRAINERS

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Background: Multiple studies have been performed to assess the barriers of residents and their trainers towards evidence-based practice (EBP). Removing barriers will however not always lead to an improvement in practice, since also motivational factors are required to change practice habits.

Aims: We assessed the motivational factors for ebp in GP-trainees and their trainers.

Methods: Ten focusgroups among 6-10 GP-trainees, their formal, and clinical trainers were conducted at 2 universities. Participants were selected using purposive sampling. At the start of the session participants received a definition of ebp (the integration of best evidence with preferences and experiences of the patient and physician), the statement that ebp can be considered to be the cornerstone of modern practice, and a question on the participants' experience with ebp. After this, questions regarding current practice, motivating factors for ebp and needs followed. All sessions were audiotaped, literally transcribed and all statements were categorized by 2 researches independently.

Results: The used definition of ebp was unknown or disputed by many of the participants. The attitude towards ebp varied among participants with a clear difference between older clinical trainers, focusing on personal experience, and younger trainers and trainees aiming to focus on current best evidence. Motivating factors were subdivided into three main categories: training in ebp knowledge and skills (formal training with questions from clinical practice and clear goals, positive role-models, and journal clubs), practice (when to use ebp), and conditions (rapidly accessible and reliable resources). Besides motivational factors also barriers, attitudes, current practice, resources and learning needs were identified.

Limitations: The organisation of GP-care and training might differ from other countries limiting generalisation.

Conclusions: Several motivational factors for ebp can be identified among GP-trainees and their trainers, which could be used to optimize EBP.

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28. VALIDATION OF THE DUTCH TRANSLATION OF THE BERLIN QUESTIONNAIRE ON EBM KNOWLEDGE AND SKILLS

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Background: There is no existing validated Dutch instrument to measure EBM knowledge and skills.

Aims: Determining validity, discrimination and responsiveness of the Dutch Berlin Questionnaire. [Fritsche et al, 2002]

Methods: The 2 versions of the Berlin Questionnaire were translated into Dutch using forward-backward translation. Questionnaires were distributed among 37 participants and 7 tutors of Cochrane EBM courses and 140 first year general practice trainees.
Per questionnaire the internal consistency, inter-item correlation and item-total was calculated. Difficulty of the questions was determined by the range of correct answers for individual questions and the test as a whole.
Responsiveness to change (increased knowledge) was assessed by comparing outcomes before and after the course. Known-group comparison was done to assess discrimination.

Results: Questionnaire A (n = 73) has 1 question with 66/73=90.4% correct answers. Mean total score is 7.6/15 (SD=2.5).
Questionnaire B (n = 67) has 2 questions with <10% correct answers (6/67=9% and 3/67= 4.5%) and 1 question with 61/67=91% correct answers. Mean total score is 5.9/15 (SD=2.4).
No trainees scored highest or lowest possible total score on either A or B. Total scores are normally distributed and show no significant skewness. Scores increase by 1.5 points after the course, irrespective of the sequence of administration. Course participants score lower on both questionnaires than experts, namely 8.9±2.3 on A and 7.5±2.4 on B versus 12±1.0 on A and 12.4±1.4 on B.

Limitations: Only 3/7 tutors filled in both questionnaires. Scores on questionnaire A seem consistently higher than scores on B.

Conclusions: Current translation of the questionnaire is valid in measuring EBM knowledge and skills. Attention should be paid when comparing the outcomes of both questionnaires.

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Note: all abstracts have been printed as submitted by authors, without any change

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53. **Zwolsman Sandra Emily (NL)**. Does learning style affect the practice of evidence-based medicine in GP trainees? A survey study

29. EVALUATING THE USE OF EVIDENCE-BASED METHODS IN DEVELOPING GUIDELINES AMONG MEDICAL PROFESSIONAL SOCIETIES IN KOREA

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Background: As guidelines are increasingly used in Korea, there is growing concern on whether guidelines are developed by evidence-based methods.

Aims: The aims of this study were to systematically examine guidelines published by medical professional societies and to determine to what degree they are based on scientific evidence and the use methodological standards.

Methods: Guidelines produced by medical professional societies in Korea published between 1998 and 2006 were identified through database search and questionnaires. Their qualities in terms of their strategies in primary evidence identification, literature selection, evidence evaluation, data synthesis, and linkage of evidence to recommendation were assessed. A total of 54 guidelines were assessed by four independent appraisers using explicit criteria.

Results: Only small numbers of guidelines met the established criteria for assessing the use of evidence-based methods. 29.6% of the guidelines reported information on searching methods for published studies. 16.7% gave information on the evaluation of evidence or data synthesis, 9.3% reported explicit methods for deciding the strength of the recommendations. There was improvement over time in adherence to standards on identification and summary of evidence, increasing from 18.6% for guidelines developed before 2001 to 33.0% for those developed after 2001.

Limitations: We did not include all of the guidelines in the nation.

Conclusions: Few guidelines developed by professional societies in Korea are developed by evidence-based methods. Professional organizations that aim to develop guidelines should adopt evidence-based methods including identification, evaluation and synthesis of scientific evidence.

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30. 7-STEP METHOD FOR PROVIDING CONCLUSIONS BASED ON BEST AVAILABLE EVIDENCE

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Background: The phrase evidence-based is commonly used and misused. Product promotions frequently tout an evidence-based label without defining what it means. A systematic method for developing evidence-based content can increase validity, relevance and transparency for information producers and information consumers.

Aims: To define a systematic method for providing conclusions based on best current evidence. To describe real-world application of 7-step evidence-based methodology for a point-of-care clinical reference.

Methods: In 2005, four leaders in evidence-based practice from three continents came to consensus on 7 steps required in the development of a clinical reference for it to be considered evidence-based. These 7 steps were adopted as core methodology for DynaMed, an evidence-based point-of-care reference.

Results: Systematic literature surveillance for DynaMed updating in 2008 included evaluation of 43,787 articles and inclusion of 14,752 (33.7%). Experience with this process provides insights into the 7 steps of (1) Systematic evidence identification, (2) Systematic evidence selection, (3) systematic evidence evaluation (critical appraisal), (4) objective reporting of the relevant findings and quality of the evidence, (5) evidence synthesis, (6) derivation of overall conclusions from the evidence synthesis, and (7) change of the conclusions when new evidence alters the best available evidence.

Limitations: Maintainng high volume, precision and accuracy while processing evidence for real-time use requires a balance of clinical judgment and explicit protocols. Determining specific phrases for unambiguous interpretation of conclusions is often challenging.

Conclusions: This seven-step process has improved the efficiency, transparency and usability of clinical reference content. We propose these seven steps as useful for other evidence-based product developers, as well as for consumers to use as a guide in evaluation of the methodology of information products.

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31. OPTIMIZING STRATEGIES FOR KEEPING UP WITH THE LITERATURE

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Background: Keeping up with medical literature can be overwhelming. In 2004 we reported on the effort required to stay current with the literature relevant to primary care. We developed a list of 341 active journals to be monitored and estimated it would take clinicians trained in epidemiology 627.5 hours per month to evaluate the 7,287 articles published monthly in this journal set. We subsequently expanded our focus from primary care to all of clinical medicine. A sufficient number of articles have now been processed that we can identify the most useful sources for informing clinical medicine.

Aims: To report the number of unique journals cited in a ten year period, to sow how different thresholds for journals monitored would affect capture rates of best available evidence, to discuss implications for optimizing efforts for systematic literature surveillance.

Methods: DynaMed uses a systematic, transparent methodology for literature surveillance to update a point-of-care reference. We evaluated every citation in DynaMed by year and journal.

Results: As of June 20, 2009, there were 120,014 citations in DynaMed from 3,254 unique journal sources. When limiting citations to 2000-2009, the number becomes 97,880 from 2,709 unique journals. The top 100 journals provide 81.6% of the best available evidence. The top 350 and 500 journals would provide 91.6% and 93.6%, respectively. The presentation will use updated 2009 data.

Limitations: Articles from journals monitored cover-to-cover would be expected to be overrepresented compared to articles from journals identified through journal review services or MEDLINE searching.

Conclusions: Cutting off journal surveillance to a defined list of journals would miss a substantial amount of the best available evidence. Applying a range of search parameters (cover-to-cover to highly specific search strings) based on journal yield may optimize surveillance effort.

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32. EFFECTIVE PATIENT EDUCATION PROGRAMS – EVIDENCE FROM THE LITERATURE, EXPERT AND PATIENT CONSULTATIONS

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Background: Effective patient education programs are crucial in the management of chronic illness, as they greatly assist in promoting patients' self-management. There are numerous studies regarding the effectiveness of educational programs. A systematic and broadly accepted overview of what an effective program entails is currently lacking.

Aims: The aim is to define the criteria of what effective patient education encompasses.

Methods: The criteria were developed through a literature review which included methodologically sound reviews. A two round Delphi study utilizing nursing experts and semi-structured interviews with chronically ill patients were also completed.

Results: Important criteria revealed from the literature review and from the expert consultations were: to involve patients and family members in program development and implementation, to use a variety of teaching and learning methods, and to utilize action plans. Experts emphasised the importance of adequate training of the instructor in patient education. From patients' perspective, educational programs were effective if they addressed physical, psychological and social changes due to the illness. Also important were treatment options and coping strategies, as well as the degree of the patients' autonomy in dealing with psychosocial consequences of the illness.

Limitations: This study provides criteria for effective patient education programs in variety of settings for a various chronic illnesses. In order to determine what the elements of effective patient education are for specific patient groups, the criteria need to be further differentiated.

Conclusions: This study summarizes the best available evidence on effective patient education and enriches it with nursing experts' and patients' knowledge and experience. Results from these tree sources correspond and complement one another. The product of this study is a broadly supportive guideline that can assist health care practitioners in the development and implementation of effective patient education programs.

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33. HOW TO CRITICALLY APPRAISE QUESTIONNAIRE/ASSESSMENT VALIDATION STUDIES?

Conca A

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Background: For patient assessment and data collection in the clinical setting assessment tools and questionnaires are often used.
To interpret the data properly we rely on these measures to be reliable and valid.
It is not always clear how good questionnaires represent the indicated outcomes or assessments the intended evaluation. A systematic approach can be helpful to judge the degree of validity and reliability of measurements used to measure outcomes or assess patients.

Aims: In order to facilitate the critical appraisal of questionnaire/assessment validity studies a tool will be proposed for discussion.

Methods: A literature search was performed and theoretical consideration were used to accumulate questions for the questionnaire assessment.

Results: Validity theory and proposed questions from the literature will be synthesized into a critical appraisal tool.

Limitations: There are different theoretical views on validity and reliability. The standards for educational and psychological testing of the American Educational Research Association, the American Psychological Association and the National Council on Measurement in Education were used as theoretical background. This limits the perspective on this corresponding conceptualization.

Conclusions: A tool for the critical appraisal of the questionnaire development and validation helps to interpret the validity and reliability of outcome measurement.
The considerations could also help to review assessment tools for clinical practice and make an informed choice for the implementation in routine care.

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34. TOOL KIT FOR GROUP COMPLETION OF AMERICAN BOARD OF INTERNAL MEDICINE (ABIM), MAINTENANCE OF CERTIFICATION (MOC) MODULE

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Background: Since 1990, physicians certified by the ABIM in Internal medicine and other subspecialties have to recertify every 10 years in their specialties. The process involves is called Maintenance of Certification (MOC) and several steps including completion of several knowledge content modules. These are time consuming processes often requiring lengthy review of literature. Often these modules are completed during weekends or not at all. Till date only few medical centers in US have been able to conduct group MOC sessions, while this activity is mostly restricted to Annual conferences of National Medical Societies.

Aims: 1) Identify institutional resources necessary to conduct MOC, CME session;
2) Creation of Toolkit for group completion of American Board of Internal Medicine (ABIM), Maintenance of Certification (MOC) module.

Methods: Principles of adult learning and physican learning behavior was utilised to create a toolkit for MOC completion.
Brainstorming with educational experts, administrators and information technology to harness existing resources for continuous professional development.

Results: An eight step process was created for each MOC process:
1) Identify appropriate MOC module that is relevant to most faculty within a specialty
2) Contacting ABIM to use specific module
3) Apply for institutional CME Category 1 credit
4) Identify stellar faculty coordinators who are adept in literature search and critical appraisal, have expertise in multi-media presentations
5) Identify evidence-based resources (PubMed, UpToDate, etc.), discussion with experts
6) identify institutional resources (internal website, teaching slides, laptops)
7) Create atmosphere of adult learning
8) Create survey instrument to assess effectiveness of session.

Limitations: Telecast sessions can vary in quality depending on the quality of orginal presentation.

Conclusions: Group completion of MOC using existing institutional resources can enhance life long learning and is economically feasible.

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35. GROUP COMPLETION OF AMERICAN BOARD OF INTERNAL MEDICINE, MAINTENANCE OF CERTIFICATION MODULES: AN INSTITUTIONAL EXPERIENCE

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Background: Maintenance of Certification (MOC) in medicine requires completion of several knowledge content modules (Part IV requirement). These require time-consuming literature review and physicians often complete these modules by attending special MOC sessions held by National Medical Societies. We proposed that existing institutional educational resources could be utilised to complete these MOC modules, that could enhance the quality of these sessions and be cost effective. Till date only few medical centers in US have conducted group MOC sessions for their physicians.

Aims: To determine whether group completion of MOC modules enhance physician satisfaction. To determine the ease of completion of MOC modules.

Methods: We developed a curriculum using principles of adult learning theory to complete MOC modules as a group in Mayo Clinic, Rochester. 5 of these sessions were also telecast live to Mayo Clinic Scottsdale, in Arizona. Audience response system was used to document physician response and interactive discussion encouraged throughout the session. Post session surveys were gathered to assess effectiveness and satisfaction.

Results: Since 2006 we have held 7 MOC sessions for Mayo faculty. 443 physicians attended the internal courses and 9 modules (8 Internal Medicine, 1 Cardiology) has been completed as a group. Multiple MOC modules (2) were covered in 2 sessions. Range of attendees has been 21-82. Feedback from participating faculty and attendees has been very positive. Participants ranked these sessions as among the best they have attended with strong educational appeal and knowledge retention using a 5 point Likert's scale (mean=4.84). Random posttest review of 5 questions covered in the module revealed strong retention of information. Several sessions have been planned for the 2009-2010 sessions.

Limitations: Slide quality of telecast sessions were inconsistent.

Conclusions: Existing institutional resources can be utilised successfully to complete MOC modules and enhance staff satisfaction.

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36. HOW OFTEN DOES SEARCHING IMPROVE OR MISLEAD US? A SYSTEMATIC REVIEW

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Background: We commonly assume that literatute searching will help in making better clinical decisions. However poor searching systems or poor skills may also identify flawed information that may lead to worse decisions.

Aims: We aimed to systematically review studies that have assessed the impact of searching electronic resources on the knowledge of clinicians. To be included studies needed to assess clinicians or students on questions prior to searching, and re-assessed after searching.

Methods: We searched MEDLINE for relevant studies, and then undertook a forward citation search on the relevant studies found. To be included studies needed to test clinicians before and after a search, and compare these to an acceptable "gold standard" answer.

Results: Four primary studies (Table) were found to be eligible: 2 studies in students and two with generalist clinicians.

	Right-to-Right	Wrong-to-Right	Right-to-Wrong	Wrong-to-Wrong
Quick Clinical (GPs)	21%	32%	7%	40%
McKibbon (GP or IM)	28%	13%	11%	48%
Hersh-a (Med students)	20%	31%	12%	36%
Hersh-b (Nursing)	18%	17%	14%	52%

The first two columns (1 and 2) show that electronic resources confirmed or corrected pre-searching knowledge. However, the last columns (3 and 4) show that searching may be misleading by prompting clinicians to replace a correct with an incorrect answer (11% average), or confirm an incorrect answer (44% average). The overall rates in the la.

Limitations: The limited range of questions and searchers limit the generalisability of these results.

Conclusions: More than 50% of clinicians who persisted with an incorrect answer after searching reported that they were confident or very confident in the evidence found. Clinicians who did not know scenario answers before searching placed equal confidence in evidence that led them to a correct or incorrect answer. More research is needed on ways to improve both the information systems and searchers' searching skills.

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37. CLINICAL PRACTICE DEVELOPMENT AND RESEARCH IN DAILY PRACTICE AT THE UNIVERSITY HOSPITAL BERN

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Background: In 2005, the Head Office of Nursing of the University Hospital Bern started a 5-year project to implement evidence-based practice (EBP). A continuing education program and a toolkit for EBP was offered to nurses and allied health professionals; the infrastructure was optimized; a model EBP project was implemented in one clinic; and support in all steps of the EBP process was available. Currently, the project is in its final stage, with an evaluation and the designing of a framework to embed the further promotion of EBP in normal everyday practice.

Aims: This presentation focuses on the development of this framework, defining the substance and the structures needed to promote EBP in normal everyday practice.

Methods: Based on preliminary results, the project group provided a draft of the framework. A consensus meeting with clinical nurse specialists, a key group regarding EBP, was then organized to discuss relevant issues concerning EBP in daily practice. Results of this discussion were integrated in the developing framework.

Results: The clinical nurse specialists identified four pivotal points for promoting EBP in daily practice:

- The implementation of EBP takes place at the bedside and is therefore a central matter for the units in the hospital. Clinical leadership is a pre-condition.
- The roles of the different professionals within the process must be defined. The implementation of EBP influences decisions about skill and grade mix.
- The units need a contact for support in all steps of the EBP process. In addition, it should be possible to delegate steps of the process, depending on the available resources.
- A central network is necessary, where pooled knowledge is easily accessible.

Limitations: -

Conclusions: In every project, the transfer to everyday practice is a crucial stage. By integrating evaluation data as well as needs and expectations of key persons for the implementation of EBP, we hope to successfully ensure the ongoing implementation of EBP in daily practice.

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38. THE EVOLUTION OF EVIDENCE HIERARCHIES: WHAT CAN BRADFORD HILL'S "GUIDELINES FOR CAUSATION" CONTRIBUTE?

Howick J

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Background: Randomized trials are highly desirable as sources of evidence. Yet RCTs may be insufficient when they are underpowered, biased, or if they give results that contradict other (RCT or non-RCT) evidence. Conversely, non-randomized evidence is sometimes sufficient to establish the effectiveness of an intervention. Hierarchies of evidence that place RCTs at the top are not well suited to gauging the strength of evidence in cases where RCTs are either unnecessary or insufficient. In this paper we investigate whether Bradford Hills guidelines for causation can contribute to the evolution and development of current hierarchies of evidence. After revising the guidelines (we found that they had an inherent structure and that they could be simplified), we apply them to a series of cases where RCTs are unsuitable.

Aims: Analyze whether the Bradford Hill "Guidelines for Causation" can inform revisions of the EBM hierarchies of evidence.

Methods: (n/a: it is an opinion piece).

Results: The EBM hierarchy of evidence should take the Revised Bradford Hill Guidelines into account as it evolves.

Limitations: The specific evidential role of "pathophysiological rationale" and "clinical judgment" should be made more formal.

Conclusions: The original Bradford Hill Guidelines can be simplified (some of the guidelines can be omitted while others can be combined or modified) and organized into three categories: direct, mechanistic and parallel evidence. In their revised form they suggest two ways that can inform revisions to current hierarchies of evidence. Firstly, it is more important for "direct" evidence to demonstrate that the effect size is greater than the combined influence of plausible confounders, than it is for the study to be experimental. This view is compatible with the spirit of EBM hierarchies: the motivation for placing RCTs at the pinnacle of evidence hierarchies is that they generally rule out more confounders than other study types. If an observational study reveals an effect large enough to swamp the effects of any additional confounding then other study designs must be regarded as on a par with RCTs. Likewise, RCTs must demonstrate effect sizes sufficiently large to rule out the combined effect of any inevitable bias. Secondly, the revised guidelines illustrate how different types of evidence can complement one another (Figure 3). Where as a trial is often open to the objection that it is an anomaly or not generalizable, if we supplement the evidence from the trial with strong mechanistic and parallel evidence, it becomes increasingly difficult to question the results of the study and its applicability to a widertarget population. A similar idea supports the useof systematic reviews, teleoanalysis and the tenet of replicability in scientific method. These features of the guidelines make them particularly helpful where RCTs are unfeasible.

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39. TRAINING THE TRAINERS: AN APPROACH TO INCREASING THE USE OF EVIDENCE IN SCHOOL-BASED PT/OT SERVICES

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Background: Physical (PT) & Occupational Therapists (OT) in public schools have unique challenges. They work in classes, hallways, cafeterias & gymnasiums, to address students' individual educational goals. Many are isolated from other clinicians or have minimal time for professional dialogue during school hours. Use of online resources is limited by computer access in schools & caseload demands. Thus, evidence use is dependent on individual motivation, comfort with literature searching and critiquing skills, and personal access to evidence databases.

Aims: Education was provided to a large, urban school district employing >1000 PTs & OTs, to increase knowledge of EBP & facilitate use of evidence for clinical decisions.This paper describes the educational process and outcomes.

Methods: Phase 1: A 6-hour introductory lecture to >400 PTs & OTs covered: the 5 EBP steps; strong/weak examples in each step for discussion; locating literature, systematic reviews, guidelines, CAT banks & other forms of evidence;grading levels of evidence & recommendations; organizing evidence literature grids; strategies for clinicians to use EBP in practice. Phase 2: Clinicians were invited to a 3-day, advanced course to create literature grids using EBP steps on a PICO/PIO question of their choice and to become trainers for other PT/OTs in the district; 5 volunteered. Literature grid dissemination is through the school system's PT/OT web page.

Results: Outcome measures: 1) improved confidence and 2) skill of the trainers to explain the 5 steps, to create PICO/PIO questions, use resources to find evidence & dissect it into literature grids; ability of trainers to rate evidence levels & draw conclusions to answer a question. 3) Number of articles contributed by PT/OTs to posted literature grids created by the trainers.

Limitations: Data under collection; to be reported at meeting.

Conclusions: PT/OT introductory lectures increased knowledge of the 5 EBP steps & evidence formats. Barriers to EBP include lack of time & relevant evidence.

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40. HOW DO JOURNAL CLUBS GET EVIDENCE INTO PRACTICE?

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Background: Although journal clubs are a popular approach for considering research evidence, little is known about the active ingredients that promote the transfer of this evidence into clinical practice. Prior research has assumed that the effectiveness of journal clubs is dependent upon mentoring, training in critical appraisal, clinical epidemiology and biostatistics, and the use of structured appraisal checklists. Qualitative research needs to be conducted to identify the active "ingredients" in journal clubs that help health professionals to translate evidence into practice.

Aims: We conducted a qualitative study In order to explore the views and experiences of health professionals in general practice (GP) journal clubs. Data analysis focused on investigating the relationship between participation, attitudes toward the club, and changes that occurred in clinical practice as a result of participation.

Methods: Five general practices were recruited to the journal club project and offered a short course in evidence-based practice as well as support from an EB practitioner to facilitate their first journal club session. Semi-structured telephone interviews were conducted with 36 of the 46 participants. Two researchers (JH & EM) independently identified preliminary themes. A framework for thematic analysis was developed with a third member of the research team (KK).

Results: Participants identified five key ingredients for ensuring active participation in a journal club and use of evidence in practice: inclusive process for topic selection, identifying topics which were considered to be relevant, skilled facilitation to promote useful discussion, development of a supportive learning environment, and ability to draw upon the knowledge and skills of different club members both to enhance understanding of the research and to discuss its translation into practice.

Limitations: Only 35 of the 46 participants could be contacted for interview, so results may not have reflected the views of all participants.

Conclusions: This qualitative study identified some important factors in the learning environment that may impact on the ability to transfer evidence to practice. Prior research has not considered these factors. Future studies need to be consider the learning context when designing the intervention and assessing impact.

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41. ASSESSING ABILITY TO TRANSFER ACADEMIC EVIDENCE-BASED KNOWLEDGE TO THE WORKPLACE

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Background: Most evidence-based practice courses assess increase in knowledge or skills immediately after learners have completed the course. Little is known about the relationship between achievement levels during EBP courses and the ability to transfer academic knowledge to the workplace.

Aims: The overall aim of the 3-year evaluation is to assess ability of health and social care professionals on an EBP Masters programme to use evidence-based knowledge in their workplaces. The aim for the first stage of the project is to assess change in attitudes toward EBP and change in self reported implementation during the first year of the course.

Methods: The EB Belifes Scale and the EB Implementation Scale, which have been validated in a US population of nurses (Melnyk and Fineout-Overholt, 2007), were administered in the first two semesters of the Bergen Masters in Evidence Based Practice to Norwegian health care professionals who have English as a second language. The EB Beliefs Scale assesses attitudes and confidence in knowledge and skills, while the EB Implementation Scale is a self-reported measure of engagement in relevant EB behaviours usch as searching, appraisal, and use of evidence. A cognitive interviewing method called “Read and Think Aloud” was used with focus groups to assess validity of the scales.

Results: Results from the cognitive interviewing are being used to assess validity of the scales in a population with English as a second language. Descriptive statistics are being used to map changes in attitudes and confidence over a 9 month period. Results from the EB Beliefs Scale are being compared to self-reported EB Implementation to determine whether there is a correlation between positive attitudes, increased confidence, and perceived ability to implement EBP in the workplace.

Limitations: -

Conclusions: Preliminary analysis indicates that several of the questions on the scales may be interpreted differently by populations with English as a second language. Issues for analysis of the data will be discussed.

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42. PILOT STUDY TO TEST THE USE OF A MOBILE DEVICE IN THE CLINICAL SETTING TO ACCESS EVIDENCE-BASED PRACTICE RESOURCES*

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Background: The importance of integrating evidence-based practice (EBP) learning and teaching into the clinical setting has been recognised. However, there has been little published work on the impact of using mobile devices within undergraduate healthcare education to access EBP resources in the clinical setting.

Aims: To test the feasibility and acceptability of the use of a mobile device to access EBP resources in the clinical setting.

Methods: A pretest-posttest design with a convenience sample of 2nd and 3rd year undergraduate healthcare students on clinical placement. Questionnaires were employed to measure 1) feasibility and acceptability of the mobile device, and 2) perceptions of the development of EBP knowledge and skills. A web page was developed to support the process and to provide links to key EBP resources.

Results: 19 undergraduate healthcare students completed the study. The main findings indicated a low level of utilisation of the mobile device in the clinical setting, primarily due to practical difficulties associated with accessing the internet and the small screen size. Consequently the majority of students used personal computers to access EBP resources. Through the process, students reported improvements in their knowledge and skills in relation to EBP and the appraisal of clinical guidelines.

Limitations: Sample size was limited by availability of mobile device; attrition rate.

Conclusions: Despite limited use of the mobile device in the clinical setting, students were able to complete the EBP process and reported improvements in their knowledge and skills in relation to EBP and the appraisal of clinical guidelines. Findings suggest that for undergraduate healthcare students, rapid access to online evidence in the clinical environment is not essential for the integration of the EBP process into practice or for the development of EBP knowledge and skills, provided there is easy access to such evidence at some point during the placement period.

** Morris J. & Maynard V., Pilot Study to Test the Use of a Mobile Device in the Clinical Setting to Access Evidence Based Practice Resources. Worldviews on Evidence-Based Nursing (In Press)*

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43. INTER-RATER RELIABILITY TESTING OF THE NORWEGIAN VERSION OF THE ADAPTED FRESNO TEST

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Background: The Adapted Fresno Test (AFT) is a 7 item test focused around clinical scenarios (total score 0-156). The test can be used by rehabilitation professionals, educators and researchers to measure change in competence in evidence-based practice (EBP). The AFT was translated to Norwegian to measure change in knowledge and skills in a controlled before and after study implementing EBP in physiotherapy clinical education. The original AFT is said to have acceptable psychometric properties. However, translated instruments need to be tested in a manner analogous to testing the original instrument.

Aims: To examine inter-rater reliability of the Norwegian version of the AFT of competence in EBP.

Methods: The Norwegian version of the AFT was administered during the academic year 2008/2009 to physiotherapists in hospitals (n=29) before and after the intervention period, and to their students (n=56) before and after a clinical placement period; resulting in 170 tests. A random sample of 30 completed tests; 15 pretests and 15 posttests, will be selected and scored by two raters with a good understanding of EBP. A training session will be conducted for raters by the first author, using examples of scored and unscored tests.

Results: Inter-rater reliability will be calculated using intraclass correlation coefficients (ICC) for seven summed sub-test scores and the total AFT score.

Limitations: -

Conclusions: Testing procedures and results from the testing of inter-rater reliability of the Norwegian version of the AFT will be presented at the conference.

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44. TWIN APPRAISAL OF CLINICAL TRIALS (TACT). A TOOL FOR SUPPORTING THE CONSENSUS OF DIFFERENT STAKEHOLDERS

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Background: Considerable time and energy is expended to discuss the validity, importance, and applicability of the results of clinical trials. Depending on the goals, perspectives, and motivating factors, protagonists and skeptics come to different conclusions even when they use the same methods and tools for critical appraisal.

Aims: To propose a tool that can be used by different stakeholders to support a process of consensus finding on the validity of clinical trials.

Methods: A university-based and an industry-based referee discussed common appraisals of five studies which were published in well recognized journals. For that they identified the study questions, defined the simplest i.e. ideal study designs to answer these questions, and checked eight validity criteria. Identical positive or negative answers of both referees increased or decreased the validity score by one point. A maximum of two disagreements (0-scores) was allowed. This pilot experiment was repeated with 20 medical students (3rd yr) at UFF. Five groups of 4 students playing the roles of the industry-based and 4 students of the university-based referees had to find a consensus.

Results: The two referees of the pilot experiment agreed in all but one answer to the five investigated publications. The points of criticism differed in various papers. The students gave slightly higher scores than the referees in 4 of the 5 papers but considered the validity of one paper inacceptable.

Limitations: Not the assessments but the appraisals may vary considerably when different groups of referees find a consensus.

Conclusions: In most situations it will be possible to find a consensus on the assessment of validity criteria. It is more difficult to find a consensus on the appraisal e.g. of the ideal study design to answer the study question. This problem may be explained by different perspectives: some referees may address the internal validity and others the external validity of clinical trials.

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45. DO WE NEED A COMPREHENSIVE EDUCATIONAL PROGRAMME FOCUSED ON CLINICAL PRACTICE GUIDELINES?

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Background: The Centre for Clinical Practice Guidelines of the Department of Social Medicine and Health Policy, Faculty of Medicine and Dentistry, Palacky University in Olomouc is concerned with issues of clinical practice guidelines (CPGs) as viewed from different perspectives. The main goal of the centre is to be an independent research and educational institution for anyone interested in the process of development, adaptation, implementation and evaluation of CPGs and their multidisciplinary aspects.

Aims: A new comprehensive educational programme has been developed to disseminate information about CPGs.

Methods: We developed a comprehensive educational programme focused on various aspects of CPGs and many workshops and lectures have been held since 2008.

Results: Basic knowledge – workshops and lectures intended for undergraduate students and health care professionals with no experience with CPGs: Introduction to CPGs – basic principles. How to search and find CPGs? Development and adaptation methodology – workshops intended for CPG developers and stakeholders: Introduction to CPG development and adaptation methodology. Guidelines for guidelines. Adaptation of CPGs. Development of CPGs in various countries (a series of lectures). Implementation and evaluation – workshops focused on implementation and evaluation of CPGs intended for experienced health care professionals, CPG developers and advanced undergraduate students. Patient and public involvement – lectures intended for health professionals, stakeholders and patient organisations. Multidisciplinary aspects – lectures intended for CPG developers, stakeholders, experienced health care and other professionals. Tutor training programme – intended for educators of the programme.

Conclusions: As CPGs are an important part of clinical decision making, it is advisable to introduce them to undergraduate students and to extend the knowledge in postgraduate and lifelong education.

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46. KARL POPPER'S PHILOSOPHY AND ETHICS: THE IMPORTANCE FOR TEACHING STEP 1

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Background: While EBP is often accused of relying on a paradigm of "absolute truth", it is in fact grounded on the Karl Popper's criterion of demarcation through falsification. Even more relevant, the first 3 steps of the EBP process are closely patterned on the Popper's evolutionary approach of objective knowledge: 1) Identification of a problem; 2) Generation of hypothesis; 3) Selection of the best solution. This places the Step 1 of the EBP process (building an answerable question) in a pivotal position for the understanding of the whole process, and underscores a few aspects which are often overlooked in EBP courses. First, in this step internal evidence must be appraised and integrated in the problem (Porzsolt, ACPJC 2003;139:A11). Second, knowledge gaps on background issues (expertise), must be identified and addressed (Richardson, ACPJC 1995;123: A12). Third, issues of applicability of the possible solution should be anticipated, since it would be often futile to search and appraise evidence about interventions that could not be applied. Fourth, and possibly more important, the goal of the intervention should be set at this stage (typically by choosing the outcome in a PICO question). J Baron (Against Bioethics, MIT 2006), identifies four ways for setting goals: Self-serving: when you set a goal for yourself; Moral: you let someone to set the goal for himself; Altruistic: you act on a goal set by someone else; Moralistic (paternalistic): you set the goal for others. Thus, delicate ethical questions must be addressed at this stage, which means that patient preferences and values must be carefully sought, so that empathy, counseling and narrative medicine skills must be mastered and carefully employed to be able to correctly formulate an answerable question. A model based on quickly building a PICO question is likely to be too simplistic and eventually frustrating, failing to exploit the richness of evidence-based practice.

Aims: -

Methods: -

Results: -

Limitations: -

Conclusions: -

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47. USING WEB 2.0 TO ENHANCE EVIDENCE-BASED PRACTICE LEARNING

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Background: Wikis are important elements of the "Web 2.0" technologies, allowing users to have control over content, and providing abundant, free, uncensored, and dynamic information. "Wiki" is a Hawaiian term for quick. Wikis, blogs and podcasts are all examples of Web 2.0 or social software critical to learning in the digital age. Using web-conferencing and asynchronous discussion through a private wiki, we have developed an asynchronous learning community for evidence-based practice.

Aims: The third year Integrated Community Clerkship is a year-long distributed clinical education experience. Medical students are scattered across 700 miles of northern Alberta, Canada. Students teach each other via web-conferencing from clinical cases relevant to their level of training. Medical school faculty facilitates weekly synchronous Student Learning Sessions (SLS). Prior to each SLS medical students contribute asynchronously using a private wiki, to develop learning issues and seek answers to clinical questions.

Methods: -

Results: -

Limitations: Although the wiki's utility in EBP education is poorly defined, our medical students report that it is a useful learning platform. Our current experience allows us to identify advantages and disadvantages to the integration of EBP into a Web 2.0 based curriculum. We are working to identify barriers and limitations so that in the future we will be able to develop a better EBP model for knowledge delivery, sharing and management to medical undergraduates in distributed medical education.

Conclusions: We are investigating methods that more successfully integrate EBP into the social web to allow better use of the wiki to facilitate EBP teaching so that students are encouraged to collaborate, take ownership of learning, enhance student engagement with teaching materials, and help develop a student-centered EBP curriculum.

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48. LINKING DIVERSITY AMONG DOCTORS AND SETTINGS TO THE PERCEIVED BARRIERS FOR EBP

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Background: EBP relies on the understanding of clinical research by doctors. Their challenge is to integrate generic evidence with clinical expertise, and tailor this to individual patients. Diversity among doctors has impact on patient care, but has received little attention in the context of EBP.

Aims: To explore the potential impact of diversity in knowledge, experience, roles and attitudes of doctors on their willingness and ability for EBP in relation to the barriers they perceive.

Methods: Qualitative study in 2 very different departments of anaesthesiology; one in a university hospital and another in a general hospital. Purposive participant sampling reflected 3 levels of seniority: 4 registrars, 4 consultant anaesthetists and 4 senior anaesthetists. We performed semi-structured interviews to elicit perceived barriers for EBP, and through methods and techniques from grounded theory approach we linked these barriers to diversity among doctors and settings.

Results: Anaesthetists were mainly “doers”; they focused on their daily medical routines. Combining clinical work with significant leadershiptasks transformed the seniors from “doers” (jumping into action) to “doers-thinkers” (reasoned action), which could explain the impact of seniority: in both departments only the seniors were willing and able to apply EBP, and acted accordingly. Differences in setting that seemed to complicate EBP, applied to the organisational context of the general hospital: absence of a formal hierarchy among doctors and little collaboration between doctors and non-medical management.

Limitations: Our in-depth exploration gives rich explanatory data, but the small sample limits generalisation of our findings to other settings and medical disciplines.

Conclusions: Despite the differences in working environment, we found similar impact of doctors’ seniority. The potential impact of diversity among doctors on EBP deserves further exploration. Different strategies may be necessary to help various groups of doctors to progress with EBP.

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49. THE EBP BARRIER INDEX. DEVELOPMENT OF A TRIAGE TOOL FOR EBM BARRIERS: A RESEARCH PROPOSAL

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Background: On a daily basis doctors are confronted with the complexity of their routine clinical practice. As a result, doctors do not always manage to apply the latest evidence to each patient. Many barriers for EBP have been identified, but a simple comprehensive triage instrument on these barriers is lacking.

Aims: We want to describe and gain more understanding in EBP-behaviour of doctors, i.e. why they are (not) providing effective care. Our aim is to design a triage instrument (questionnaire) that enables doctors and their managers to focus on those areas where facilitation is most likely to improve the effectiveness of patient care.

Methods: Mixed method approach will be used in 3 project phases: (1) Deriving an item pool: Based on blending the complementary concepts of the Theory of Planned Behaviour, Bounded Rationality, Satisfycing, Action Planning and Coping Planning we formulated a comprehensive behavioural framework for complex medical problem solving and decision making under uncertainty. Existing surveys related to these concepts resulted in an item pool. (2) Development of a preliminary version of the triage instrument: By internet survey among three EBP stakeholder groups (i.e. researchers, doctors and managers) the item pool will be reduced using a judgmental approach. We will conduct case studies in clinical departments to triangulate findings from the survey. We will use the resulting data to describe and classify diverse doctors and working environments, according to their EBP-barriers. Invitational panel discussions will complete this phase. (3) Testing and validation of the preliminary version in clinical practice: After internet survey among diverse doctors, we will perform random individual observations to compare survey findings with actual practice. Additional case studies will only be performed, when appropriate.

Results: -

Limitations: -

Conclusions: We expect our triage instrument can be used to diagnose, predict and overcome specific EBP-barriers for diverse types of doctors and working environments.

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50. RESULTS OF THE EBM KNOWLEDGE AND SKILLS QUIZ FOR 300 STUDENTS AT MEDICAL SCHOOL UNIVERSITY MEDICAL CENTRE UTRECHT, UTRECHT, THE NETHERLANDS

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Background: In 1999 the University Medical Center Utrecht, Medical School curriculum has been revised and EBM teaching started in 2004. Students follow an EBM course during 6 weeks (4 ECTS) in their final 6th year, always before the start of their clinical ward rotation. The emphasis of the EBM course that has been designed according to the principles of the Sicily statement is on problem based application of research evidence to individual patients. It includes plenary interactive lectures, moderated skills lab assignments and tutored small group practicals. At the end of each EBM graduate course participants complete a standard form used in the medical school quality evaluation and improvement cycle. Examination includes evaluation of skills and knowledge, contribution to collaboration in small groups and written reports and verbal presentations of best-evidence summaries.

Aims: To evaluate the quality and impact of the course on knowledge and skills of students. The students are quizzed for pre and post course knowledge and skills.

Methods: In 2008 data of the knowledge and skills quiz of 300 students have been collected and analysed. Individual change scores per item and item clusters were calculated.

Results: The results of the evaluations of the quality improvement cycle of the medical school strongly shows the need for and satisfaction with the EBM course. Participants rate the gain in knowledge and improvement in skills (scale lowest to highest: 1 to 5) as 4.5 (mean; sd: 0.4). The knowledge quiz shows an increase in their skills needed for adequate questioning, retrieval, appraisal, and summarising best available evidence. In contrast to the topic diagnosis and prognosis, little knowledge could be added for the topic therapy. Detailed results will be presented during the conference.

Limitations: These are preliminary quiz results. Dased on these data the first formal analysis of the internal consistèncy is underway.

Conclusions: Our EBM course satisfies the need of participants and adds to their knowledge and skills.

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51. EVIDENCE ON-TIME: ADVANCING EFFECTIVE PATIENT MANAGEMENT BY REAL-TIME POINT-OF-CARE INTEGRATION OF MEDICAL EVIDENCE MANAGEMENT IN ROUTINE CLINICAL PRACTICE

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Background: Improvement of competences and knowledge of health professionals on optimal use of best-available evidence in real-time at point-of-care patient management is expected to help to close the gap between research and practice efficiently.

Aims: To evaluate the effect of an educative multifaceted intervention aimed at promotion of the use of clinical research evidence in real-time clinical practice. The training is targeted at improving questoning, retrieval, appraisal of studies and extraction and judgement of outcomes, which is also used during graduate traing at the Utrecht Medical School.

Methods: During a pre-post educational intervention study the impact of real-time point-of-care medical evidence management competences is evaluated. Three part clinical questions are defined for patient management decisions taken with quantifiable uncertainty. Relevant original publications are retrieved and appraised, and effect estimates are extracted. The change in patient management decision, and the certainty thereof are documented. Consequently, patient outcomes will be monitored and documented. Application and use of the competences will be measured before, during the training, and 6 month later.

Results: We expect that prior to the intervention for 15% of all clinical decisions information needs will be expressed, but not for all evidence will be retrieved. After the intervention we expect that evidence will be retrieved and used in 50% of the decisions on the expressed information needs.

Limitations: Funding proposal is submitted and currently under review.

Conclusions: With 36 foreground questions on patient management, statistical significance (beta .01; 2-sided alpha .01) will be reached for the anticipated 35% difference after the training. After 6 months we expect that evidence will be retrieved and used in 75% of the decisions on the expressed information needs. With the 36 cases we will be able to demonstrate statistical significance (beta .2; 2-sided alpha 0.01) for the increase from 50% to 75%.

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52. RESIDENT BARRIERS TOWARDS EVIDENCE-BASED PRACTICE: A SYSTEMATIC REVIEW

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Background: Insufficient time and lack of skills are important barriers to evidence-based practice (EBP). Residents could have additional barriers, since their practice can be strongly influenced by the educational system and clinical supervisors.

Aims: The purpose of this study therefore was to systematically appraise and summarize the literature on the barriers of residents in the application of EBP.

Methods: The authors searched MEDLINE, EMBASE, the Cochrane Library, CINAHL and ERIC until the end of January 2008. Additionally, they screened the abstracts of relevant conferences (AMEE, SGIM, SMDM, Ottawa and EBHC) from January 2001 until January 2008 manually. The search was extended by contacting experts in the field. Original studies on the barriers of residents in applying EBP were included. Methodological quality was assessed and results were extracted by two reviewers idependently using prespecified forms.

Results: The search resulted in 511 titles, 84 abstracts, and 3 studies suggested by experts of which 9 were included in this review. The quality of the included studies was high. The most frequently mentioned barriers for residents were limited available time (28 – 85%), attitude, and knowledge and skills. In four studies, specific barriers related to the position of residents, like influences from staff members, lack of experience in EBP and low possibilities to change conditions are described.

Limitations: Most studies were performed in western english-speaking countries. Results might therefore not be applicable to other regions.

Conclusions: Residents experience specific barriers to EBP. These barriers should recognized and integrated in the EBP training program of residents.

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53. DOES LEARNING STYLE AFFECT THE PRACTICE OF EVIDENCE-BASED MEDICINE IN GP TRAINEES? A SURVEY STUDY

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Background: EBP can be considered a method of retrieving and using new knowledge. Learning style (LS), a description of the way subjects acquire new information, might influence EBP and can be an important factor in developing educational programmes on EBP.

Aims: To describe differences in knowledge, attitude and behaviour regarding EBP in GP trainees and assess differences in EBP between subjects with different LS.

Methods: Questionnaire survey among GP trainees regarding LS: EBP knowledge (Berlin questionnaire), attitude (McColl questionnaire) and behaviour.

Results: GP trainees' EBP knowledge (6.6±2.4; scale 0-15) and attitude (37±8.8; scale 0-100) scores are positive, and no difference for LS is found (p=0.21 and p=0.22). About half the trainees ask questions (51%) and answer them (48%) by searching for new evidence. GP trainees mainly use guidelines to answer their questions (40%) and agree that doing so suits General Practice (55%). Looking at LS, there is no difference in EBP use (p=0.59). The trainees with a theoretic-reflective LS seems to more often appraise methodology (p=0.46), validity (p=0.36), usability (p=0.59) and relevance (p=0.91) of literature, although this is not significant. There is no difference between LS and factors contributing to medical decision making. Intuition influences decisions differently in different LS (active-pragmatic and theoretic-reflective 3.8 vs 3.3 for other LS; p = 0.02). Theoretic LS seem to have more often attended trainings in EB-searching (reflective 89% and pragmatic 85%) than active LS (63% and 77%; p = 0.07) and in critical appraisal as well (43% and 40% vs 37% and 23%, p=0.62).

Limitations: Our behaviour questionnaire measures self-reported behaviour. There is, as yet, no valid measure available to measure EBP.

Conclusions: According to our research, no difference exists in EBP between subjects with different LS. LS therefore cannot be used to predict handling medical information / EBP. LS should be taken into account by teachers in how new information is presented.

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