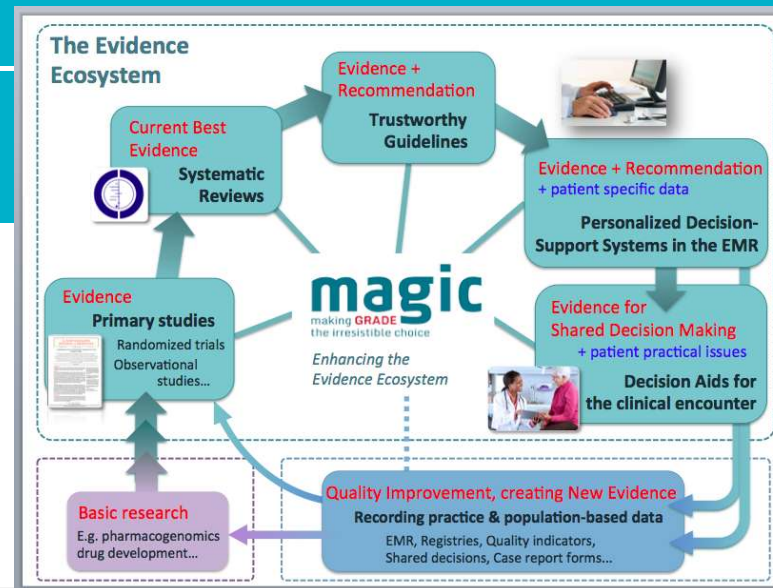


# A Trustworthy and Digital Evidence Ecosystem

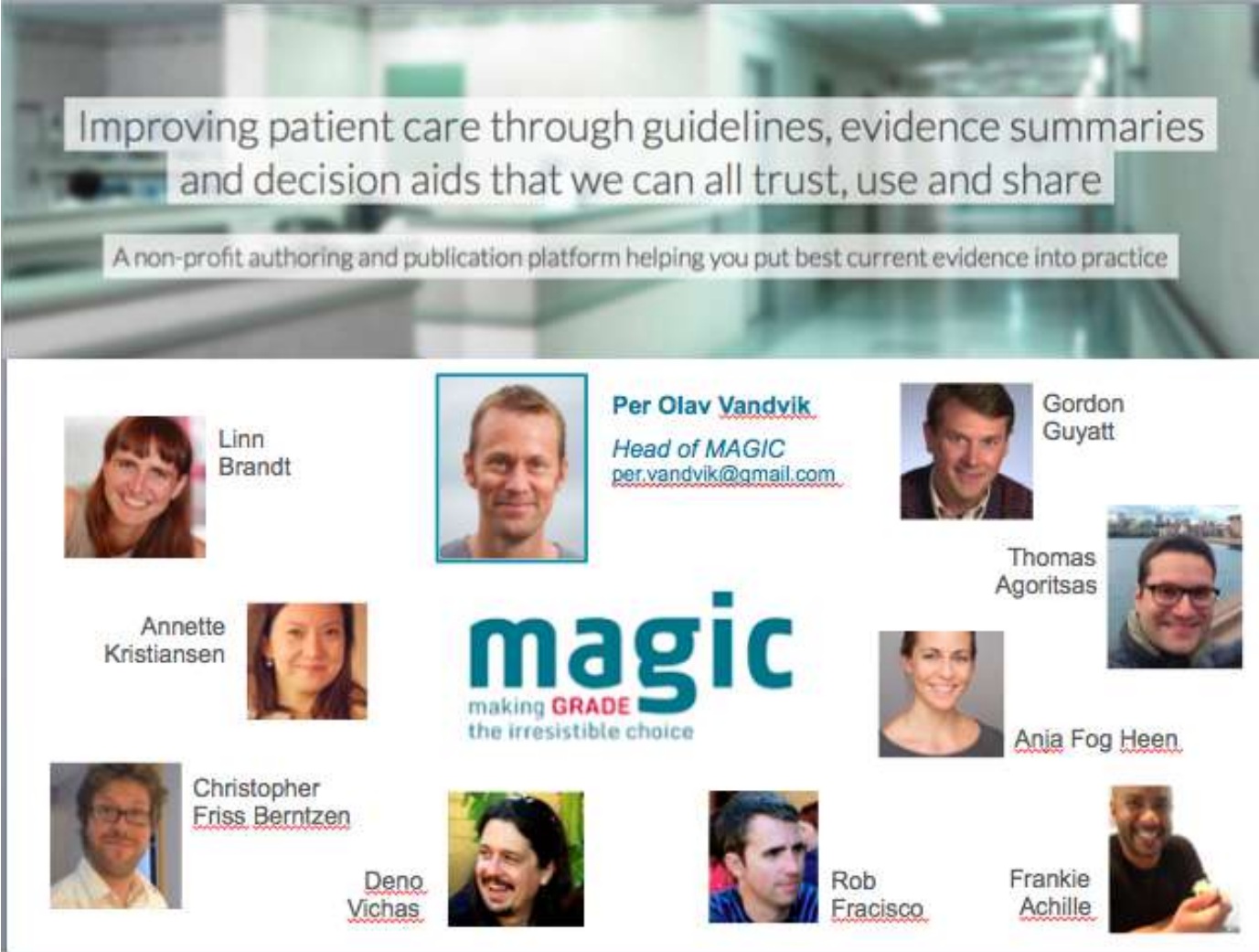
for increased value and reduced waste in research and health care



# Declaration of interests

Improving patient care through guidelines, evidence summaries  
and decision aids that we can all trust, use and share

A non-profit authoring and publication platform helping you put best current evidence into practice



**Linn Brandt**

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*Head of MAGIC*  
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**Gordon Guyatt**

**Annette Kristiansen**

**Thomas Agoritsas**

**magic**  
making **GRADE**  
the irresistible choice

**Ania Fog Heen**

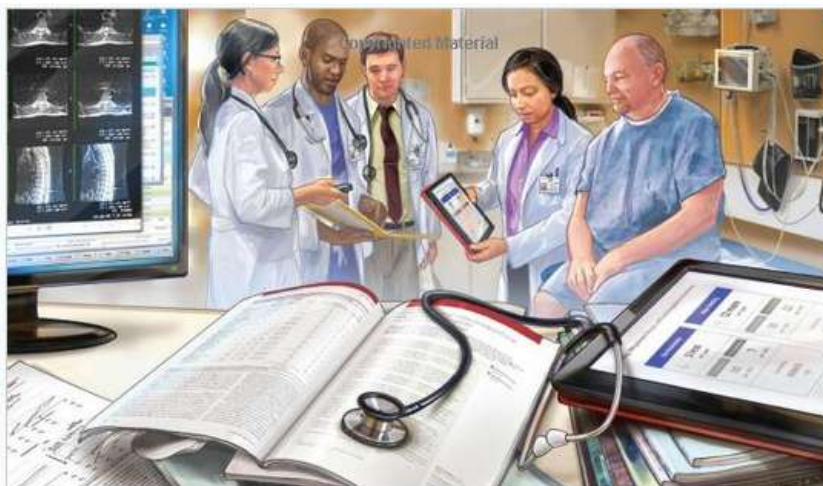
**Christopher Friss Berntzen**

**Deno Vichas**

**Rob Fracisco**

**Frankie Achille**

# Evidence-based medicine: Great advances



3rd EDITION

## Users' Guides to the Medical Literature

A MANUAL FOR EVIDENCE-BASED CLINICAL PRACTICE

Gordon Guyatt, MD

Drummond Rennie, MD

Maureen O. Meade, MD

Deborah J. Cook, MD



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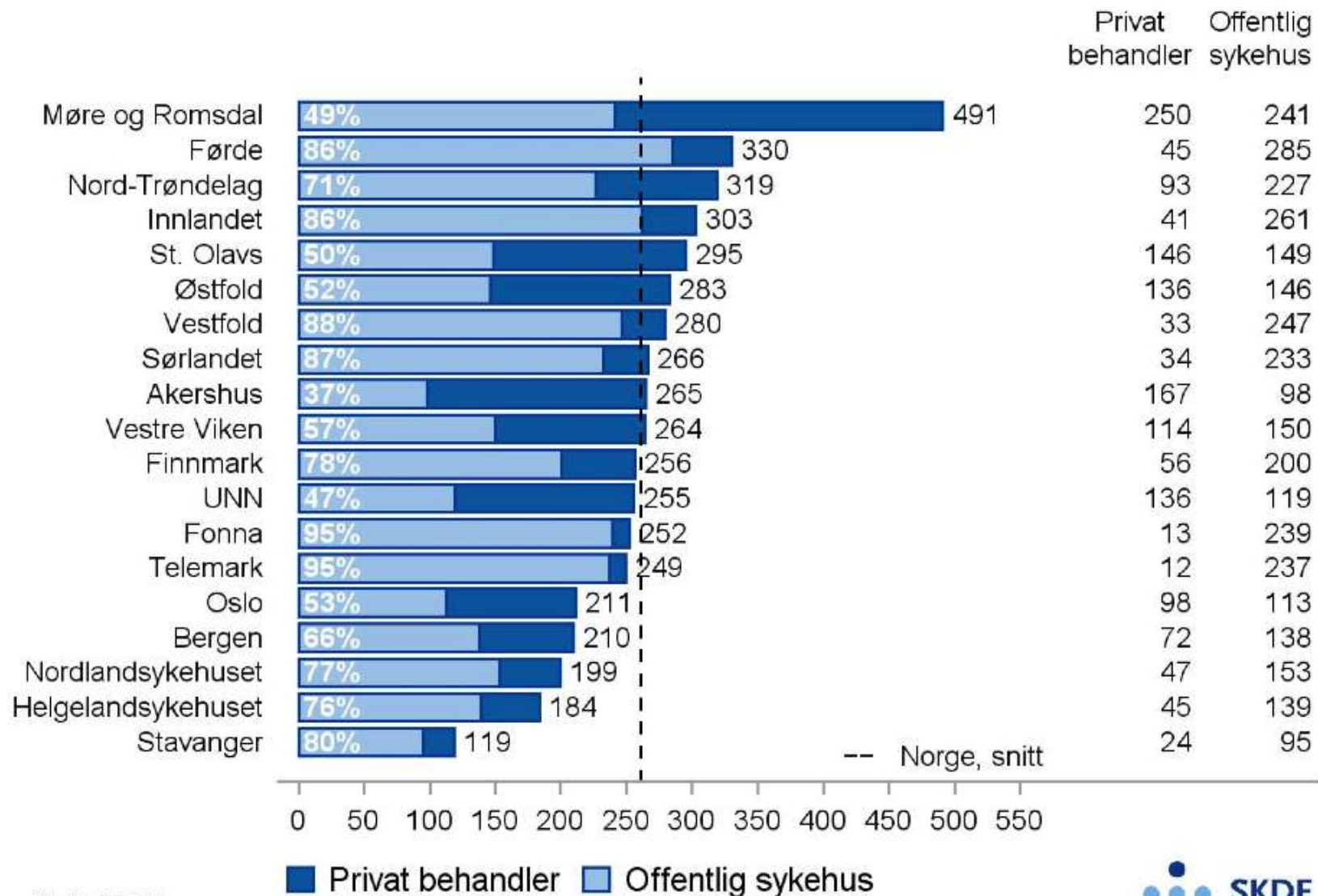
## 23rd Cochrane Colloquium Vienna

Filtering the  
information overload  
for better decisions

3-7 Oct, 2015  
[colloquium.cochrane.org](http://colloquium.cochrane.org)



Boområde/opptaksområde



Kilde: NPR/SSB

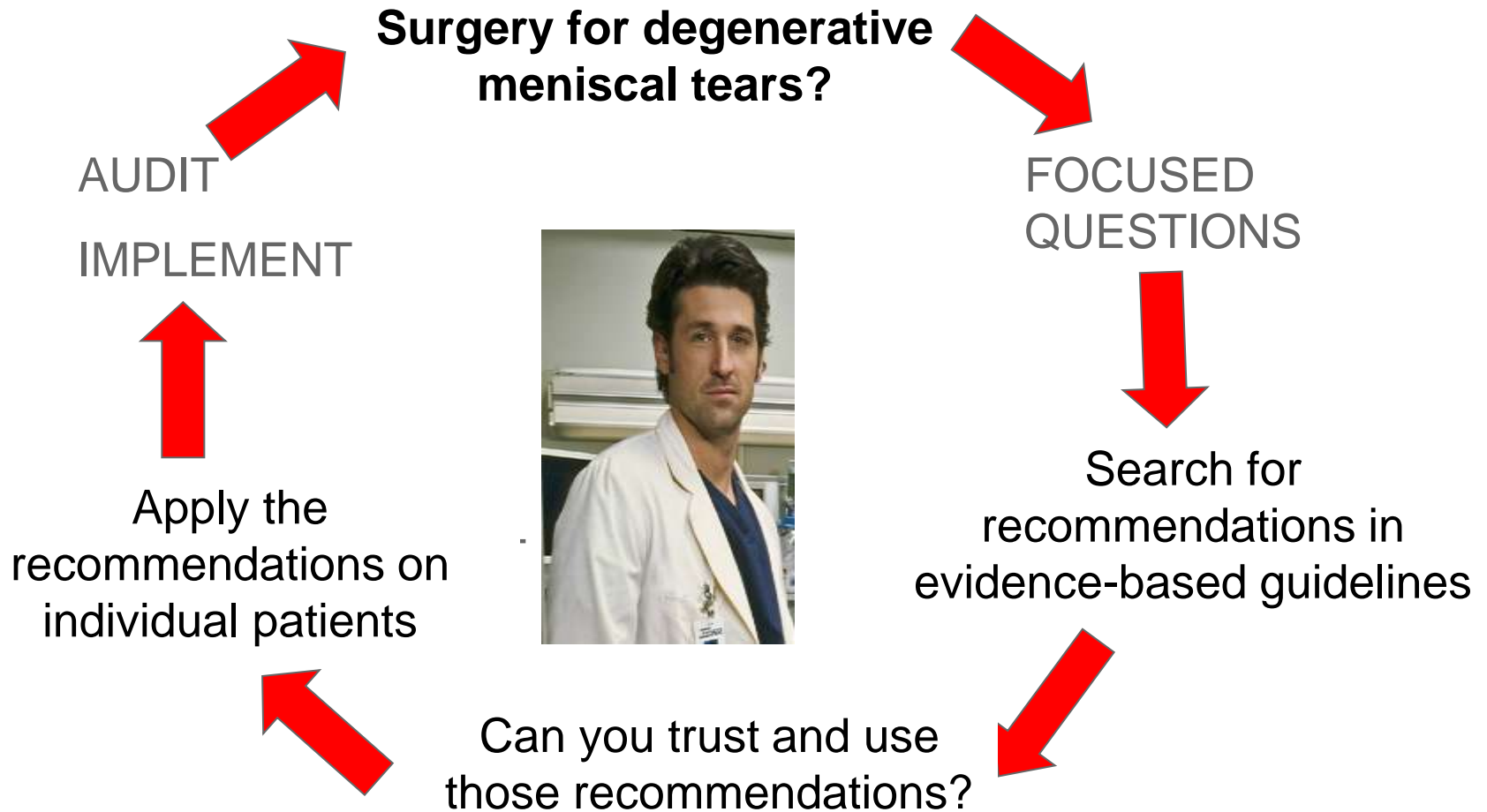


**Meniskoperasjon, kjønns- og aldersjusterte rater pr. 100.000 innbygger pr. boområde, fordelt på offentlig og privat behandler, gj.snitt for perioden 2011-2013**

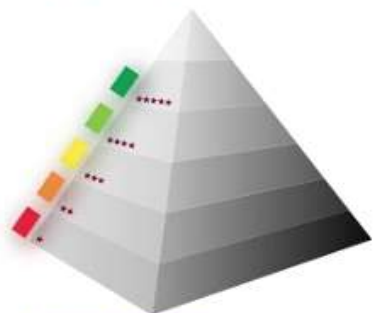


**Director of regional hospital trust:  
"Almost impossible to know what is the right  
thing to do"**

# Finding trustworthy answers to clinical questions



## Utvalgte nye studier



6S model explained  
Criteria for articles in **PLUS**

### ■ Oppslagsverk ★★★★★

UpToDate  
Best Practice

### ■ Oppsummerte oversikter ★★★★★

ACP Journal Club (via PLUS)  
DARE

### ■ Systematiske oversikter ★★★★★

PLUS Syntheses

### ■ Oppsummerte enkeltstudier ★★★★★

ACP Journal Club (via PLUS)

### ■ Enkeltstudier ★★★★★

PLUS Studies

### ■ Non-Appraised ★★★★★

PubMed Clinical Queries  
PubMed

Historikk

degenerative meniscal tears surgery

Søk

Current PLUS Database:

Avansert søk

### Oppslagsverk ★★★★★

# No trustworthy guidelines in Norway

[More Results...](#)

### Systematiske oversikter ★★★★★

#### ■ PLUS Syntheses

Arthroscopic surgery for degenerative tears of the meniscus: a systematic review and meta-analysis. (*Systematic Review*)

### Enkeltstudier (pre-appraised by these criteria) ★★★★★

#### ■ PLUS Studies

Efficacy of magnetic resonance imaging evaluation for meniscal tear in acute anterior cruciate ligament injuries. (*Original Study*)

Arthroscopic partial meniscectomy versus sham surgery for a degenerative meniscal tear. (*Original Study*)

**Below this bar you must do your own critical appraisal. (and can use these criteria if you wish)**

#### ■ PubMed Clinical Queries

These results are yielded from your search term combined with [Search Filters](#) which are a modified version of our PubMed Clinical Queries.

Systematic Reviews

**Degenerative** meniscus: Pathogenesis, diagnosis, and treatment options.

MR imaging characteristics and clinical symptoms related to displaced **meniscal flap tears**.

[More Results...](#)

Therapy

Arthroscopic **surgery** for **degenerative tears** of the meniscus: a systematic review and meta-analysis.

Arthroscopic debridement compared to intra-articular steroids in treating **degenerative medial meniscal tears**.

## ORIGINAL ARTICLE

## Arthroscopic Partial Meniscectomy versus Sham Surgery for a Degenerative Meniscal Tear

Raine Sihvonen, M.D., Mika Paavola, M.D., Ph.D., Antti Malmivaara, M.D., Ph.D., Ari Itälä, M.D., Ph.D., Antti Joukainen, M.D., Ph.D., Heikki Nurmi, M.D., Juha Kalske, M.D., and Teppo L.N. Järvinen, M.D., Ph.D., for the Finnish Degenerative Meniscal Lesion Study (FIDELITY) Group

## ABSTRACT

**BACKGROUND**

Arthroscopic partial meniscectomy is one of the most common orthopedic procedures, yet rigorous evidence of its efficacy is lacking.

**METHODS**

We conducted a multicenter, randomized, double-blind, sham-controlled trial in 146 patients 35 to 65 years of age who had knee symptoms consistent with a degenerative medial meniscus tear and no knee osteoarthritis. Patients were randomly assigned to arthroscopic partial meniscectomy or sham surgery. The primary outcomes were changes in the Lysholm and Western Ontario Meniscal Evaluation Tool (WOMET) scores (each ranging from 0 to 100, with lower scores indicating more severe symptoms) and in knee pain after exercise (rated on a scale from 0 to 10, with 0 denoting no pain) at 12 months after the procedure.

**RESULTS**

In the intention-to-treat analysis, there were no significant between-group differences in the change from baseline to 12 months in any primary outcome. The mean changes (improvements) in the primary outcome measures were as follows: Lysholm score, 21.7 points in the partial-meniscectomy group as compared with 23.3 points in the sham-surgery group (between-group difference,  $-1.6$  points; 95% confidence interval [CI],  $-7.2$  to  $4.0$ ); WOMET score, 24.6 and 27.1 points, respectively (between-group difference,  $-2.5$  points; 95% CI,  $-9.2$  to  $4.1$ ); and score for knee pain after exercise, 3.1 and 3.3 points, respectively (between-group difference,  $-0.1$ ; 95% CI,  $-0.9$  to  $0.7$ ). There were no significant differences between groups in the number of patients who required subsequent knee surgery (two in the partial-meniscectomy group and five in the sham-surgery group) or serious adverse events (one and zero, respectively).

**CONCLUSIONS**

In this trial involving patients without knee osteoarthritis but with symptoms of a degenerative medial meniscus tear, the outcomes after arthroscopic partial meniscectomy were no better than those after a sham surgical procedure. (Funded by the Sigrid Juselius Foundation and others; ClinicalTrials.gov number, NCT00549172.)

From the Department of Orthopedics and Traumatology, Hatanpää City Hospital, Tampere (R.S.), the Department of Orthopedics and Traumatology, Helsinki University Central Hospital and University of Helsinki (M.P., J.K., T.L.N.J.), and the National Institute for Health and Welfare, Center for Health and Social Economics (A.M.), Helsinki, the Department of Orthopedics and Traumatology, University of Turku, Turku (A.I.), the Department of Orthopedics, Traumatology, and Hand Surgery, Kuopio University Hospital, Kuopio (A.J.), and the Department of Orthopedics and Traumatology, Central Finland Central Hospital, Jyväskylä (H.N.) — all in Finland. Address reprint requests to Dr. Järvinen at the Department of Orthopedics and Traumatology, Helsinki University Central Hospital/Töölö Hospital, Topeliuksenkatu 5, P.O. Box 266, 00029 HUS, Helsinki, Finland, or at teppo.jarvinen@helsinki.fi.

\*A list of additional members of the FIDELITY Group is provided in the Supplementary Appendix, available at NEJM.org.

N Engl J Med 2013;369:2515-24.

DOI: 10.1056/NEJMoa1305189

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## Arthroscopic surgery for degenerative tears of the meniscus: a systematic review and meta-analysis

Moin Khan MD, Nathan Evaniew MD, Asheesh Bedi MD, Olufemi R. Ayeni MD MSc, Mohit Bhandari MD PhD

### ABSTRACT

**Background:** Arthroscopic surgery for degenerative meniscal tears is a commonly performed procedure, yet the role of conservative treatment for these patients is unclear. This systematic review and meta-analysis evaluates the efficacy of arthroscopic meniscal débridement in patients with knee pain in the setting of mild or no concurrent osteoarthritis of the knee in comparison with nonoperative or sham treatments.

**Methods:** We searched MEDLINE, Embase and the Cochrane databases for randomized controlled trials (RCTs) published from 1946 to Jan. 20, 2014. Two reviewers independently screened all titles and abstracts for eligibility. We assessed risk of bias for all included studies and pooled outcomes using a random-effects model. Outcomes (i.e., function and pain relief) were dichotomized to short-term (< 6 mo) and long-term (< 2 yr) data.

**Results:** Seven RCTs ( $n = 805$  patients) were included in this review. The pooled treatment

effect of arthroscopic surgery did not show a significant or minimally important difference (MID) between treatment arms for long-term functional outcomes (standardized mean difference [SMD] 0.07, 95% confidence interval [CI] -0.10 to 0.23). Short-term functional outcomes between groups were significant but did not exceed the threshold for MID (SMD 0.25, 95% CI 0.02 to 0.48). Arthroscopic surgery did not result in a significant improvement in pain scores in the short term (mean difference [MD] 0.20, 95% CI -0.67 to 0.26) or in the long term (MD -0.06, 95% CI -0.28 to 0.15). Statistical heterogeneity was low to moderate for the outcomes.

**Interpretation:** There is moderate evidence to suggest that there is no benefit to arthroscopic meniscal débridement for degenerative meniscal tears in comparison with nonoperative or sham treatments in middle-aged patients with mild or no concomitant osteoarthritis. A trial of nonoperative management should be the first-line treatment for such patients.

### Competing interests:

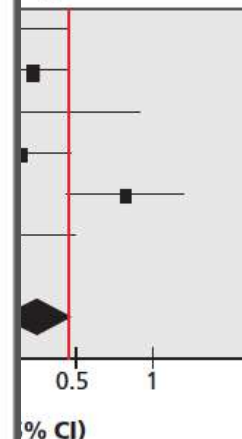
Mohit Bhandari declares consultancy payments from Smith & Nephew, Stryker, Amgen, Zimmer, Motmed and Biogen, and grant support from Smith & Nephew, DePuy, Eli Lilly and Biogen. No other competing interests were declared.

This article has been peer reviewed.

Correspondence to: Moin Khan, moinkhanmd@gmail.com

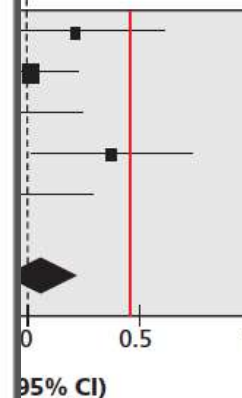
CMAJ 2014; DOI:10.1503/cmaj.140433

Favours surgical



of clinical equivalence

Favours surgical



of clinical equivalence

Study	Mean $\pm$ SD
Herrlin et al. <sup>37</sup>	80 $\pm$ 27.
Katz et al. <sup>39</sup>	78.9 $\pm$ 18.
Østerås et al. <sup>42</sup>	59.1 $\pm$ 23.
Sihvonen et al. <sup>40</sup>	82 $\pm$ 20.
Vermesan et al. <sup>43</sup>	42.8 $\pm$ 3.1
Yim et al. <sup>41</sup>	84.1 $\pm$ 17.
Overall	
Heterogeneity: $I^2 = 56\%$	

Figure 3: Pooled short-term outcomes based on a minimal important difference. Note: CI = confidence interval

Study	Mean $\pm$ SD
Herrlin et al. <sup>38</sup>	93.5 $\pm$ 20.
Katz et al. <sup>39</sup>	80.9 $\pm$ 17.
Sihvonen et al. <sup>40</sup>	82.2 $\pm$ 16.
Vermesan et al. <sup>43</sup>	36.1 $\pm$ 3.0
Yim et al. <sup>41</sup>	83.2 $\pm$ 12.
Overall	
Heterogeneity: $I^2 = 20\%$	

Figure 4: Pooled long-term outcomes based on a minimal important difference. Note: CI = confidence interval

Arthroscopic meniscal débridement is one of the most commonly performed procedures in orthopedic surgery. More than 700000 such procedures are performed each year in the United States, and more than 4 million are performed each year worldwide, with substantial economic and social burdens.<sup>1-6</sup> Many patients who undergo arthroscopic meniscal débridement have concurrent osteoarthritis, and orthopedic surgeons are often challenged to determine the true cause of patients' symptoms: the meniscal tear, osteoarthritis or a combination of both.<sup>7</sup>

Although 2 well-designed randomized controlled trials (RCTs)<sup>8,9</sup> have shown a lack of efficacy for arthroscopic surgery in patients with severe and advanced knee arthritis, many patients present with degenerative meniscal tears and mild or minimal concurrent osteoarthritis.<sup>10</sup> Patients with degenerative meniscal tears in the setting of mild osteoarthritis may experience functional improvement or pain relief with

arthroscopic surgery,<sup>11-14</sup> but the role of conservative treatment is unclear.<sup>15-17</sup> Arthroscopic surgery involves the potential for complications, which must be weighed against the prognosis for relief from presenting symptoms.<sup>5,18</sup>

The objective of this systematic review and meta-analysis was to evaluate the efficacy of arthroscopic meniscal débridement in comparison with nonoperative or sham treatments in patients with degenerative meniscal tears and knee pain with regard to function and pain relief in the short term (< 6 mo) and long term (< 2 yr).

### Methods

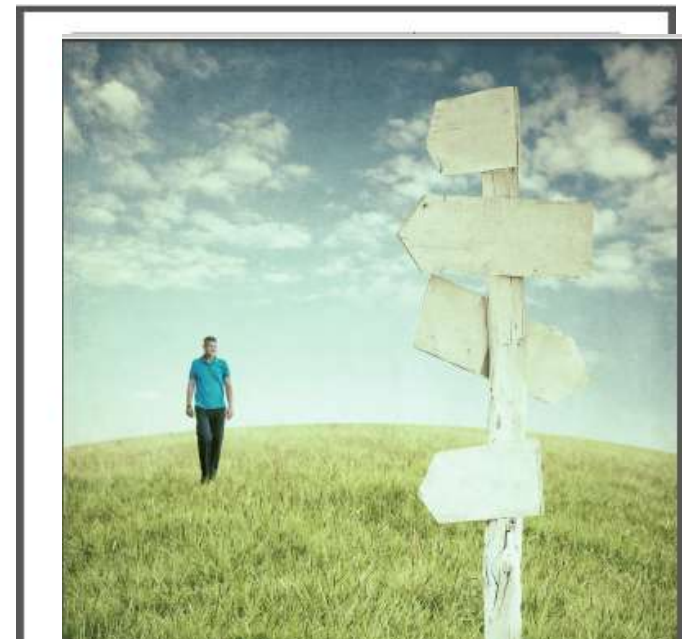
We conducted this study according to the methods of the *Cochrane Handbook for Systematic Reviews of Interventions*.<sup>19</sup> The findings are reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement.<sup>20</sup>

# We need to create trustworthy 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**

# 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



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](http://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.<sup>1</sup> 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.<sup>1,3</sup> Advances in approaches to summarize evidence, rate its quality, and move in a transparent manner from

of Recommendations Assessment, Development and Evaluation (GRADE) system.<sup>4,5</sup> GRADE has become an international standard, adopted by > 70 organizations worldwide, providing a framework and detailed guidance for producing trustworthy guidelines.<sup>6</sup> Despite this progress, challenges remain (Table 1).

For editorial comment see page 365



Guideline panel using MAGICapp

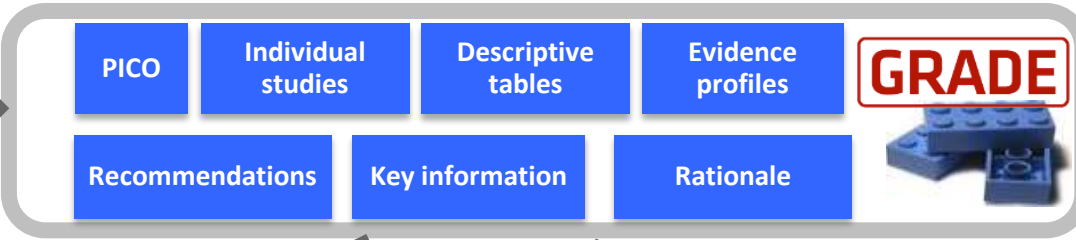


### Guideline authoring and publication platform (MAGICapp)

New evidence

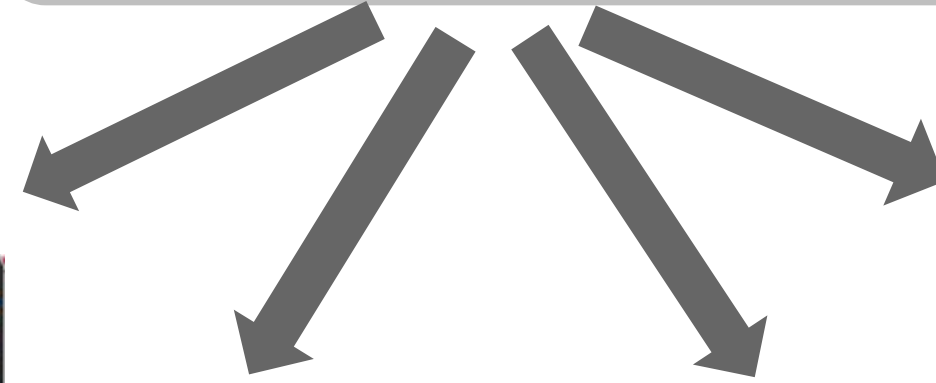


Dynamic updating



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



# 1 Surgery for degenerative meniscal tears

Background Text

Add Recommendation

## Strong recommendation

Options

Benefits clearly outweigh the drawbacks/harms.

In patients with degenerative meniscal tears we recommend not performing arthroscopic partial meniscectomy



Help ?

Effect estimates

Key info

Rationale

Practical advice

Adaptation

References

Discussion (0)

### Benefits and harms

Guidance

For patients treated with arthroscopic partial meniscectomy compared to sham-surgery at 3 month follow up:

No important difference in pain (SMD 0.2 higher, 95% CI: 0.67 lower to 0.26 higher) or function (SMD 0.25 higher, 95% CI: 0.02-0.48 higher)

Risk of deep venous thrombosis (6/1000), surgical complications (5/1000), infections (5/1000), cardiovascular events (3/1000) and death (1/1000)

### Quality of evidence

Guidance

We have moderate to high confidence in the effect-estimates for pain and function (systematic review of 4 trials, 800 patients) and risk estimates for adverse events (register-study of 14 391 patients)

### Preference and values

Guidance

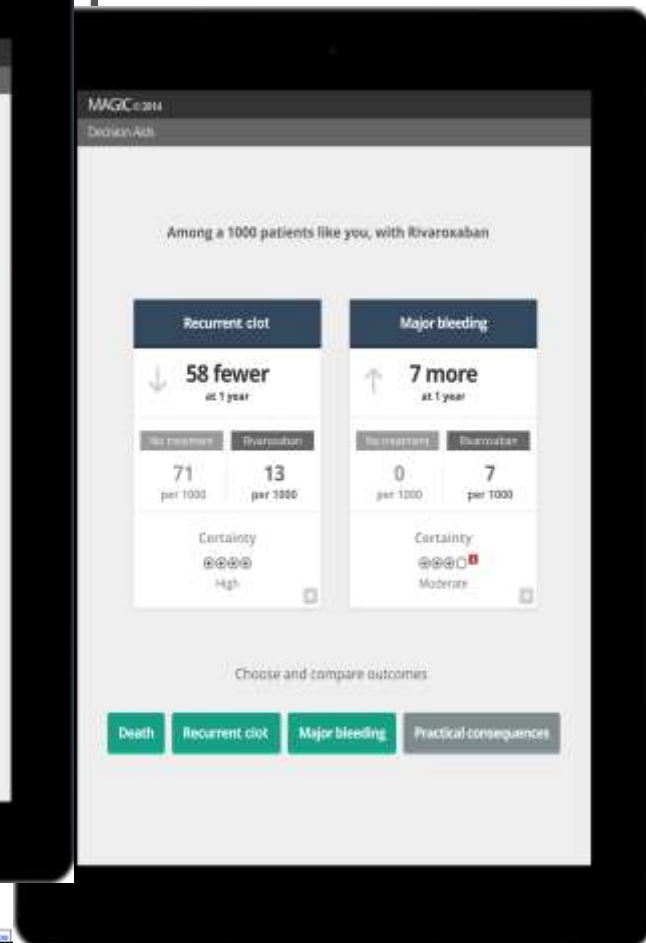
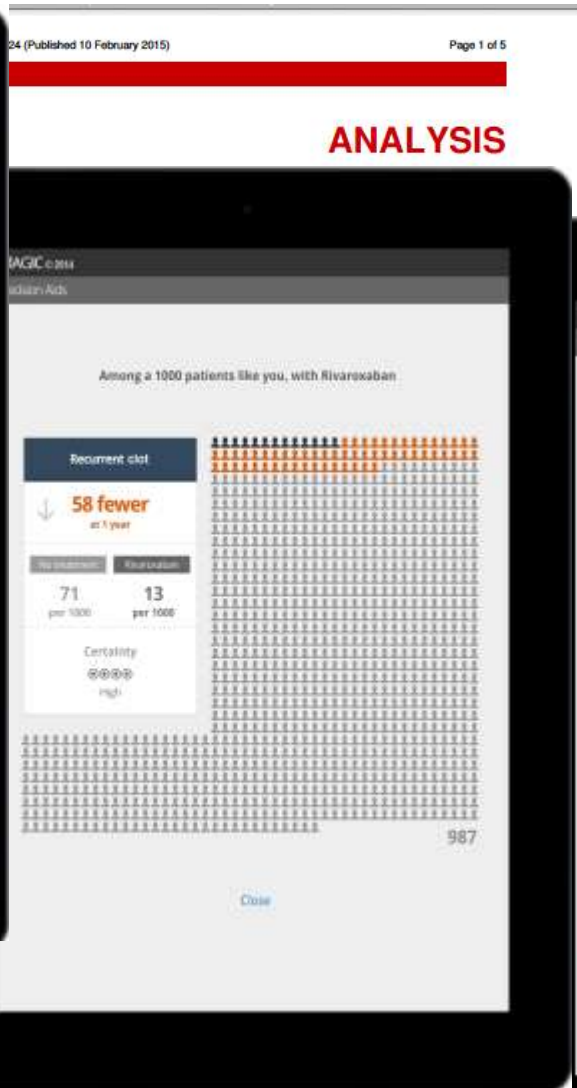
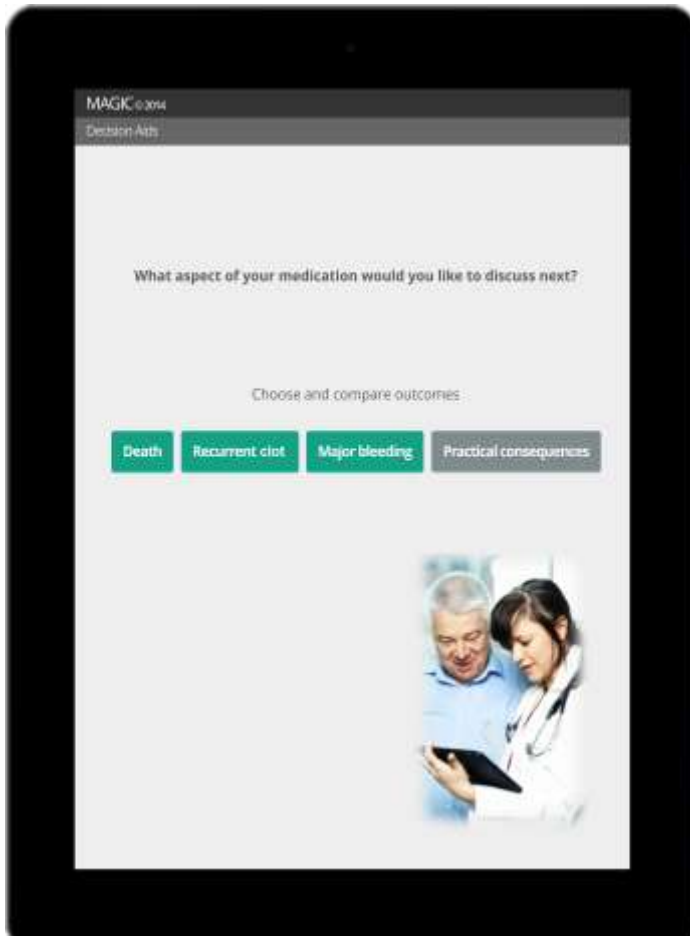
We believe all or nearly all patients being well-informed about the lacking benefits and potential risks of partial meniscectomies would elect not to undergo such procedures and rather use other treatments (e.g. physical exercise)

### Resources and other considerations

Guidance

Partial meniscectomies is costly (approximately 15 000 NOK/ procedure), places high resource-demands on health care and is not cost-effective (SBU, Sweden 2014)

# SHARE IT: Creating discussions in consultations



and summaries of evidence, and the educational needs of clinicians. In this article we highlight the educational needs of clinicians, while, struggle to access and understand versions of guidelines. In this article we highlight the educational needs of clinicians, while, struggle to access and understand versions of guidelines.

Correspondence to: T Agoritis, thomas.agoritis@gmail.com

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

RANESTAD, Kristin  
10048009896 - 34 år - Kvinne

Clinical Decision Support

Excerpt from Norwegian guidelines for antithrombotic therapy and thromboprophylaxis

### 1 Venous thromboembolism

Selection of drug for long term treatment

**Weak recommendation**

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

For patients without malignancy we suggest warfarin or rivaroxaban for long-term treatment rather than LMWH.

Remark: Dabigatran and apixaban are not registered for use on this indication in Norway at the time of writing (November 2013).

View less details

Effect evidence Key info Rationale Practical advice Adaptation Reference

**Benefits and harms**

Long-term treatment with LMWH instead of warfarin in patients with cancer reduces the number of recurrent thromboembolism from 30 till 19/1000 patients with no significant differences in major bleeding or deaths.

- Rivaroxaban versus LMWH / warfarin: No significant difference for any outcome.
- Dabigatran versus warfarin: No significant difference for any outcome.
- Apixaban versus warfarin: No significant difference for recurrent thromboembolism or death after 6 months, but significantly fewer major bleeds with apixaban.

**Quality of evidence**

For LMWH versus warfarin considered here: Moderate due to low precision and possible risk of bias.

For NOAC versus warfarin: Moderate due to imprecise effect estimates for mortality and recurrent venous thromboembolism.

**Preference and values**

We believe that most patients will want long-term oral treatment instead of LMWH given the burden of self-injections. Patients who place a high value on avoiding INR monitoring and diet restrictions are likely to prefer rivaroxaban rather than warfarin.

**Resources and other considerations**

Warfarin, LMWH and rivaroxaban reimbursed. Three months' supply of warfarin (3 tbl daily): NOK 436,-, rivaroxaban 20 mg x 1: NOK 2228,- LMWH 10000 IU x 1: NOK 7404,- (SPOR 06/01/12).

### EMR Data

Found 16 emr codes for current Recommendation.

Neoplasm	SNOMED: 108369006
Liver disease	SNOMED: 235856003
Renal failure	SNOMED: 236423003
Temperature	37,7 °C SNOMED: 246506008 1 gdr, kl 23:14
Body weight	60 kg SNOMED: 27113001 16-Aug kl 08:37
Pulse Rate	89 /min SNOMED: 78564009 16-Aug kl 08:38
Antithrombotics	ATC: B01A
Creatinin	78 mmol/l LOINC: LP14355-9 1 gdr, kl 08:19
Hemoglobin	11,2 gm/l LOINC: LP14449-0 1 gdr, kl 07:56
Platelets	256 10 <sup>9</sup> /l LOINC: LP14597-6 1 gdr, kl 07:56
Potassium	3,7 mmol/l LOINC: LP15098-4 1 gdr, kl 08:16
Sodium	LOINC: LP15099-2
INR	LOINC: LP20762-8
Blood pressure	110 / 72 mm[Hg] LOINC: LP40259-1 16-Aug kl 09:15
C reactive protein	18 mg/l LOINC: LP41279-8 16-Aug kl 13:03
Alanine aminotransferase	LOINC: LP44699-4 1 gdr, kl 07:51

Aktuell kontakt Dokumenter  
 DPs Clinic Oppgaver  
 Patientliste  
 Arktipe Admin Patientleadmin

Pasienter Arbeidsflate



# Changing practice requires more than EBM

**Surgery for degenerative meniscal tears?**

Quality improvement  
Measure practice

FOCUSED  
QUESTIONS

Apply the  
recommendation on  
individual patients

Search for  
recommendations in  
evidence-based guidelines

Strong recommendation  
against meniscectomy



References Evidence Profiles Recommendations Search for recommendations Search

1 Surgery for degenerative meniscal tears Background Text Add Recommendation

Strong recommendation Options

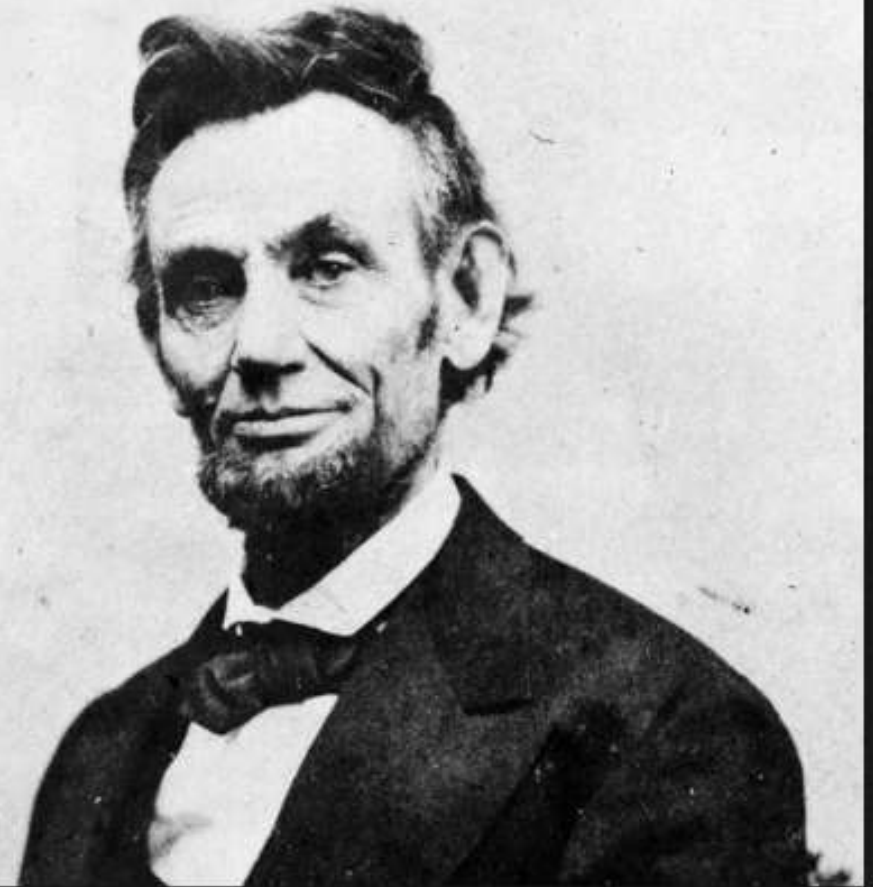
In patients with degenerative meniscal tears we recommend not performing arthroscopic partial meniscectomy



# Health care and society face major challenges

**“The best way  
to predict  
the future  
is to  
create it.”**

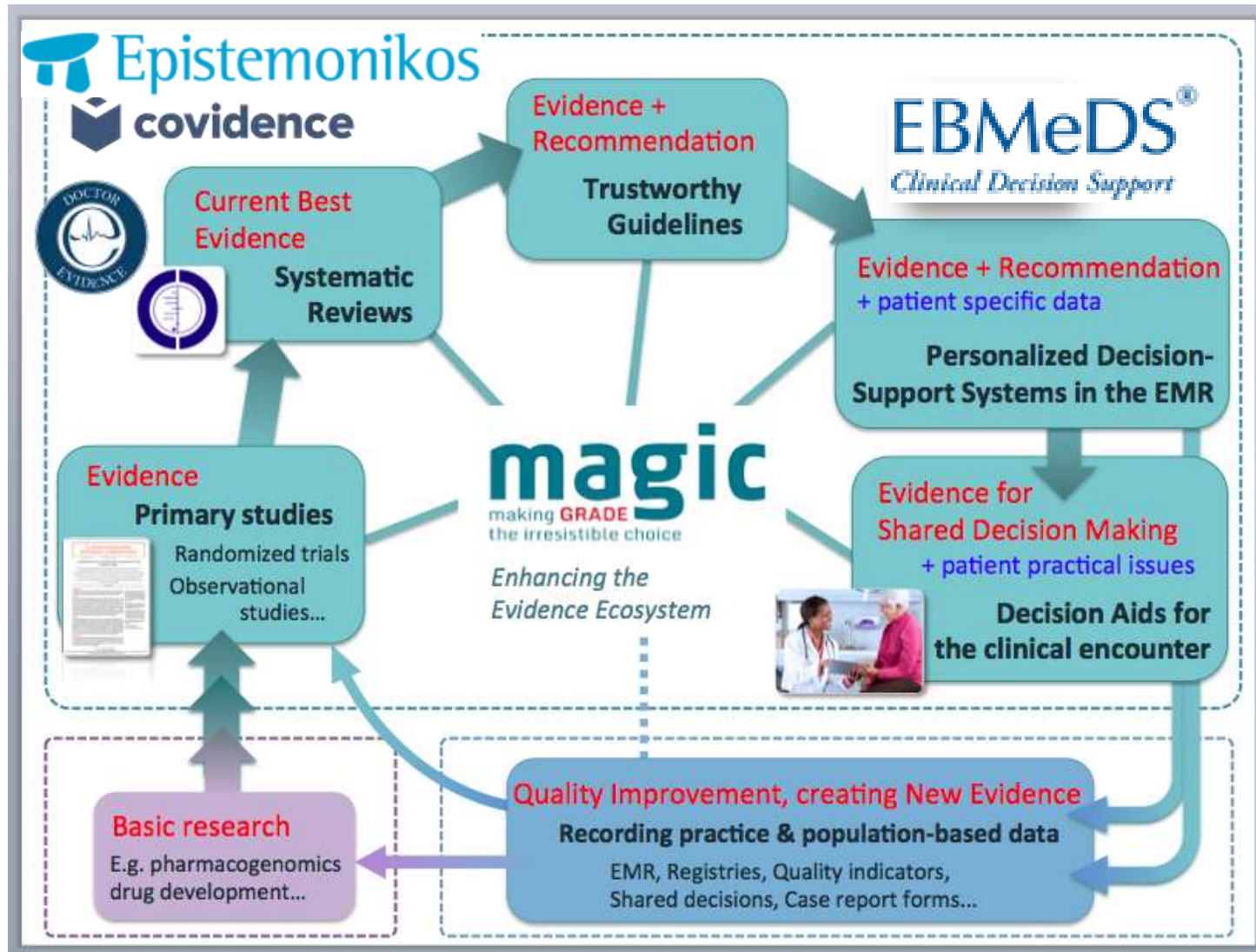
Abraham Lincoln



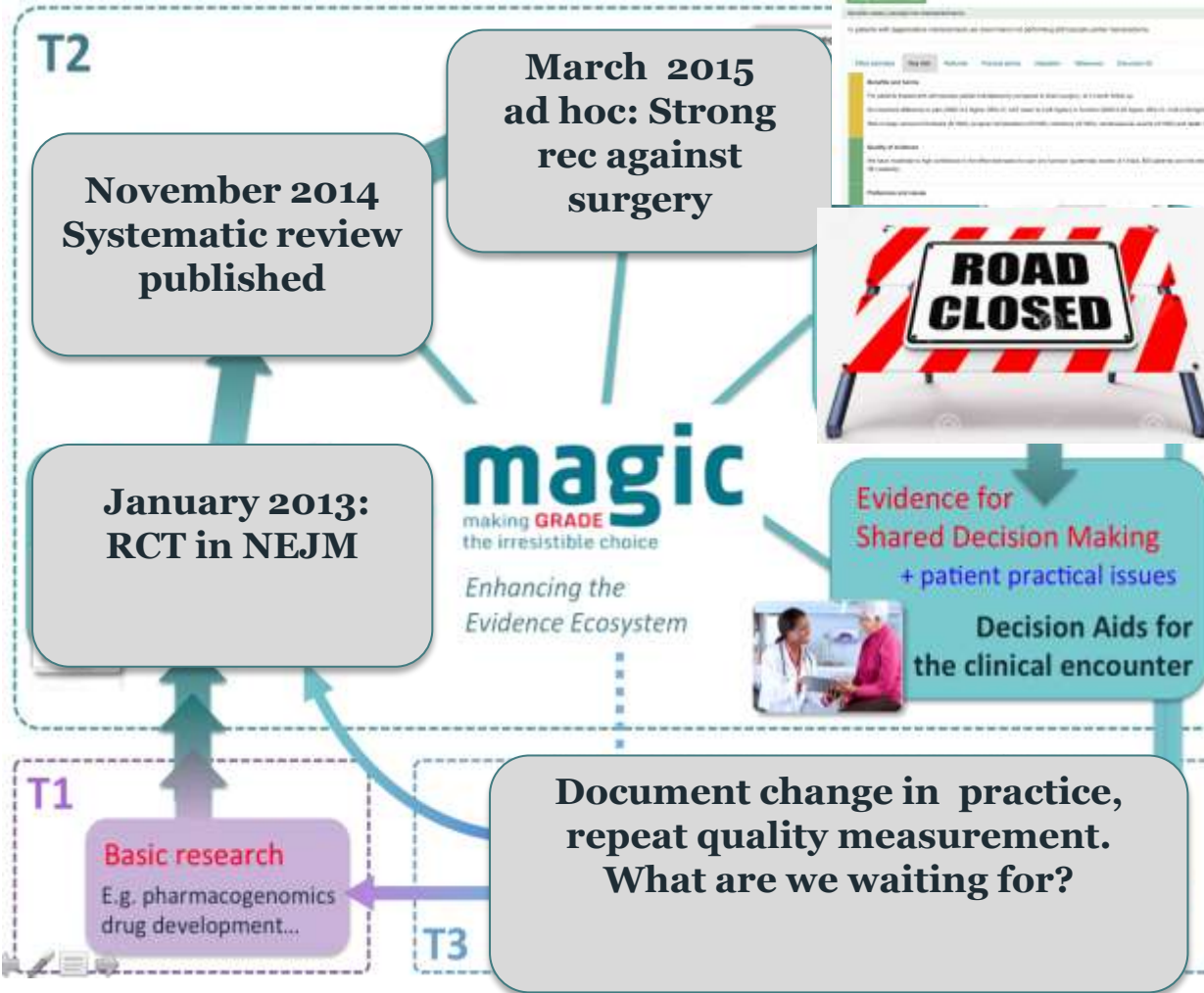
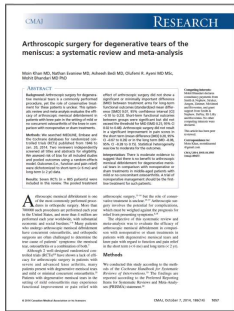
## The Evidence Ecosystem: Main objective

To create a digital evidence ecosystem connecting people - performing primary research, systematic reviews, guidelines, computerized decision support(CDS) and quality improvement - with innovative technological platforms, facilitating the creation, dissemination and implementation of trustworthy evidence in clinical practice

# A trustworthy and digital evidence ecosystem



# Meniscus surgery: No more waste in Norway?



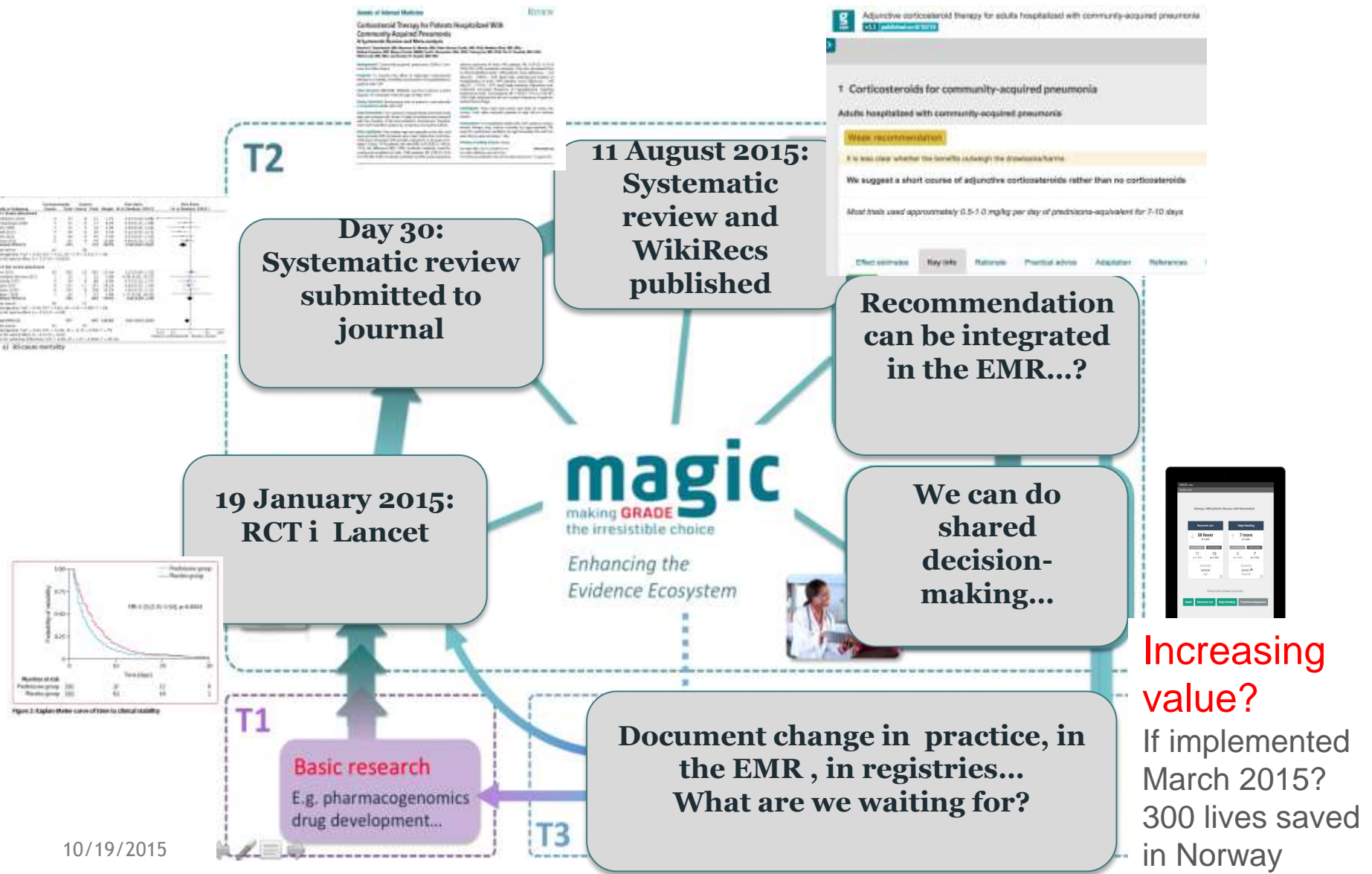
## Barriers:

- Surgeons hiding
- Funding (DRG)
- Silos of people
- No explicit links

## Reducing waste?

If implemented November 2014?  
100 mill Euros saved by now

# Steroids in pneumonia: WikiRecs as alternative approach



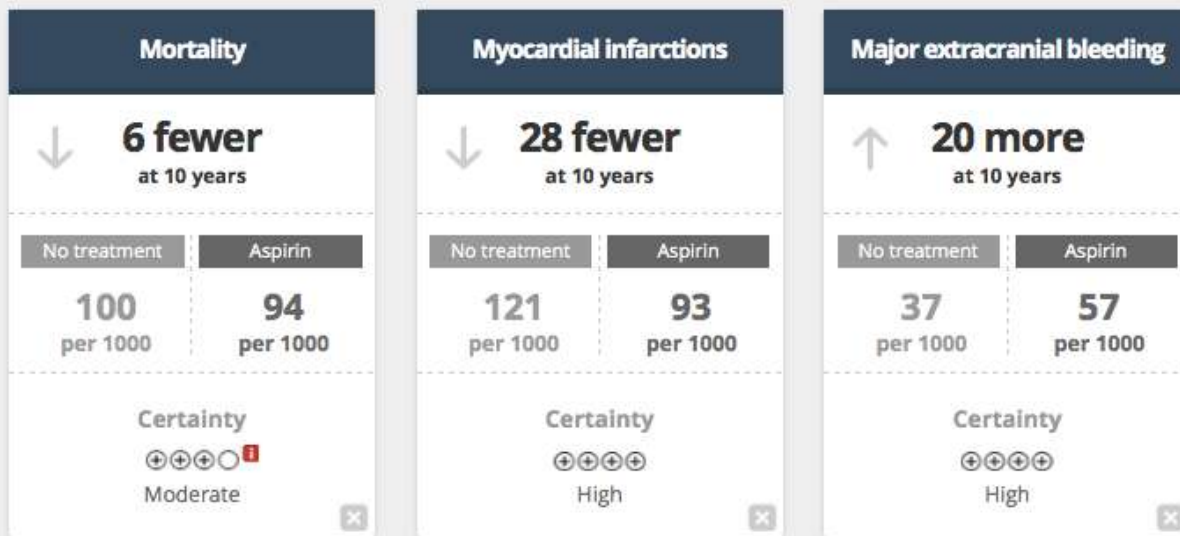
## Take home messages

- Advances in standards, systems and tools for EBM
- Technology will play a key role in creating, disseminating and updating trustworthy evidence in a digital world
- EBM not enough: Evidence Ecosystem a solution?
- Equally important as **technology** is **collaboration** and **sharing of information**: A true collaborative culture, lots of work (and perhaps some more magic ;-)



Low dose aspirin vs. no treatment for primary prevention

Among a 1000 patients like you, with aspirin



Choose and compare outcomes

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