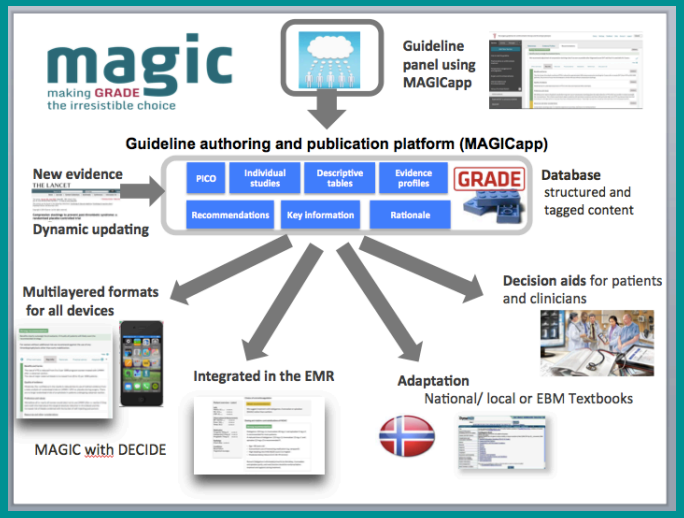
# How to develop and publish a trustworthy evidence summary and recommendation through the MAGIC authoring and publication platform




**Workshop MAGICapp- October 29 2015 Sicily Conference**
**Facilitator: Per Olav Vandvik**

# Declaration of interests and who we are

# Objectives

- To be introduced to the process of developing a trustworthy recommendation with the GRADE system and the MAGICapp (www.magicapp.org)

- To get hands-on experience with use of the MAGICapp in the creation of an evidence summary and treatment recommendation.

# Corticosteroids for community-acquired pneumonia

March 2015

Table | Bottom line

Plain language statements ON | Absolute effect ON | Relative effect ON | Visual overview OFF

| Outcomes | Plain language statements | Absolute Effect: Without Corticosteroids | Absolute Effect: With Corticosteroids | Relative effect (95% CI) Nº of participants & studies | Certainty of the evidence GRADE |
|---|---|---|---|---|---|
| **All-cause mortality** Follow-up: In-hospital | *Corticosteroids are likely to result in a small reduction in the risk of dying.* | 85 per 1000 | 57 per 1000 | RR 0.67 (0.45 to 1.01) Based on data from 1974 patients in 12 studies | ⊕⊕⊕◯ Moderate |
| **Need of mechanical ventilation** Follow-up: In-hospital | | | 50 less per 1000 | | ⊕⊕⊕◯ Moderate |
| **Admission to intensive care unit** Follow-up: 30 days | | | 42 less per 1000 | | ⊕⊕⊕◯ Moderate |
| **Acute respiratory distress syndrome** Follow-up: 30 days | | | 50 less per 1000 | | ⊕⊕⊕◯ Moderate |
| **Duration of hospitalization.** Follow-up: In-hospital | | | Reduced by 1 day | | ⊕⊕⊕⊕ High |
| **Time to clinical stability.** Follow-up: In-hospital | | | Reduced by 1 day | | ⊕⊕⊕⊕ High |
| **Readmission to hospital** Follow-up: 30 days | | | Likely no difference | | ⊕⊕⊕◯ Moderate |
| **Hyperglycemia** Follow-up: 30 days | | | 35 more per 1000 | | ⊕⊕⊕⊕ High |
| **Gastrointestinal hemorrhage** Follow-up: In-hospital | | | Likely no difference | | ⊕⊕⊕◯ Moderate |
| **Severe neuropsychiatric complications** Follow-up: 30 days | | | 11 more per 1000 | | ⊕⊕⊕◯ Moderate |

Difference: 28 less per 1000 patients (95% CI: 47 less to 1 more per 1000 patients)

# Finding trustworthy answers to clinical questions

**Orthopedic thromboprophylaxis?**

FOCUSED QUESTIONS

Search for recommendations in evidence-based guidelines

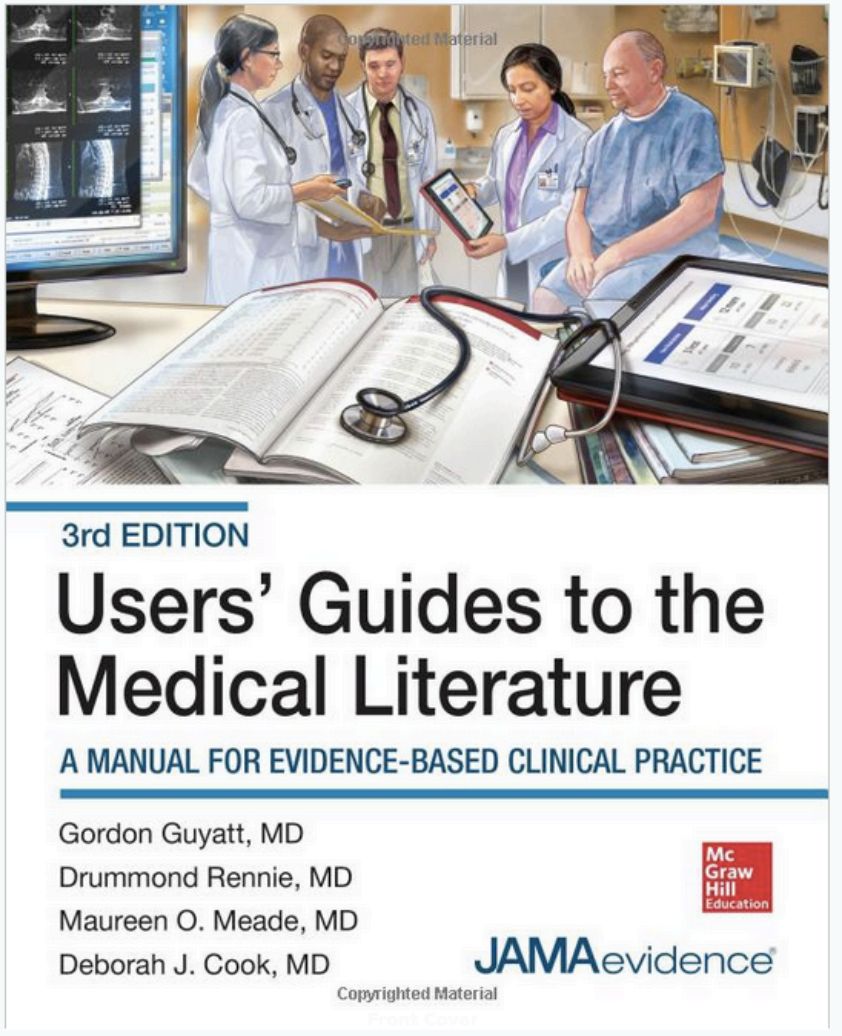
Can you trust and use those recommendations?

Apply the recommendations on individual patients

AUDIT

IMPLEMENT

# Evidence-based medicine: Great advances



# We need to create trustworthy evidence summaries and guidelines according to new definition and standards

## New definition

*"Clinical Practice Guidelines are statements that include recommendations intended to optimize patient care. They are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options"*

## New standards

GRADE

Formulate question

Select outcomes

Rate importance

Outcomes across studies

Create evidence profile with GRADEpro

Rate quality of evidence for each outcome

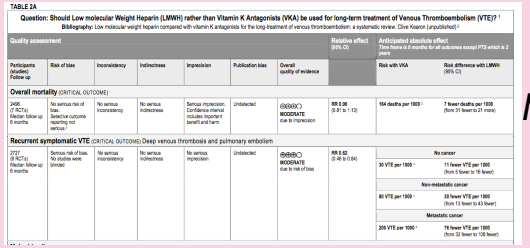
P
I
C
O

Outcome Critical

Outcome Critical

Outcome Important

Outcome Not important



High
Moderate
Low
Very low

Summary of findings & estimate of effect for each outcome

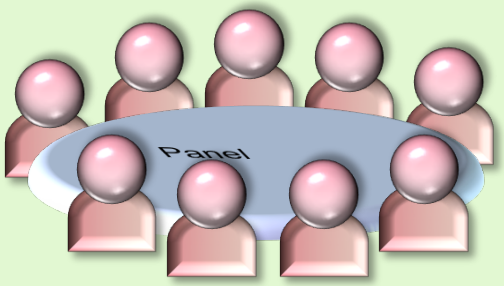
Systematic review

Guideline development

Formulate recommendations:
•For or against (direction)
•Strong or weak/conditional (strength)

considering:
- ❑Quality of evidence
- ❑Balance benefits/harms
- ❑Values and preferences

Revise if necessary by considering:
❑Resource use (cost)

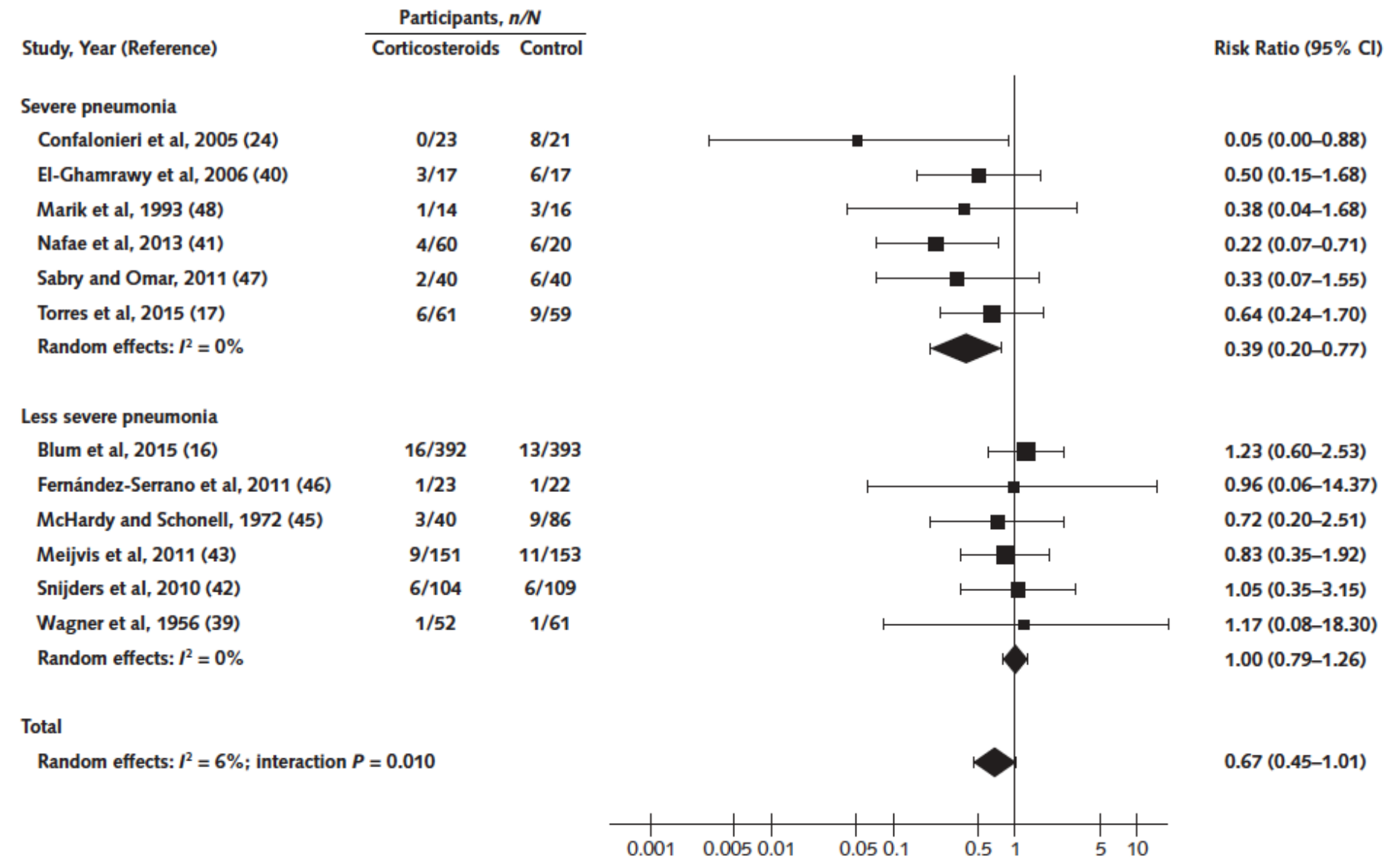



Grade overall quality of evidence across outcomes

- "We recommend using…"
- "We suggest using…"
- "We recommend against using…"
- "We suggest against using…"

*Illustration from Holger Schunemann and Yngve Falck Ytter*

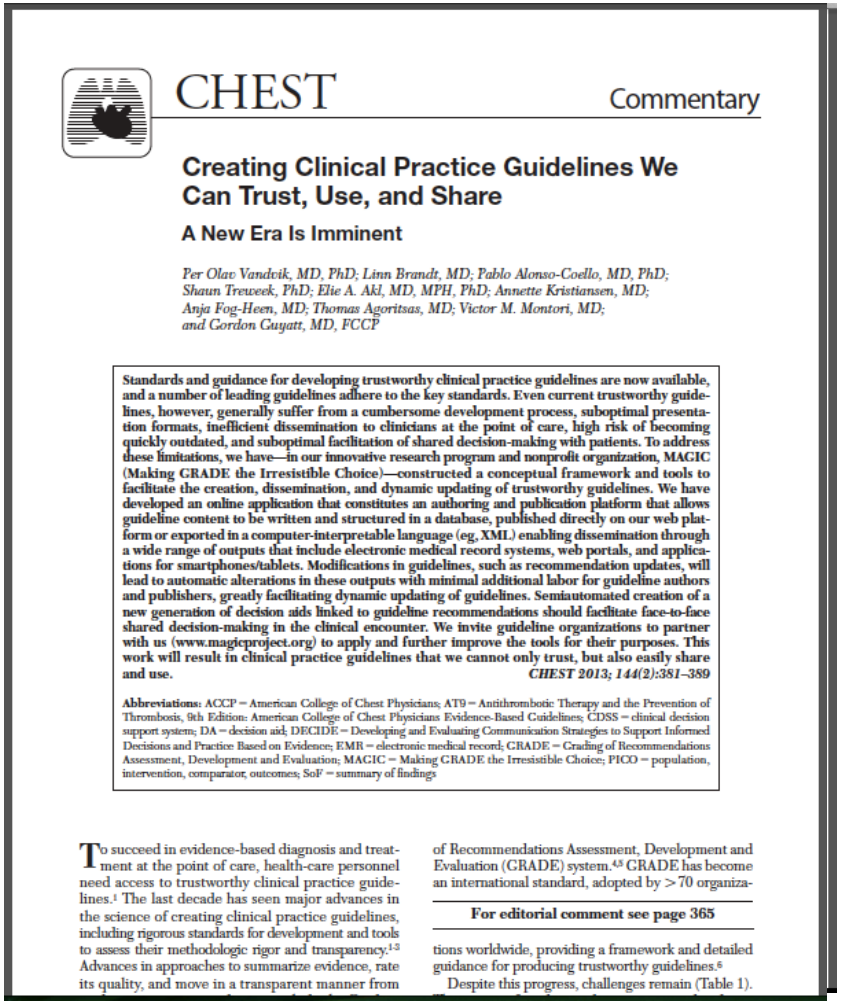
*Figure 1.* Effect of corticosteroids on all-cause mortality in patients hospitalized with community-acquired pneumonia, by severity of pneumonia.



# Imagine you found a trustworthy guideline

- **Huge duplication, lots of work**
- **Are these guidelines**
- ✓ Available, useful and understandable for clinicians?
- ✓ Suited for integration into EMRs, EBM textbooks and adaptation?
- ✓ Sufficiently up to date?
- ✓ Facilitating shared decisions?
- 2010: No available tools
- **We need**

magic
making GRADE
the irresistible choice



CHEST Commentary

**Creating Clinical Practice Guidelines We Can Trust, Use, and Share**

**A New Era Is Imminent**

*Per Olav Vandvik, MD, PhD; Linn Brandt, MD; Pablo Alonso-Coello, MD, PhD; Shaun Treweek, PhD; Elie A. Akl, MD, MPH, PhD; Annette Kristiansen, MD; Anja Fog-Heen, MD; Thomas Agoritsas, MD; Victor M. Montori, MD; and Gordon Guyatt, MD, FCCP*

**Standards and guidance for developing trustworthy clinical practice guidelines are now available, and a number of leading guidelines adhere to the key standards. Even current trustworthy guidelines, however, generally suffer from a cumbersome development process, suboptimal presentation formats, inefficient dissemination to clinicians at the point of care, high risk of becoming quickly outdated, and suboptimal facilitation of shared decision-making with patients. To address these limitations, we have—in our innovative research program and nonprofit organization, MAGIC (Making GRADE the Irresistible Choice)—constructed a conceptual framework and tools to facilitate the creation, dissemination, and dynamic updating of trustworthy guidelines. We have developed an online application that constitutes an authoring and publication platform that allows guideline content to be written and structured in a database, published directly on our web platform or exported in a computer-interpretable language (eg, XML) enabling dissemination through a wide range of outputs that include electronic medical record systems, web portals, and applications for smartphones/tablets. Modifications in guidelines, such as recommendation updates, will lead to automatic alterations in these outputs with minimal additional labor for guideline authors and publishers, greatly facilitating dynamic updating of guidelines. Semiautomated creation of a new generation of decision aids linked to guideline recommendations should facilitate face-to-face shared decision-making in the clinical encounter. We invite guideline organizations to partner with us (www.magicproject.org) to apply and further improve the tools for their purposes. This work will result in clinical practice guidelines that we cannot only trust, but also easily share and use.**

***CHEST 2013; 144(2):381–389***

**Abbreviations:** ACCP = American College of Chest Physicians; AT9 = Antithrombotic Therapy and the Prevention of Thrombosis, 9th Edition: American College of Chest Physicians Evidence-Based Guidelines; CDSS = clinical decision support system; DA = decision aid; DECIDE = Developing and Evaluating Communication Strategies to Support Informed Decisions and Practice Based on Evidence; EMR = electronic medical record; GRADE = Grading of Recommendations Assessment, Development and Evaluation; MAGIC = Making GRADE the Irresistible Choice; PICO = population, intervention, comparator, outcomes; SoF = summary of findings

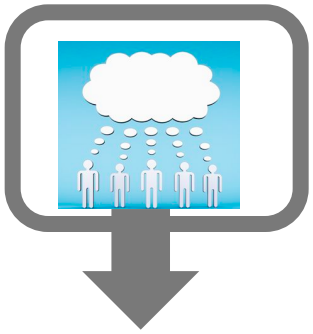
To succeed in evidence-based diagnosis and treatment at the point of care, health-care personnel need access to trustworthy clinical practice guidelines.[1] The last decade has seen major advances in the science of creating clinical practice guidelines, including rigorous standards for development and tools to assess their methodologic rigor and transparency.[1-3] Advances in approaches to summarize evidence, rate its quality, and move in a transparent manner from of Recommendations Assessment, Development and Evaluation (GRADE) system.[4,5] GRADE has become an international standard, adopted by > 70 organizations worldwide, providing a framework and detailed guidance for producing trustworthy guidelines.[6]

**For editorial comment see page 365**

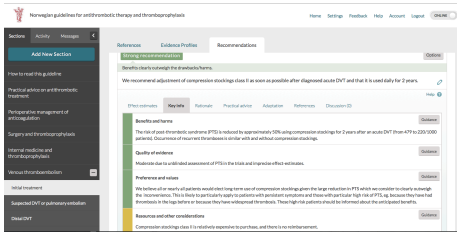
Despite this progress, challenges remain (Table 1).

magic

making GRADE the irresistible choice



Guideline panel using MAGICapp



# Guideline authoring and publication platform (MAGICapp)

## New evidence


## Dynamic updating

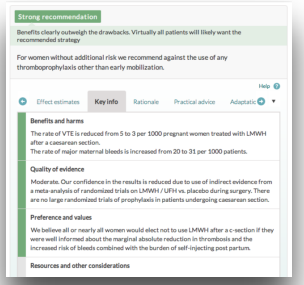
PICO | Individual studies | Descriptive tables | Evidence profiles

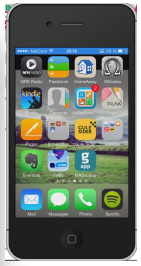
Recommendations | Key information | Rationale


## Database

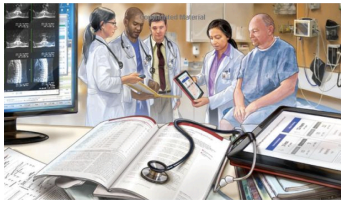
structured and tagged content

## Multilayered formats for all devices

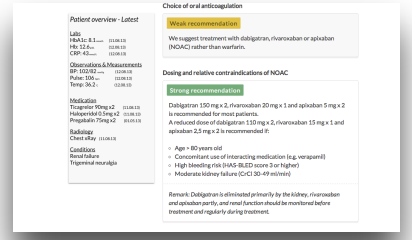




## Decision aids for patients and clinicians



## Integrated in the EMR



## Adaptation

National/ local or EBM Textbooks


MAGIC with DECIDE

# Let us check it out:

## www.magicapp.org

www.magicapp.org/guideline/#id:30&l:en — MAGICapp

Norsk Selskap for Trombose og Hemostase

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# Prevention of VTE in Orthopedic Surgery Patients: A Norwegian adaptation of the 9th ed. of the ACCP Antithrombotic Therapy and Prevention of Thrombosis Evidence-based Clinical Practice Guidelines

Sections

- Orthopedic surgery and prevention of venous thromboembolism
- Patients at moderate to high risk of thrombosis: All surgery of the lower extremities
- Major hip and knee surgery
- Other interventions and screening

## 2 Patients at moderate to high risk of thrombosis: All surgery of the lower extremities

**Strong recommendation**

Benefits clearly outweigh the drawbacks. Virtually all patients will likely want the recommended strategy

We recommend thromboprophylaxis with low molecular weight heparin, low-dose direct factor Xa inhibitor (apixaban, rivaroxaban) or dabigatran for the first 10 postoperative days.

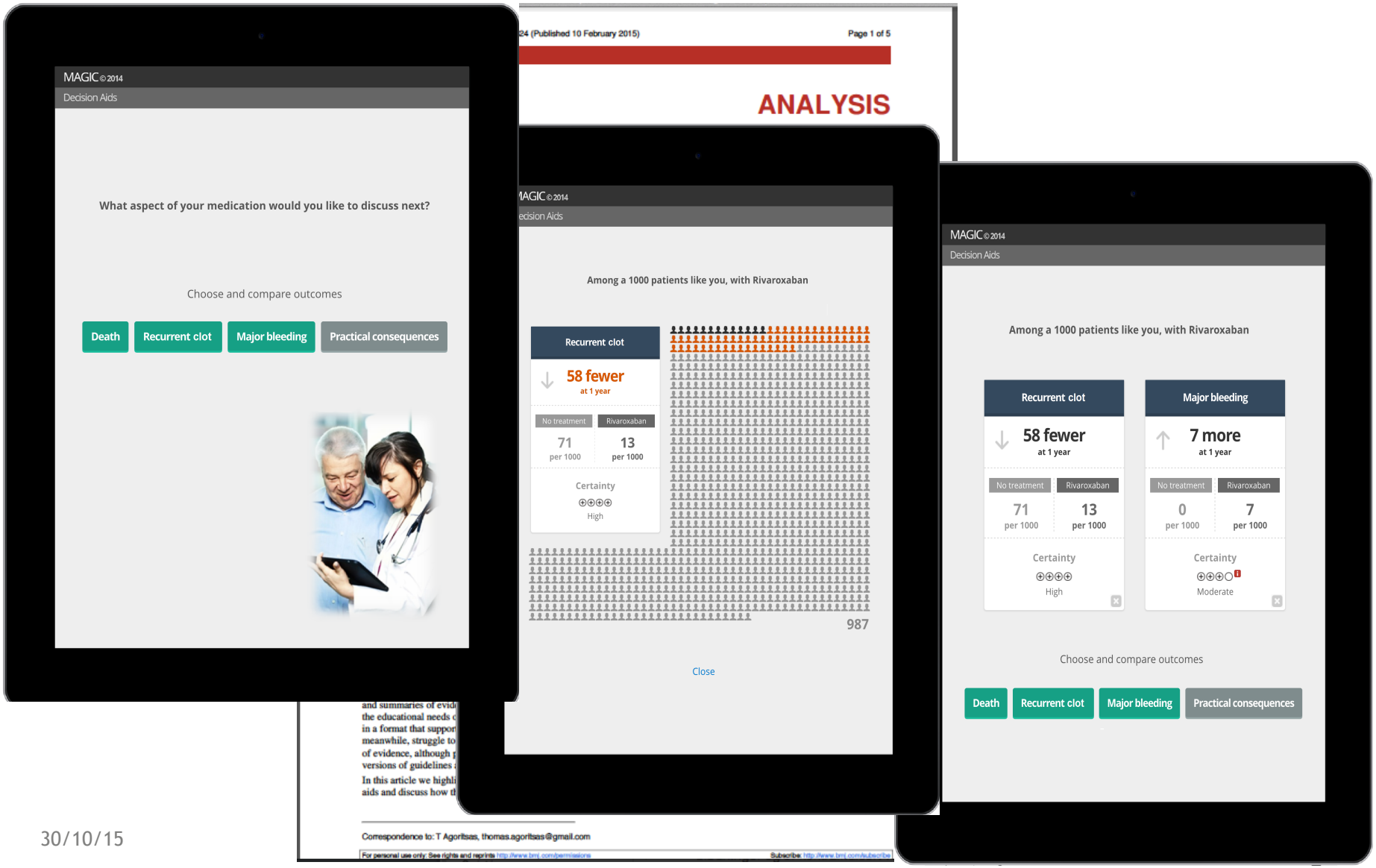
*High risk: previous symptomatic VTE.*
*Moderate risk: age > 80 years or multiple comorbidities.*
*Patient risk can be assessed using the Charlson Comorbidity index or ASA classification. Please see under "practical information".*

View More Details

Effect estimates | **Key info** | Rationale | Practical advice | Adaptation | References | Discussion (0)

| Title | Pubmed Link | Journal Link |
|---|---|---|
| Falck-Ytter et al. Prevention of VTE in Orthopedic Surgery Patients. Chest 2012;141;e278S-e325S | 22315265 | 10.1378/chest.11-2404 |
| Collins et al. Reduction in fatal pulmonary embolism and venous thrombosis by perioperative administration of subcutaneous heparin. N Engl J Med. 1988;318(18):1162-1173. | 3283548 | 10.1056/NEJM198805053181 |
| Lederle et al. Venous Thromboembolism Prophylaxis in Hospitalized Medical Patients and Those With Stroke: A Background Review for an American College of Physicians Clinical Practice Guideline. Annals of Internal Medicine. 2011;155:602-615. | 22041949 | 10.7326/0003-4819-155-9-201111010-00008 |

# SHARE IT: Creating discussions in consultations



# MAGIC

## Decision Aids

**Low dose aspirin vs. no treatment for primary prevention** ▼

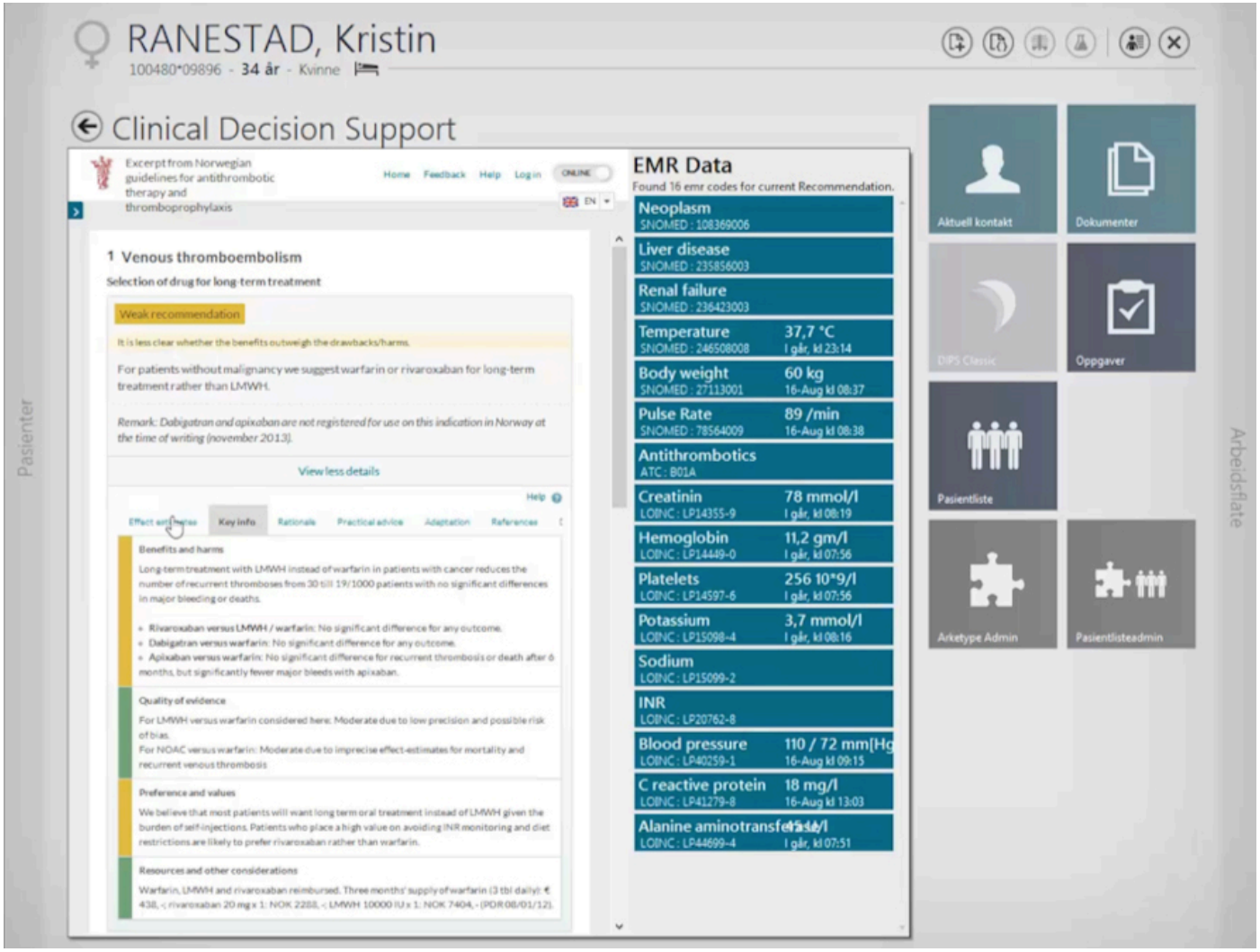
**Among a 1000 patients like you, with aspirin**

| Mortality | Myocardial infarctions | Major extracranial bleeding |
|---|---|---|
| ↓ **6 fewer** at 10 years | ↓ **28 fewer** at 10 years | ↑ **20 more** at 10 years |
| No treatment: 100 per 1000 | No treatment: 121 per 1000 | No treatment: 37 per 1000 |
| Aspirin: 94 per 1000 | Aspirin: 93 per 1000 | Aspirin: 57 per 1000 |
| Certainty: ⊕⊕⊕◯ Moderate | Certainty: ⊕⊕⊕⊕ High | Certainty: ⊕⊕⊕⊕ High |

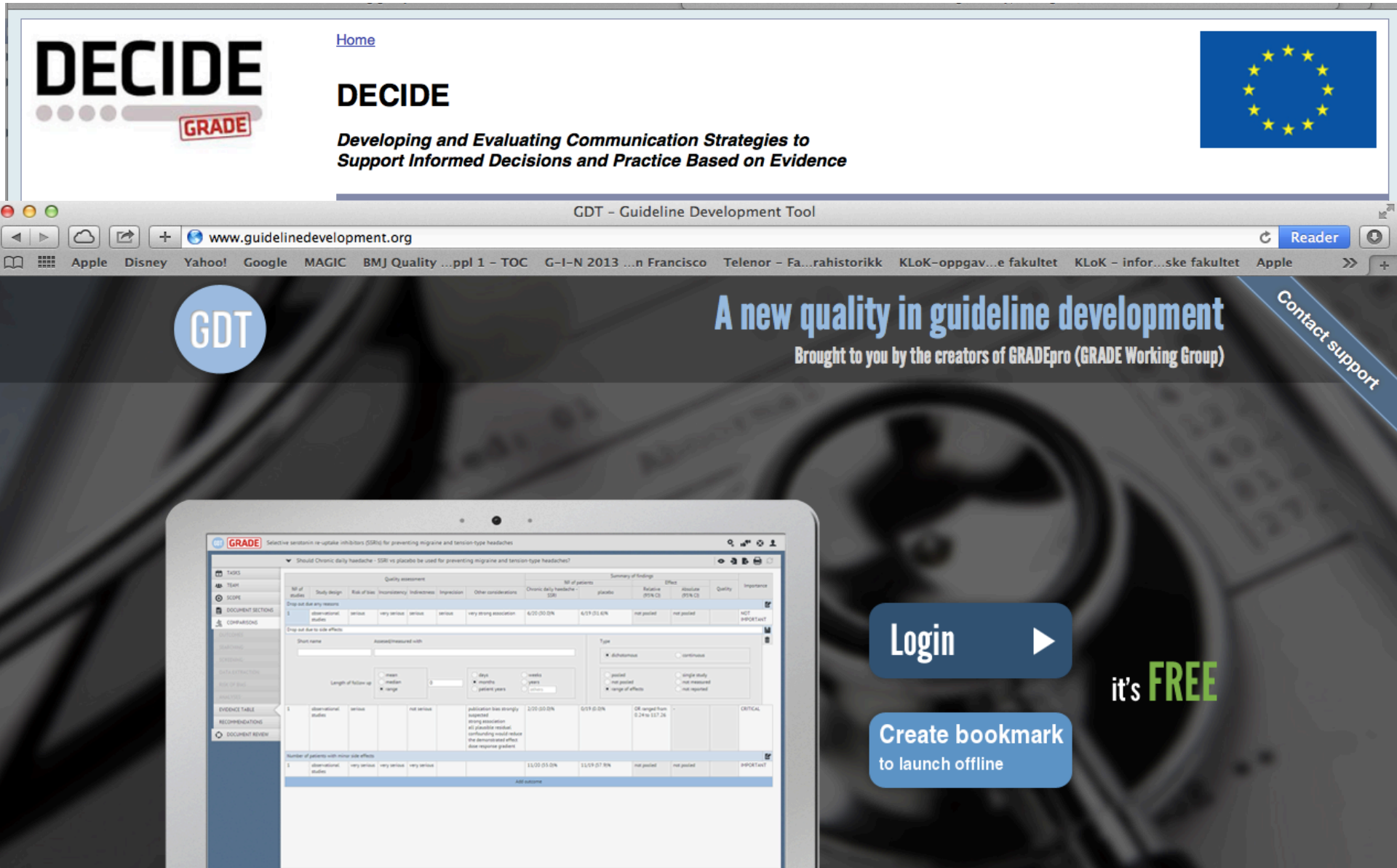
Choose and compare outcomes

Mortality | Myocardial infarctions | Non-fatal stroke | Major extracranial bleeding | Practical consequences

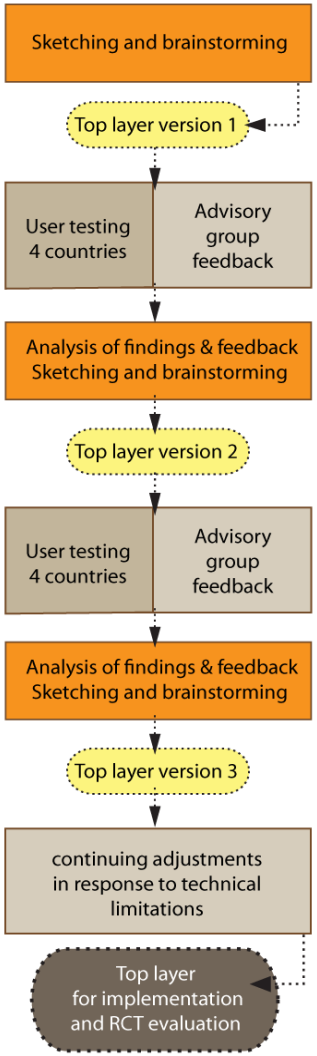
# Integrating recommendations in the EMR, linked to patient specific data



# MAGIC collaborates with DECIDE +++



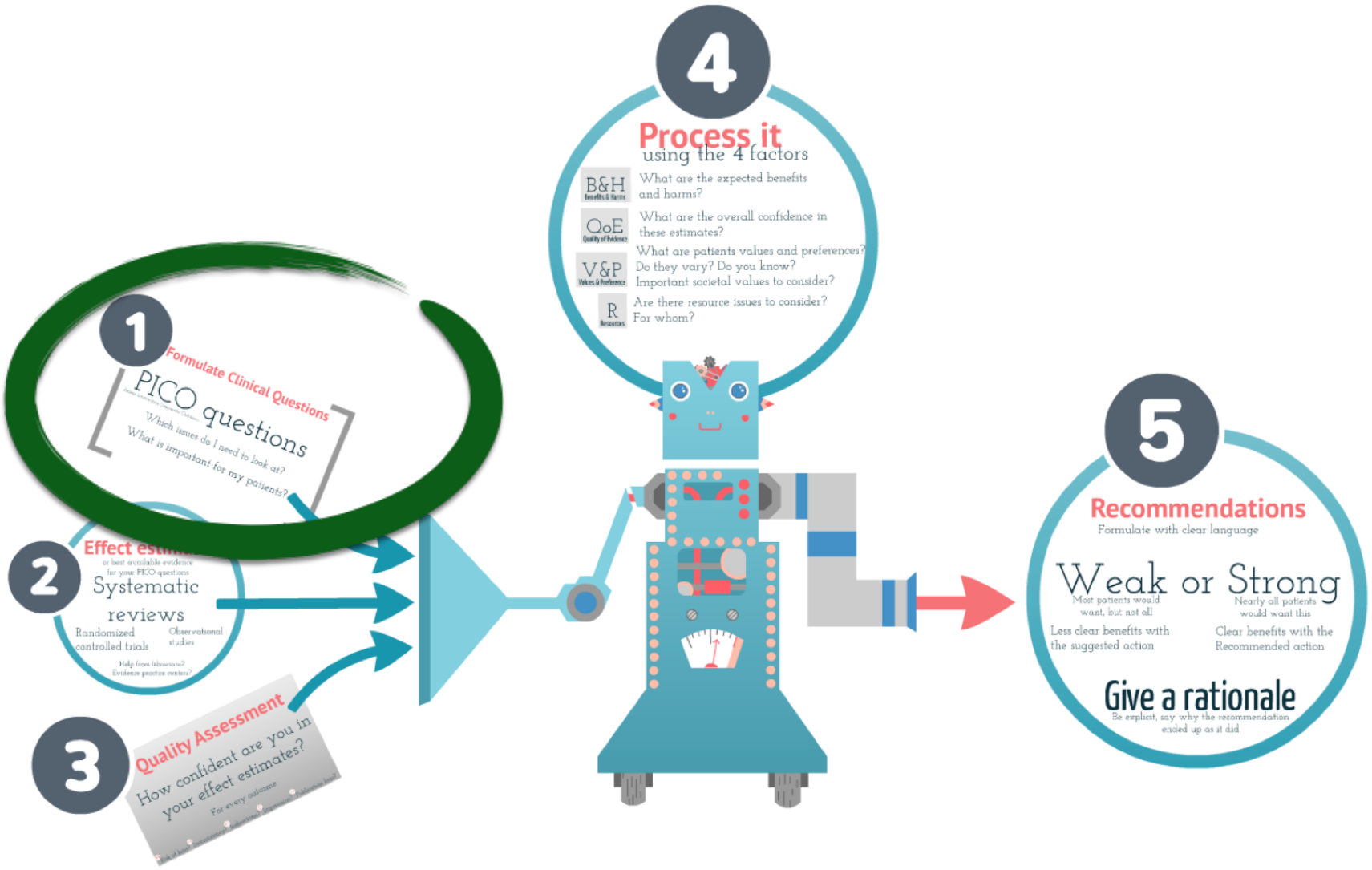
# Research in DECIDE (e.g. Multilayered guideline formats)





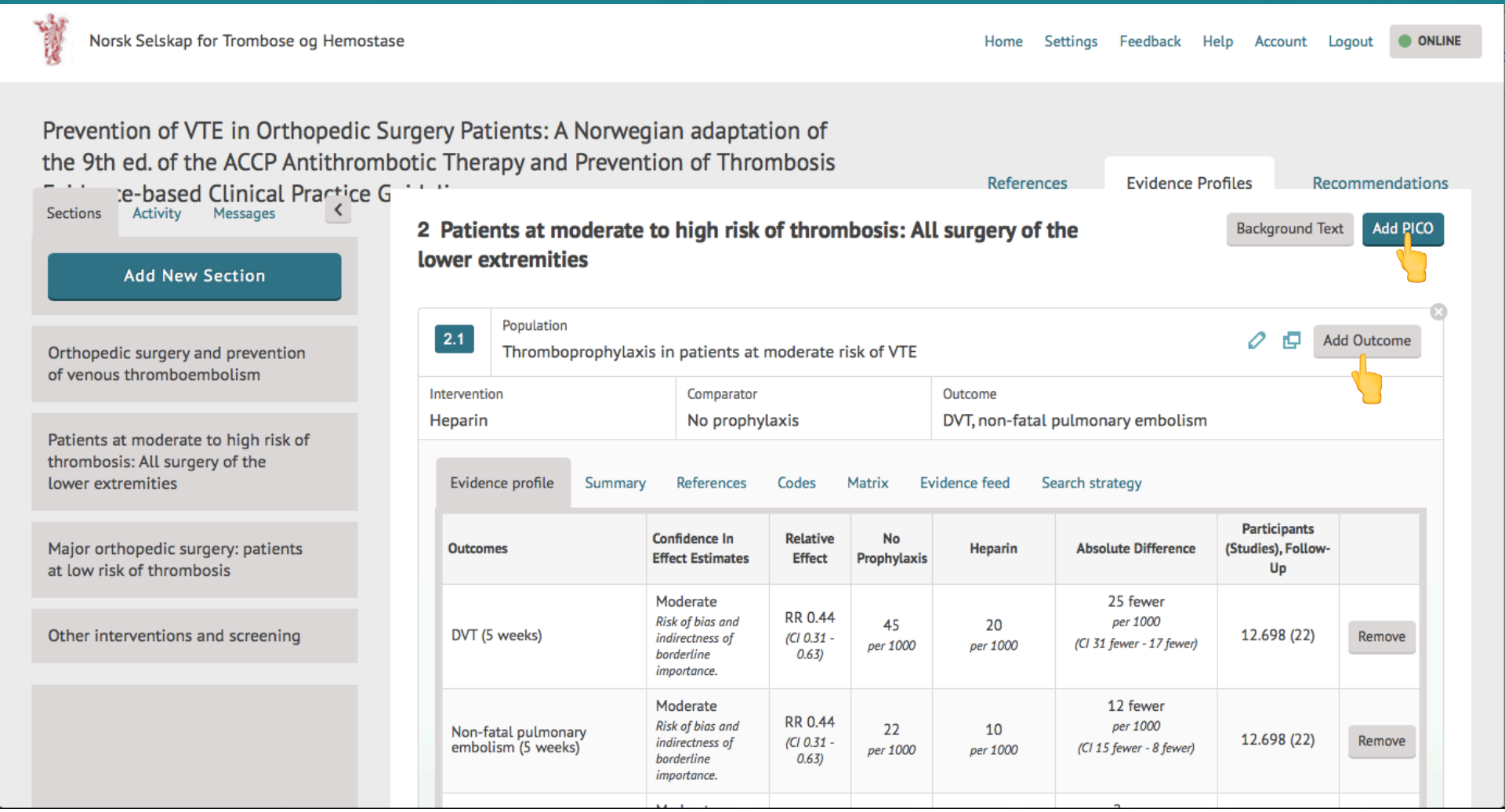
*Number of iterations may be more or less than 3, depending on nature of findings and feedback*

**Insight from user-testing:**
Insufficient conceptual understanding of guideline methodology (e.g. strength of recommendations and quality of evidence) may hamper application of trustworthy guidelines in practice

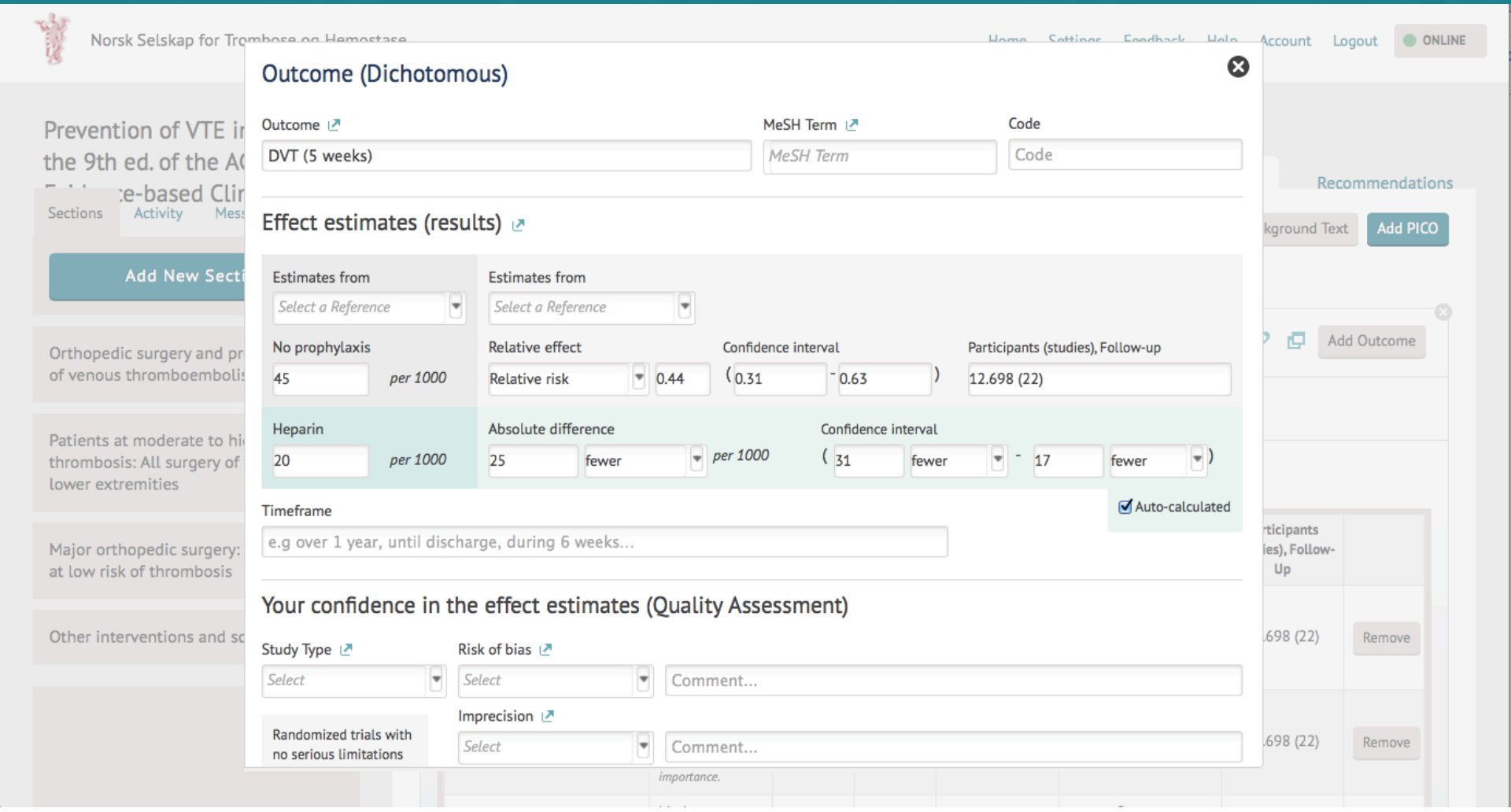



# BASICs of making GRADE guidelines

# Authoring in MAGICapp: PICOs and evidence profiles



# Authoring in MAGICapp: PICOs and evidence profiles



# **Going from evidence to recommendation:** Linking to PICO and its evidence profile

**Strong recommendation** Options

Benefits clearly outweigh the drawbacks. Virtually all patients will likely want the recommended strategy

We recommend surgical treatment over conservative treatment of unstable distal radial fractures in adults with normal functional requirements.

Effect estimates | Key info | Rationale | Practical advice | Adaptation | References | Discussion (0)

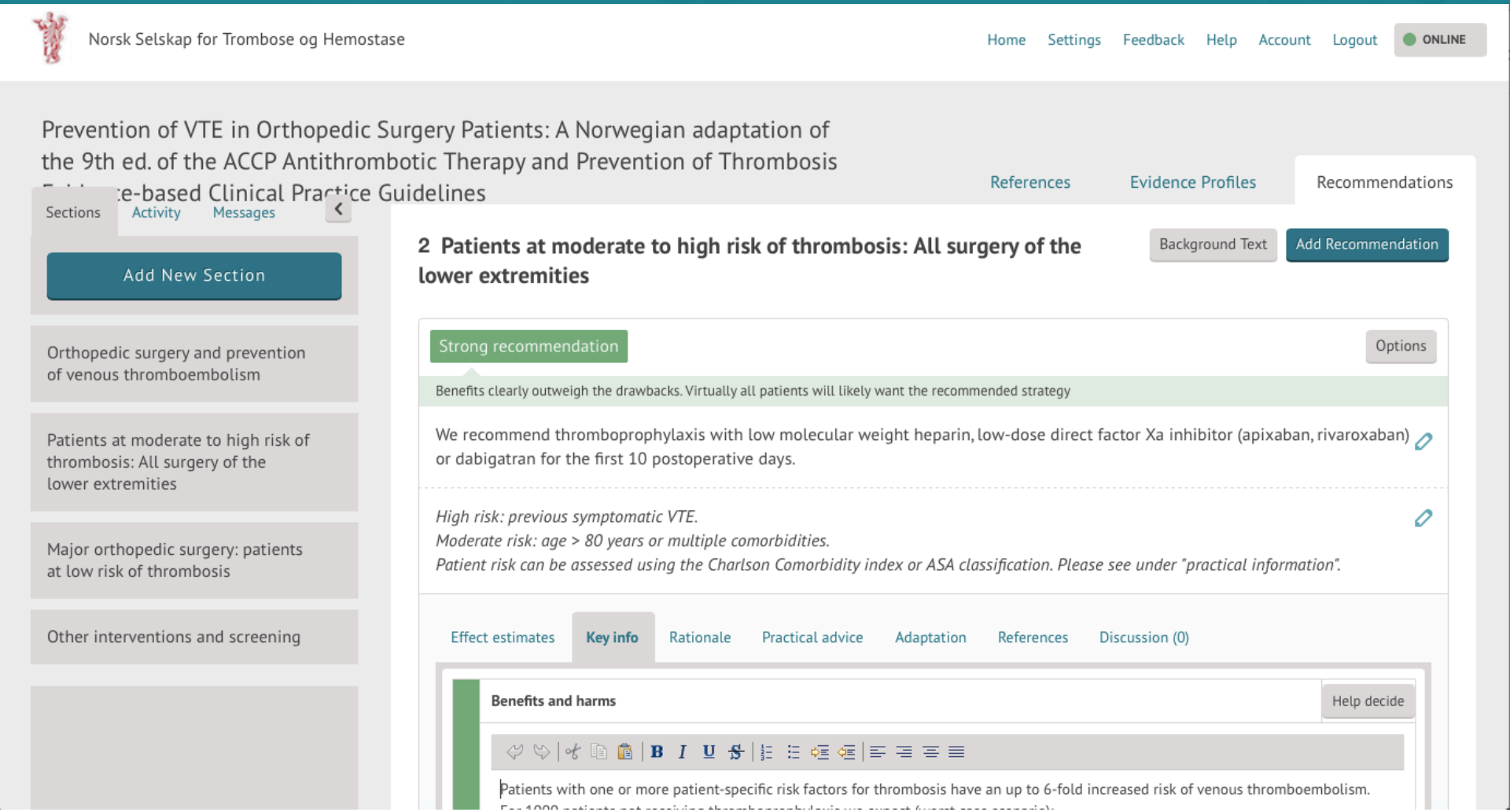
Show Selected | Show Section | Show All

| Selected | Patient | Intervention | Control | Outcome |
|---|---|---|---|---|
| ☑ | Patients with unstable distal radial fractures View | Percutaneous pinning | Conservative treatment | Pain, Function, Anatomical position, Complications |

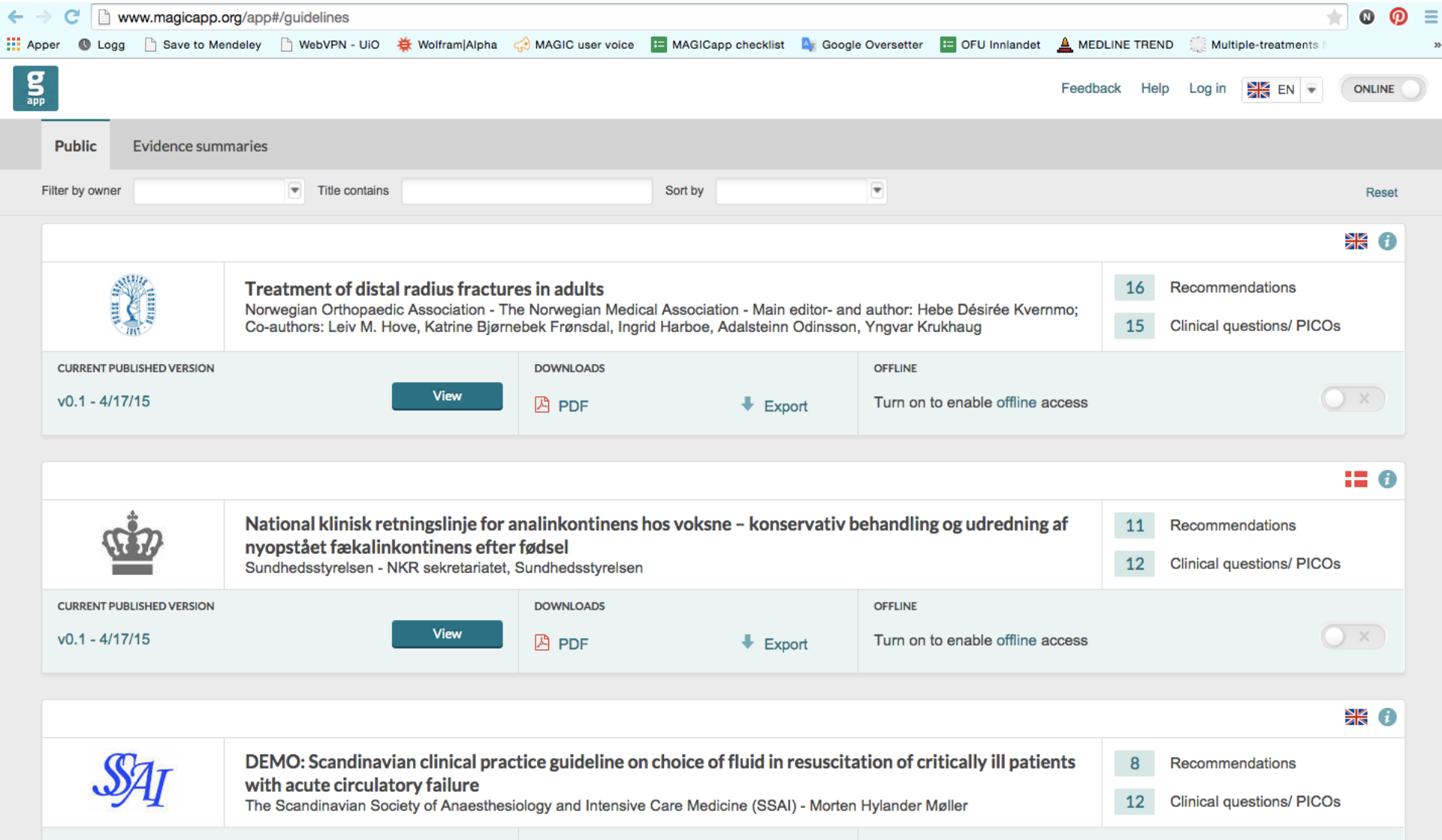
Evidence profile | Summary | References | Evidence feed

| Outcomes | Confidence In Effect Estimates | Relative Effect | Conservative Treatment | Percutaneous Pinning | Difference With Intervention | Participants (Studies), Follow-Up |
|---|---|---|---|---|---|---|
| Requiring re-dislocation | Moderate *due to the risk of bias (systematic error) and imprecise effect estimates* | RR 0.09 *(CI 0.02 - 0.37)* | 143 *per 1000* | 13 *per 1000* | 130 fewer *per 1000* *(CI 140 fewer - 90 fewer)* | 269 (4 RCT) |
| Carpal tunnel syndrome (compression of | Low | RR 0.53 | | | 25 fewer | |

# Going from evidence to recommendation: Multilayered formats as developed in DECIDE



# www.magicapp.org/public



# Log in as workshop-test

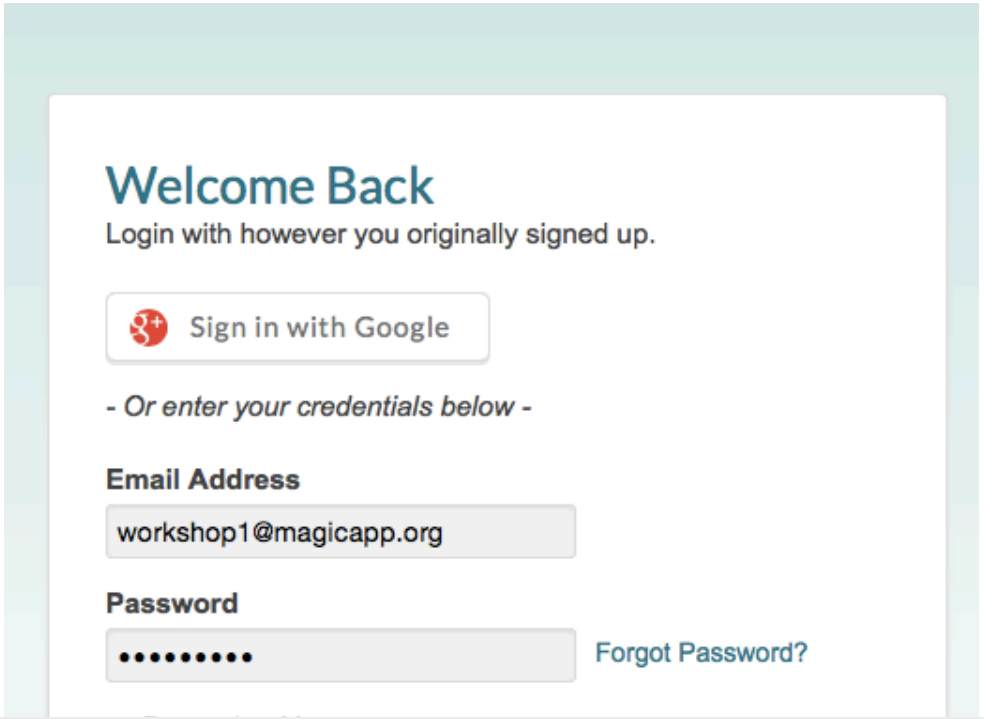
## www.magicapp.org

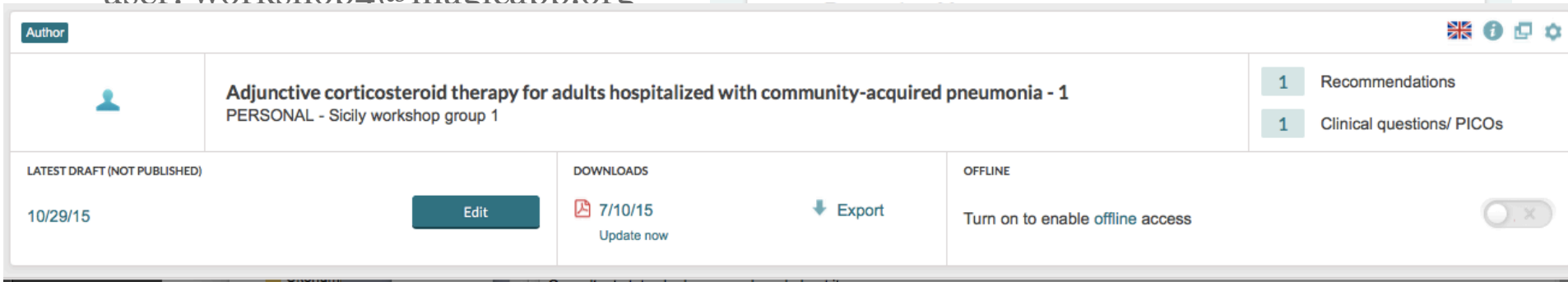
Group 1:
user: workshop1@magicapp.org
Pass: workshop1

Group 2:
user: workshop2@magicapp.org
Pass: workshop2

Group 3:
user: workshop3@magicapp.org
Pass: workshop3

Group 4:
user: workshop4@magicapp.org



# Changing practice requires more than EBM

**Orthopedic thromboprophylaxis?**

FOCUSED QUESTIONS

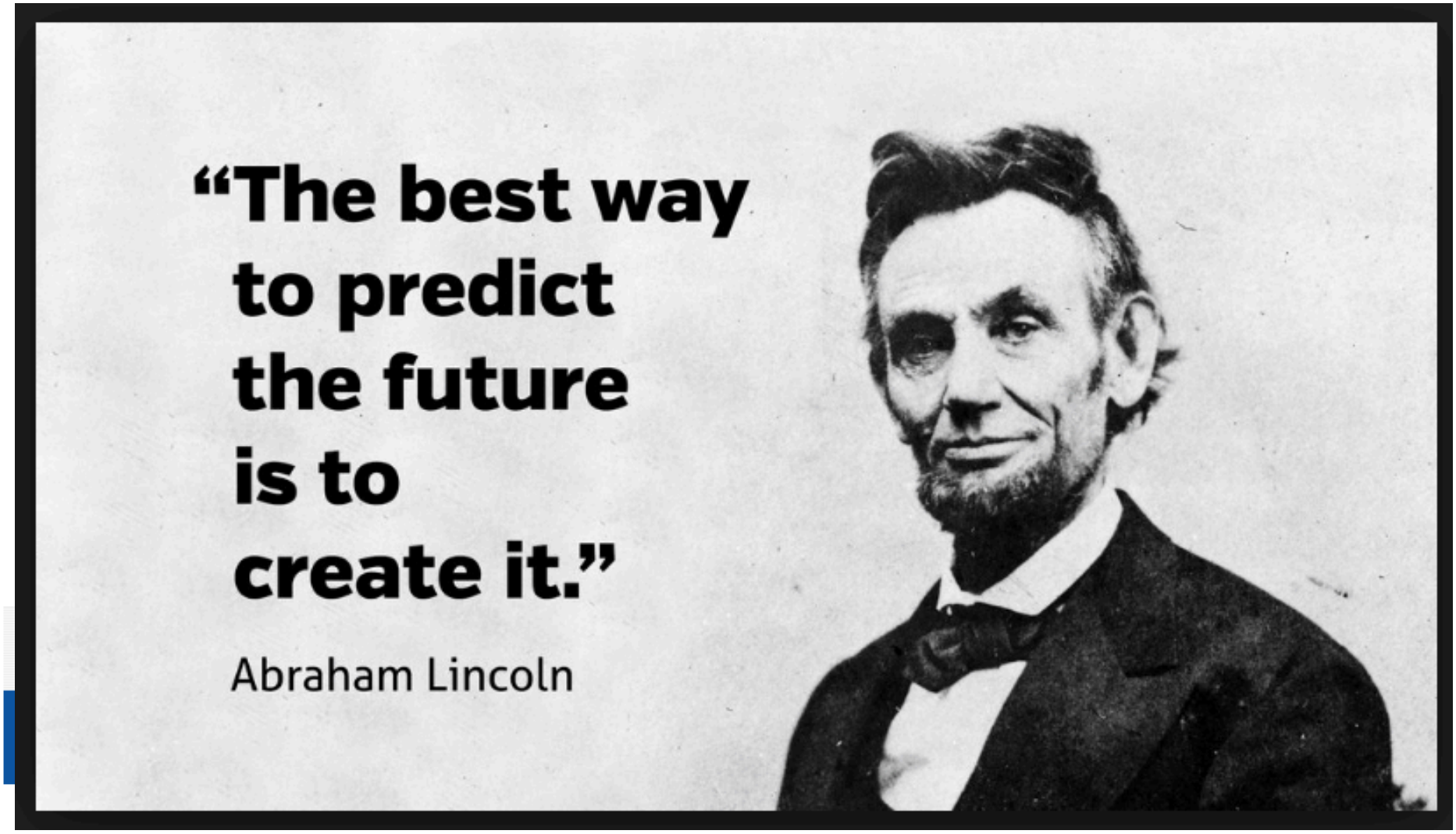
Search for recommendations in evidence-based guidelines

Weak recommendation for long term prophylaxis

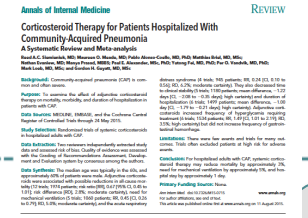
Apply the recommendation on individual patients

Quality improvement
Measure practice

# Health care and society face major challenges

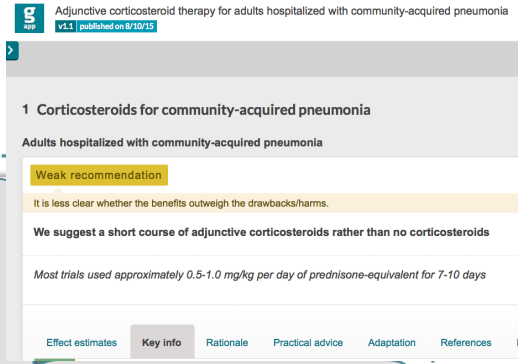


# Steroids in pneumonia: WikiRecs as alternative approach


Annals of Internal Medicine REVIEW

Corticosteroid Therapy for Patients Hospitalized With Community-Acquired Pneumonia

A Systematic Review and Meta-analysis


Adjunctive corticosteroid therapy for adults hospitalized with community-acquired pneumonia

v1.1 published on 8/10/15

1 Corticosteroids for community-acquired pneumonia

Adults hospitalized with community-acquired pneumonia

Weak recommendation

It is less clear whether the benefits outweigh the drawbacks/harms.

We suggest a short course of adjunctive corticosteroids rather than no corticosteroids

*Most trials used approximately 0.5-1.0 mg/kg per day of prednisone-equivalent for 7-10 days*

Effect estimates | Key info | Rationale | Practical advice | Adaptation | References

T2

11 August 2015: Systematic review and WikiRecs published

Day 30: Systematic review submitted to journal

Recommendation can be integrated in the EMR...?

19 January 2015: RCT i Lancet

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making GRADE the irresistible choice

*Enhancing the Evidence Ecosystem*

We can do shared decision-making...

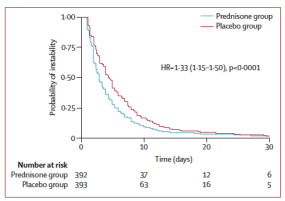

Figure 2: Kaplan-Meier curve of time to clinical stability

T1

Basic research

E.g. pharmacogenomics drug development...

T3

Document change in practice, in the EMR , in registries...
What are we waiting for?

Increasing value?

If implemented March 2015?
300 lives saved in Norway