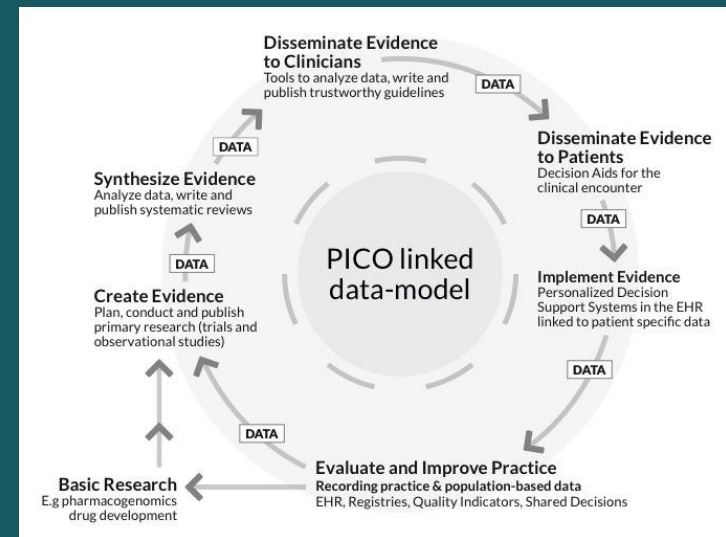
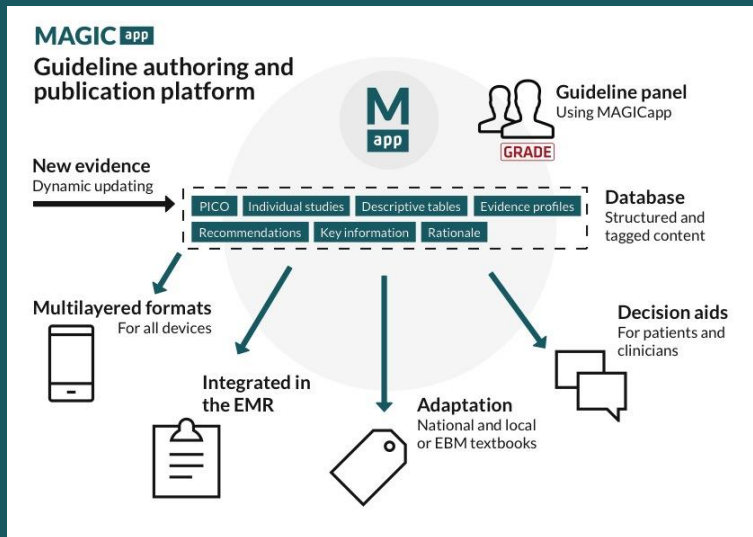


MAGICapp for evidence synthesizers

in an emerging Trustworthy and Digital Evidence Ecosystem



Cochrane Webinar August 23 2017

Per Olav Vandvik, associate professor MD, Ph.D

Disclosures: Head of MAGIC, a non-profit research and innovation program

MAGICapp for evidence synthesizers?



Trusted evidence.
Informed decisions.
Better health.

Search...



Our evidence

About us

Get involved

News and events

Cochrane Library



Cochrane and MAGIC announce partnership

- ◆ News and Events
- ◆ Featured Reviews
- ◆ Jobs
- ◆ Making a Difference

Cochrane and [MAGIC](#) are delighted to announce the launch of an official partnership, aimed at supporting and further strengthening the use of health evidence within the context of a digital and trustworthy evidence ecosystem for health care.



MAGIC (formally known as the MAKING GRADE the Irresistible Choice (MAGIC) organization) is a non-profit research and innovation programme set up to make evidence summaries and recommendations that work for clinicians at the point of care and to facilitate shared decision-making with patients. Established in 2010, the MAGIC project has, among a number of other initiatives, developed the MAGICapp, a web-based platform for preparing guidelines using structured data systems and validated methods.

Print



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Subscribe

2016: Time for a post-guidelines era in health care?

Major limitations EBM and guidelines

- Developers
 - Not trustworthy, ignore other knowledge
 - Resource-demanding, extreme duplication
- Clinicians and patients
 - Available, useful, understandable ?
 - Allow shared, personalized decisions?
 - Up to date?
 - Integrated in the electronic health record?

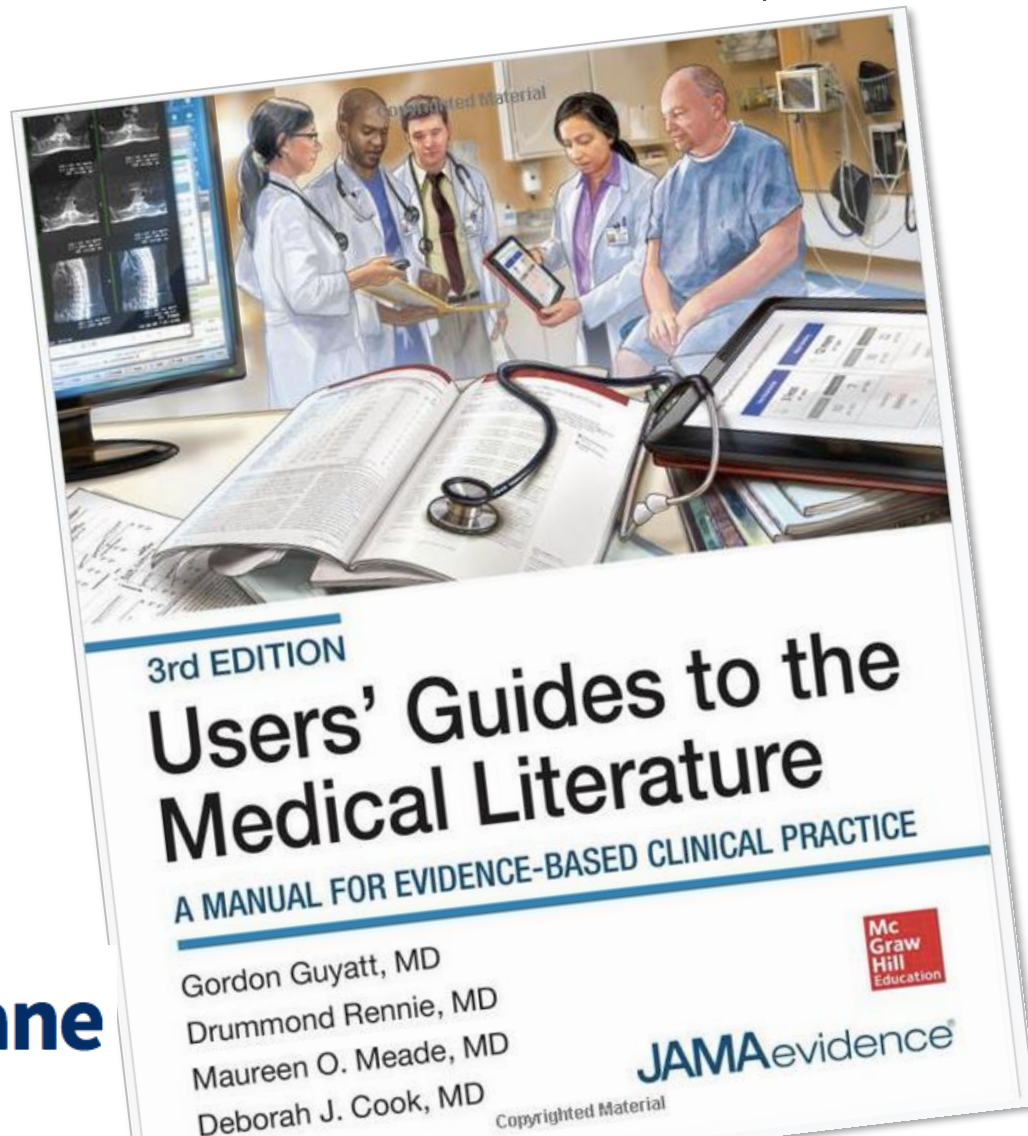
The image shows a screenshot of a BMJ article. At the top left is the BMJ logo. At the top right is the CrossMark logo. Below the logo is the article ID: BMJ 2014;348:g3725 (doi: 10.1136/bmj.g3725) (Published 13 June 2014). On the right side, it says 'Page 1 of 7'. Below this is a red horizontal bar with the word 'ANALYSIS' in white capital letters. Underneath the bar is the word 'ESSAY' in red. The main title of the article is 'Evidence based medicine: a movement in crisis?' in bold black text. Below the title is the authors' names: 'Trisha Greenhalgh and colleagues argue that, although evidence based medicine has had many benefits, it has also had some negative unintended consequences. They offer a preliminary agenda for the movement's renaissance, refocusing on providing useable evidence that can be combined with context and professional expertise so that individual patients get optimal treatment'. Below the authors' names is their affiliation: 'Trisha Greenhalgh dean for research impact¹, Jeremy Howick senior research fellow², Neal Maskrey professor of evidence informed decision making³, for the Evidence Based Medicine Renaissance Group'. Below the affiliation are footnotes: '¹Barts and the London School of Medicine and Dentistry, London E1 2AB, UK; ²Centre for Evidence-Based Medicine, University of Oxford, Oxford OX2 6NW, UK; ³ Keele University, Staffs ST5 5BG, UK'. The main body of the article is divided into two columns. The left column starts with 'It is more than 20 years since the evidence based medicine working group announced a "new paradigm" for teaching and practising clinical medicine.¹ Tradition, anecdote, and theoretical reasoning from basic sciences would be replaced by evidence from high quality randomised controlled trials and observational studies, in combination with clinical expertise and the needs and wishes of patients. Evidence based medicine quickly became an energetic intellectual community committed to making clinical practice more scientific and empirically grounded and thereby achieving safer, more consistent, and more cost effective care.² Achievements included establishing the Cochrane Collaboration to collate and summarise evidence from clinical trials;³ setting methodological and publication standards for primary and secondary research;⁴ building national and international infrastructures for developing and updating clinical practice guidelines;⁵ developing resources and courses for teaching critical appraisal;⁶ and building the knowledge base for implementation and knowledge translation.⁷ From the outset, critics were concerned that the emphasis on experimental evidence could devalue basic sciences and the tacit knowledge that accumulates with clinical experience; they also questioned whether findings from average results in clinical studies could inform decisions about real patients, who seldom fit the textbook description of disease and differ from those included in research trials.⁸ But others argued that evidence...' The right column starts with 'Two decades of enthusiasm and funding have produced numerous successes for evidence based medicine. An early example was the British Thoracic Society's 1990 asthma guidelines, developed through consensus but based on a combination of randomised trials and observational studies.⁹ Subsequently, the use of personal care plans and step wise prescription of inhaled steroids for asthma increased,¹⁰ and morbidity and mortality fell.¹¹ More recently, uptake of the UK National Institute for Health and Care Excellence guidelines for prevention of venous thromboembolism after surgery has produced significant reductions in thromboembolic complications.¹² Despite these and many other successes, wide variation in implementing evidence based practice remains a problem. For example, the incidence of arthroscopic washout of the knee joint, whose benefits are unproved except when there is a known loose body, varies from 3 to 48 per 100 000 in England.¹³ More fundamentally, many who support evidence based medicine in principle have argued that the movement is now facing a serious crisis (box 1).¹⁴ Below we set out the problems and suggest some solutions. Distortion of the evidence based brand The first problem is that the evidence based "quality mark" has been misappropriated and distorted by vested interests. In particular, the drug and medical devices industries increasingly...

Time to respond to calls from the opponents?

Major challenges with EBM, systematic reviews and guidelines but also advances in standards, methods and tools..

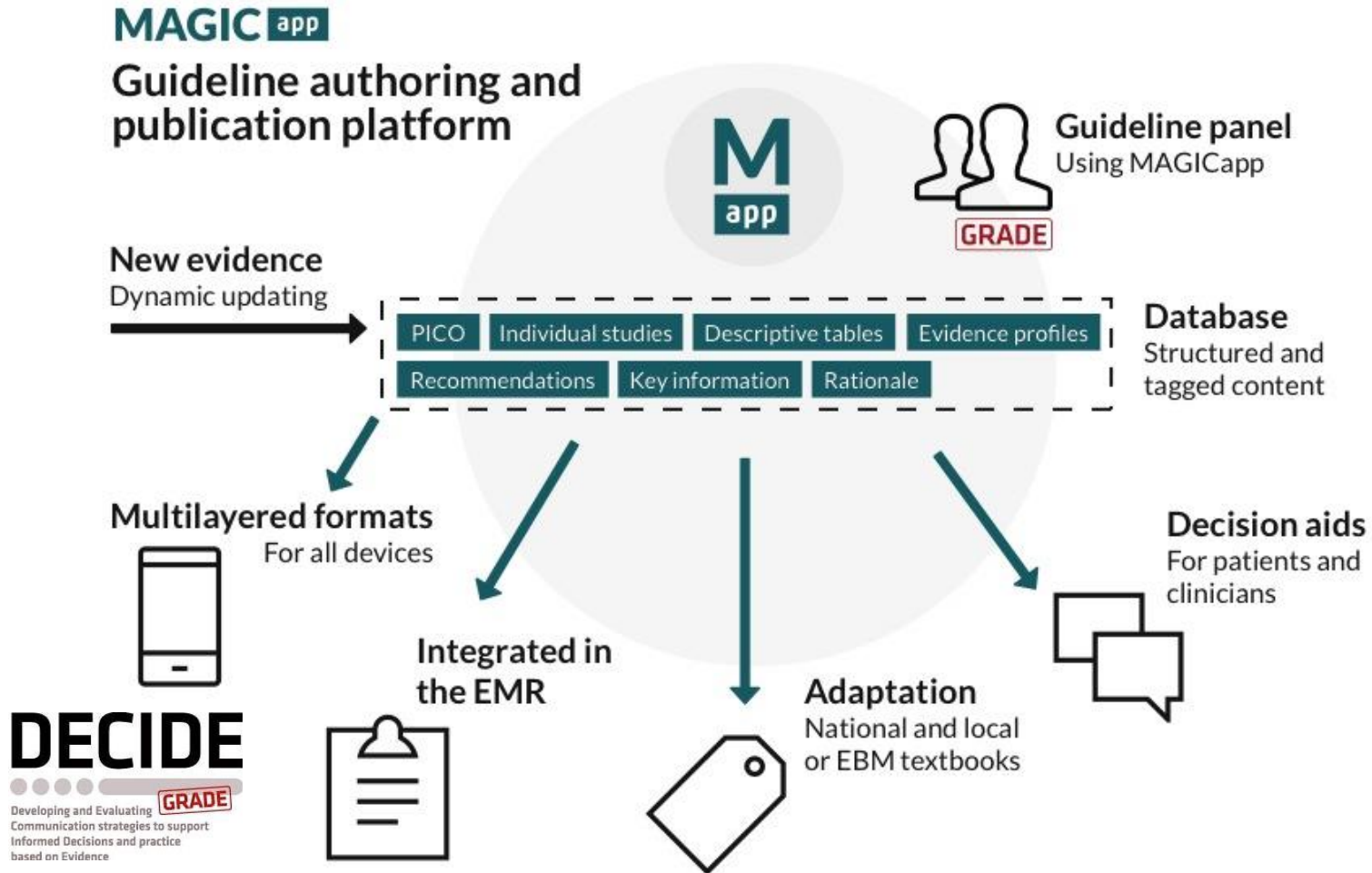


CLINICAL PRACTICE
GUIDELINES
WE CAN TRUST



GRADE

Can technology help? Platforms and tools ready for use (e.g., www.magicapp.org)



A peek into MAGICapp, for end-users and authors

Google Kalender - Informasjon om aktiviteten Implementering MAGICapp

The 2017 Canadian Guideline for Opioids for Chronic Non-Cancer Pain v4.4 published on 8/17/17

Home Help Resources Log in EN ONLINE

Search for recommendations

- Scope of the Guideline and How To Use the Guideline [View Section Text](#)
- Background and methods [View Section Text](#)
- Initiation and Dosing of Opioids in Patients with Chronic Noncancer Pain [View Section Text](#)
- Rotation and Tapering of Opioids, for Patients with Chronic Noncancer Pain
- Best Practice Statements
- Expert Guidance

1 Scope of the Guideline and How To Use the Guideline

2 Background and methods

3 Initiation and Dosing of Opioids in Patients with Chronic Noncancer Pain

Recommendation 1: When considering therapy for patients with chronic non-cancer pain [View Section Text](#)

Strong recommendation

We recommend optimization of non-opioid pharmacotherapy and non-pharmacological therapy, rather than a trial of opioids

[VIEW MORE DETAILS](#)

Recommendation 2: For patients with chronic noncancer pain, without current or past substance use disorder and without other active psychiatric disorders, who have persistent problematic pain despite optimized nonopioid therapy [View Section Text](#)

Weak recommendation

Challenges beyond guidelines, for patients and society



THE LANCET
A new Lancet Series



increasing value
reducing waste
in research

International Forum on
QUALITY & SAFETY
in HEALTHCARE
Paris 2014

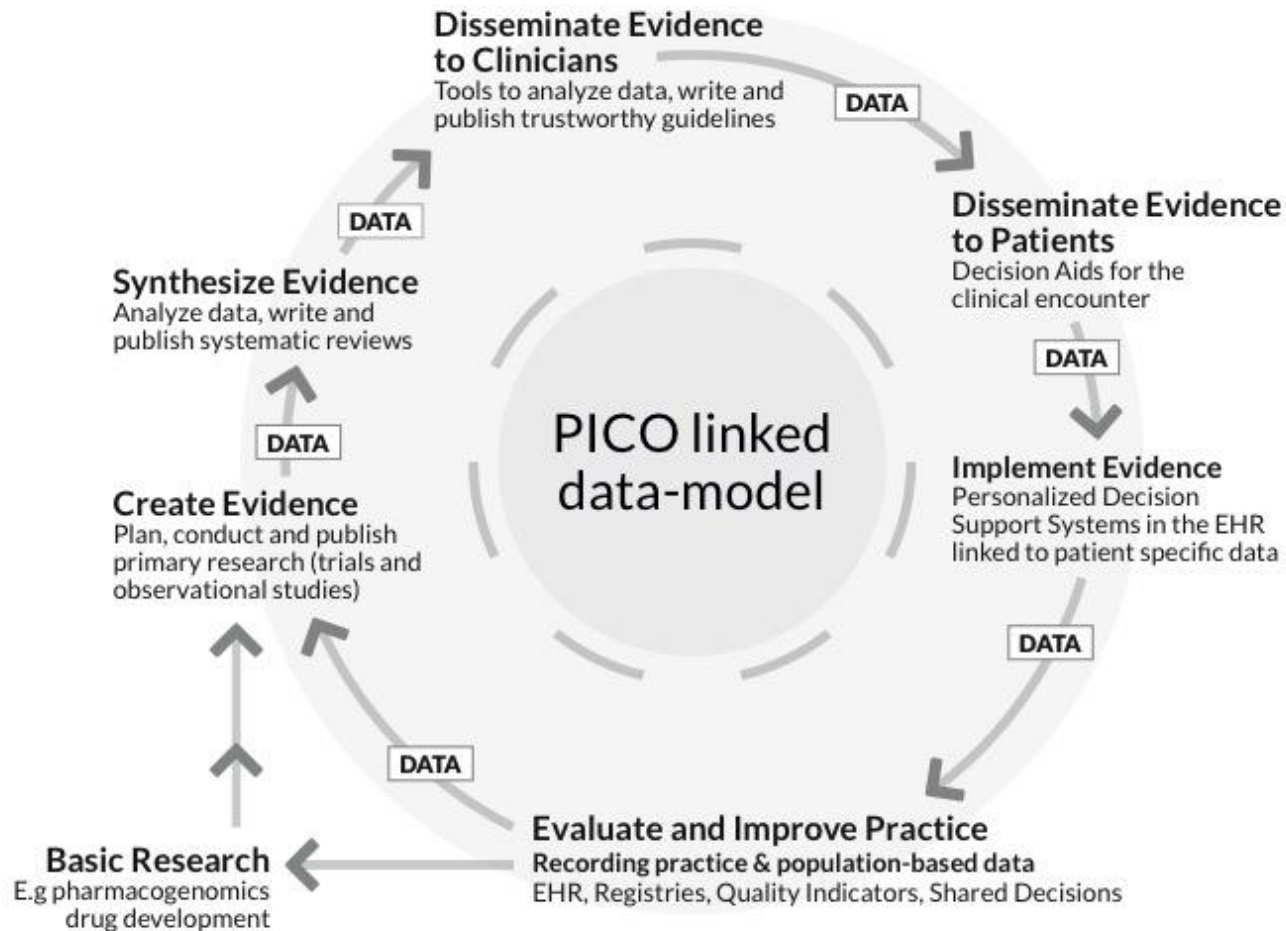


Do not despair, we are not lost;-)

Visionary “techy, fun and nice to work with” people in our community linking data in platforms through G-I-N/ Cochrane/ GRADE Tech



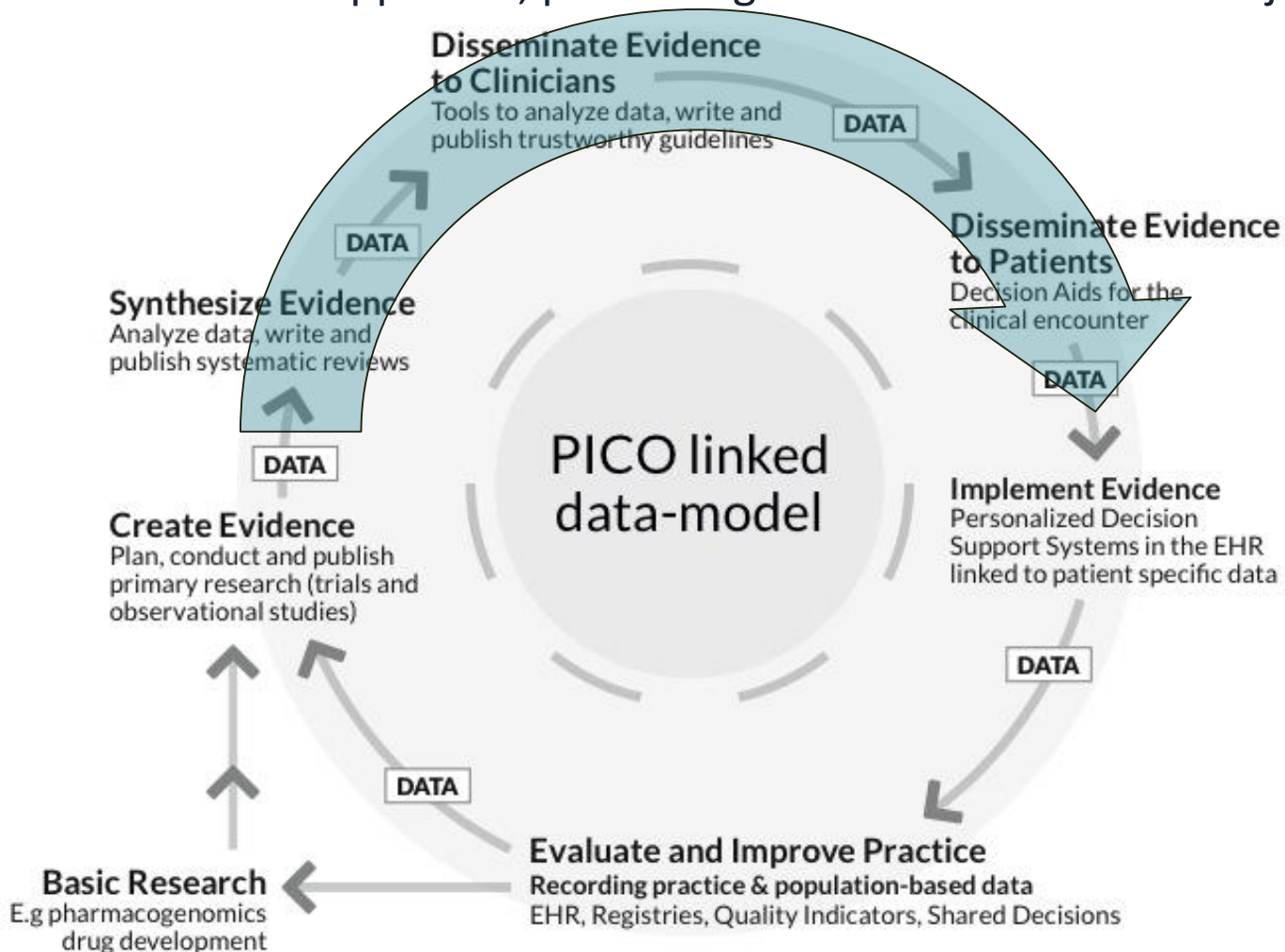
Our vision: A Digital and Trustworthy Evidence Ecosystem



Some hurdles to overcome: Organizations fit for purpose?

How can we rapidly get potentially practice-changing evidence into practice?

Collaborative network approach, partnering with innovative medical journal?



The BMJ-RapidRecs project: methods and process

- Guideline panel, network of the right people
 - ✓ Trustworthy guideline standards, GRADE
 - ✓ Focus on conflict of interest, patient involvement....
- Linked high quality systematic reviews
 - ✓ effects, prognosis, values and preferences
 - ✓ Separate teams, closely interacting with guideline panel



Rapid Recommendations process step by step (with target times)

Step 1: Monitor and identify potentially practice changing evidence

Step 2: Executive + chair triggers process and RapidRecs panel (day 7)

Step 3: Systematic reviews created by separate teams (day 45)

Step 4: RapidRecs created in MAGICapp and as synopsis paper (day 60)

Step 5: RapidRecs + reviews submitted for peer review (day 60)

Step 6: RapidRecs and reviews disseminated globally (day 90)


BMJ Rapid Recommendations, check it out...*

thebmj Research ▾ Education ▾ News & Views ▾ Campaigns Archive

Transcatheter or surgical aortic valve replacement for patients with severe, symptomatic, aortic stenosis at low to intermediate surgical risk: a clinical practice guideline


BMJ 2016 ; 354 doi: <http://dx.doi.org/10.1136/bmj.i5085> (Published 28 September 2016)
Cite this as: BMJ 2016;354:i5085

Choice of intervention for those with severe aortic stenosis



Transfemoral TAVI
Inserting a new valve into the aortic valve's place without open heart surgery. Delivery is through the femoral artery.

OR



SAVR
Open-heart surgery, to remove the narrowed aortic valve. Replacement with tissue valve.

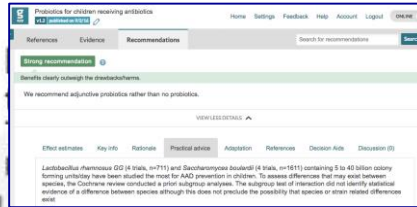
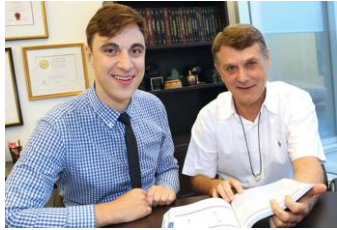
Recommendations

Population	Favours TAVI	Favours SAVR
Age 85+	Strong	
Age 75–84	Weak	
Age 65–74		Weak
Age under 65		Strong

* All papers open access and for you to scrutinize, adapt and use for your purposes

Digital and Trustworthy Evidence Ecosystem

From RapidRecs pilot to closing the loop in Finland and Belgium

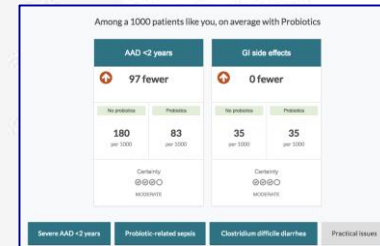


DATA

DATA

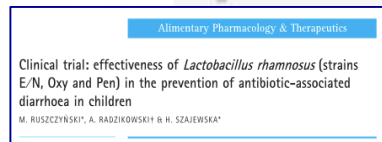


NNT=10

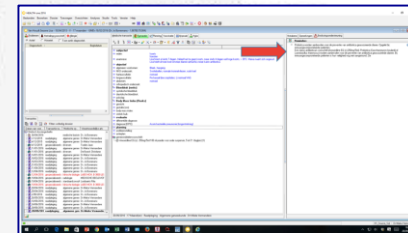


PICO linked data-model

DATA



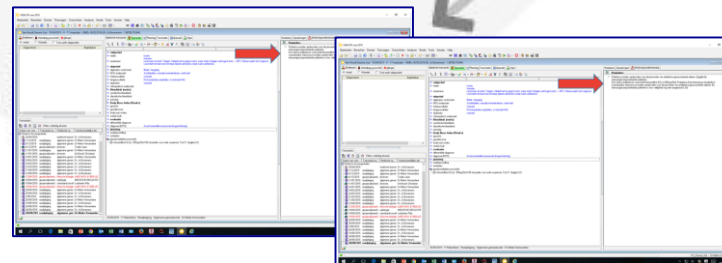
23 trials
n=4000



Offer probiotics


DATA

Basic Research
E.g pharmacogenomics
drug development



Baseline:
3 of 100
offered
probiotics

WikiRecs for probiotics in MAGICapp: <https://www.magicapp.org/app#/guideline/1170>

 Probiotics for children receiving antibiotics
 v1.2 published on 9/2/16

Home Help Acc

References Evidence **Recommendations** Search for recommendations

2 Probiotics for children receiving antibiotics for an infection

Children 1 month to 2 years old receiving antibiotics for an infection.

Strong recommendation ?

Benefits clearly outweigh the drawbacks/harms.

We recommend adjunctive probiotics rather than no probiotics.

VIEW LESS DETAILS ^

Research evidence Key info Rationale Practical info Adaptation Decision Aids Feedback (0)

Population	Intervention	Comparator
Children 1 month to 2 years old	Adjunctive probiotic therapy	No probiotic therapy

Evidence profile Summary References

Outcome Timeframe	Study results and measurements	Absolute effect estimates		Certainty in effect estimates (Quality of evidence)	Summary
		No probiotics	Probiotics		
AAD <2 years	Relative risk 0.46 (CI 95% 0.35 - 0.61) Based on data from 3898 patients in 22 studies Follow up: 1-12 weeks.	180 per 1000 Difference: 97 fewer per 1000 (CI 95% 117 fewer - 70 fewer)	83 per 1000	Moderate Due to serious inconsistency.	Probiotics appear to decrease the incidence of AAD.

WikiRecs - EBM guidelines - Translation, adaptation - CDSS in EHR

SDL Trados Studio - evd ergo 04042016 EN-FR

Advanced View Add-Ins Help

Batch tasks: Formatting QuickInsert Translation Memory Terminology Segment Actions Navigation

IVS-EN-FR-2016 - Translation Results

Project Settings: None of the 16 trials (n = 2455) that reported on adverse events documented any serious adverse events attributable to probiotics.

1 None of the 16 trials (n = 2455) that reported on adverse events documented any serious adverse events attributable to probiotics. **CM** Aucun des 16 essais (n = 2455) qui ont mentionné des événements indésirables n'ont démontré d'événements indésirables graves attribuables aux probiotiques.

IVS-EN-FR-2016 1-9-2016 17:41:57 vertaler3-HP/vertaler3

IVS-EN-FR-2016 - Translation Results IVS-EN-FR-2016 - Concordance Search Messages (0)

evd07477.html.sdlxliff [Translation]*

13 receiving antibiotics.		antibiotiques.	
16 Most participants were under 6 years of age.		La plupart des participants avaient un âge inférieur à 6 ans.	
17 The studies compared probiotics to placebo, active alternative prophylaxis, or no treatment and measured the incidence of diarrhea secondary to antibiotic use.		Les études ont comparé les probiotiques aux placebo, la prophylaxie alternative active, ou aucun traitement et a mesuré l'incidence de la diarrhée liée à l'usage d'antibiotiques.	
18 Trials included treatment with either Bacillus spp., Bifidobacterium spp., Clostridium butyricum, Lactobacilli spp., Lactococcus spp., Leuconostoc cremoris, Saccharomyces spp., or Streptococcus spp., alone or in combination.		Les essais comprenaient un traitement aux espèces Bacille, aux espèces bifidobactérium, au Clostridium butyricum, aux espèces Lactobacille, aux espèces Lactocoque, Leuconostoc Cremonis, aux espèces Saccharomyces ou Streptococcus, seules ou combinées.	
19 Eleven studies used a single strain probiotic, four combined two strains, and eight studies combined three or more strains.		Parmi les études, onze d'entre elles ont utilisé une seule souche de probiotique, quatre ont combiné deux souches et huit études ont combiné trois souches ou plus.	
20 The probiotic species with most data were Lactobacillus rhamnosus or Saccharomyces boulardii, at a dose of 5 to 40 billion colony forming units/day.		Les espèces de probiotiques aux données les plus importantes étaient le Lactobacillus rhamnosus ou le Saccharomyces boulardii, à la dose de 5 à 40 milliards unités formant une colonie/jour.	
21 The incidence of AAD in the probiotic group was 8% (163/1992) compared to 19% (364/1906) in the control group (RR 0.46, 95% CI 0.35 to 0.61; I2 = 55%, 3898 participants), NNT 10 (95% CI 8 to 12).		L'incidence de la DAA dans le groupe de probiotiques était de 8 % (163/1992) comparé à 19 % (364/1906) dans le groupe témoin (RR 0.46, 95 % CI 0.35 à 0.61 ; I2 = 55 %, 3898 participants), NNT 10 (95 % CI 8 à 12).	P+
22 Single-strain probiotics appeared as effective as multiple-strain preparations.		Les probiotiques à souche unique semblaient aussi efficaces que les préparations à souches multiples.	
23 None of the 16 trials (n = 2455) that reported on adverse events documented any serious adverse events attributable to probiotics.		Aucun des 16 essais (n = 2455) qui ont mentionné des événements indésirables n'ont démontré d'événements indésirables graves attribuables aux probiotiques.	P+
24 There is insufficient evidence on the safety of probiotics in immunocompromized children.		Les preuves sur l'innocuité des probiotiques chez l'enfant immunodéprimé sont insuffisantes.	P+
25 SOF table		Tableau SOF	P+
26 Goldenberg JZ, Lyubov L, Steurich J, Parkin P, Mahant S, Johnston BC.		Goldenberg JZ, Lyubov L, Steurich J, Parkin P, Mahant S, Johnston BC.	S+
27 Probiotics for the prevention of pediatric antibiotic-associated diarrhea.		Probiotics for the prevention of pediatric antibiotic-associated diarrhea.	
28 Cochrane Database Syst Rev 2015,(12):CD004827		Cochrane Database Syst Rev 2015,(12):CD004827	

All segments | INS 0,00% 0,00% 100,00% Chars: 155 0/2284

To practice: Meet “Stella Artois” 17 months old, with pneumonia prescribed with antibiotics in Belgian primary care



Doctor prescribes antibiotics in the EHR....

The screenshot displays a medical EHR system interface. The main window shows a patient's medical history and a list of prescriptions. A red arrow points to the prescription for Enterol (c) 250mg. A detailed view of this prescription is shown in the foreground, including the drug name, dosage, frequency, and duration. The prescription is for 20 capsules, 3 times a day, for 7 days, starting on 20/09/2016. The price is 33.92 EUR. The interface also shows a list of other prescriptions and a search bar.

HEALTH one 2016 (Voorschrift)

Bestanden Bewerken Overzichten Analyses Studie Tools Venster Help

17 maanden - GMD=18/02/2016 (Dr. Jo Borremans - 1.98780.70.004)

Medische transactie Facturatie Planning Vaccinatie Afspreek Hubs

Notabene Opmerkingen Beslissingsondersteuning

Diagnostisch A Begindatum

subjectief
reden: koorts
hoesten
anamnese: Lisa hoest al sinds 7 dagen. Inlievel had ze gastro-intestinale problemen. Lisa heeft al twee keer ernstige diarree gehad bij vorige kuren antibiotica.
objectief
algemeen voorkomer: Bleek, hangelig
NKD onderzoek: Snottebellen, normale trommelvliezen, rode keel
bestaan uit: normaal

Voorschriftenbeheerder (Van Houdt Seoane Lisa - 10/04/2015 - V - 17 maanden - GMD=18/02/2016 (Dr. Jo Borremans))

Voorschrijven Wijzigen en voorschrijven Overzichten Equivalenten

S Belgische specialiteit (APB) Indicatie

enterol

Productnaam
Enterol (c) 250mg 20 poeder voor orale suspensie
Enterol (c) 250mg 10 capsules
Enterol (c) 250mg 20 capsules
Enterol (c) 250mg 50 capsules
Enterol (c) 250mg 10 poeder voor orale suspensie

Enterol (c) 250mg
20 poeder voor orale suspensie
Prijs = 16.96
Rg = 16.96
Rg R/V = 16.96
Terugg =

Geneesmiddel in ggekope categorie Prijs = 0.85

Productnaam Prijs pe

Huidg voorschrift Aanvraag Hoofdstuk IV
(20/09/2016) (2 / 2)

Ho Voorschrift

Link met pathologie

Patient info Persoonlijke gots Onderbreking

Parameters
 Gegeven geneesmiddel
 Toegestane herhalingen
 Voorgeschreven door specialist
 reeds voorgeschreven geneesmiddel (niet afdrukken)
 Voorschrift op gtoonaam
 Automatisch bewaren
 Schijf voor
 Vitalink

OK Annuleren

Transacties
Filter: volledig dossier

Datum van voor...	Transactie na...	Medische sp...	Verantwoorde
26/04/2016		medische basisin	Dr. Jo Borrema
1/12/2015	raadpleging	algemene genee	Dr. Mieke Verm
4/12/2015	raadpleging	algemene genee	Dr. Mieke Verm
4/12/2015	gespecialiseerd c	diversen	Toelen Jaan
11/01/2016	raadpleging	algemene genee	Dr. Mieke Verm
11/01/2016	gespecialiseerd c	diversen	De Boeck, Chr
14/01/2016	raadpleging	algemene genee	Dr. Mieke Verm
18/02/2016	raadpleging	algemene genee	Dr. Jo Borrema
16/03/2016	raadpleging	algemene genee	Dr. Jo Borrema
21/03/2016	raadpleging	algemene genee	Dr. Jo Borrema
11/04/2016	raadpleging	algemene genee	Dr. Jo Borrema
12/04/2016	raadpleging	algemene genee	Dr. Jo Borrema
12/04/2016	gespecialiseerd c	Klinische biologie	LABO MCH. B
19/04/2016	gespecialiseerd c	radiologie	MEDISCHE BE
19/04/2016	gespecialiseerd c	standaardconsul	Lombaerts Rita
19/04/2016	gespecialiseerd c	Klinische biologie	LABO MCH. B
20/04/2016	raadpleging	algemene genee	Dr. Mieke Verm
25/04/2016	raadpleging	algemene genee	Dr. Jo Borrema
2/05/2016	raadpleging	algemene genee	Dr. Jo Borremans
26/05/2016	raadpleging	algemene genee	Dr. Mieke Vermandere
10/06/2016	raadpleging	algemene genee	Dr. Jo Borremans
24/06/2016	raadpleging	algemene genee	Dr. Mieke Vermandere
28/06/2016	raadpleging	algemene genee	Dr. Jo Borremans
20/09/2016	raadpleging	algemene gen	Dr. Mieke Vermandere

20/09/2016 | 17 Maand(en) | Raadpleging | Algemene geneeskunde | Dr. Mieke Vermandere

H1_Source_Sql | Dr. Mieke Vermandere

18:24
20/09/2016

H1_Source_Sql | Dr. Mieke Vermandere

18:22
20/09/2016

Drilling back to the Evidence if needed

EBM guidelines – MAGICapp - all the way to the meta-analysis?



Probiotics for children receiving antibiotics

v1.2 published on 9/2/16

Home

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ONLINE



Search for recommendations

Search

Research evidence Key info Rationale Practical info Adaptation Decision Aids Feedback (0)

Population	Intervention	Comparator
Children 1 month to 2 years old View	Adjunctive probiotic therapy	No probiotic therapy

Evidence profile Summary References

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Severe AAD <2 years	0.46 (0.35 - 0.61) Based on data from 3898 patients in 22 studies Follow up: 1-12 weeks.	18 per 1000	8 per 1000 Difference: 10 fewer per 1000 (CI 95% 12 fewer - 7 fewer)	Low Due to serious inconsistency and indirectness.	Probiotics may decrease the incidence of severe AAD by a small amount.
GI side effects	Relative risk 1 (CI 95% 0.71 - 1.29) Based on data from 2455 patients in 16 studies Follow up: 1-4 weeks.	35 per 1000	35 per 1000 Difference: 0 fewer per 1000 (CI 95% 10 fewer - 10 more)	Moderate Due to serious indirectness.	Probiotics do not appear to increase the risk of gastrointestinal side effects.

Acting on – and implementing - the evidence, together



And same goes for Finland

The screenshot displays a medical record interface. On the left, a prescription form is visible with the following details:
 - Drug: Amoxin (Amoksisilliini)
 - Form: jauhe oraalisuspensiota varten (powder for oral suspension)
 - Strength: 100 mg/ml
 - Packaging: 1 Pakkaus (box) containing 60 ml
 - Frequency: 2 millilitraa 2 kertaa vuorokaudessa (2 ml twice a day)
 - Notes: Sähköinen resepti (Electronic prescription)
 - Other: Sair.hoito (Medical treatment) selected, Muu (Other) unselected.
 - Additional: Ei gen.subst. (No generic substitution) and Määräys geneerisellä nimellä (Prescription by generic name) are also present.
 On the right, a sidebar titled 'Päätöksentuki' (Decision support) contains sections for 'Työkalut' (Tools) and 'Muistutukset' (Reminders).
 - Under 'Työkalut', there are links for 'Lääkityksen kokonaisarvio' (Overall assessment of treatment) and 'Laskurit ja lomakkeet' (Calculators and forms).
 - Under 'Muistutukset', a reminder is triggered: 'Potilas sai antibioottireseptin (Amoxin). Probiootteja (Lactobacillus tai Saccharomyces boulardii) suositellaan antibioottiripulin ehkäisemiseksi. Niiden turvallisuutta ei kuitenkaan ole varmistettu immunosuppressoiduilla henkilöillä.' (Patient received an antibiotic prescription (Amoxin). Probiotics (Lactobacillus or Saccharomyces boulardii) are recommended for the prevention of antibiotic diarrhea. Their safety has not been confirmed for immunosuppressed individuals).
 - At the bottom of the sidebar, there are links for 'Tiedot' (Information), 'Vastuunrajoitus' (Liability disclaimer), and 'Kotisivut' (Home pages).
 A blue callout box at the bottom center of the image contains the following text:
 - Title: Automatic reminder triggered in a Finnish medical record:
 - Content: The patient got a prescription of antibiotics (Amoxin). Probiotics (Lactobacillus or Saccharomyces boulardii) are recommended for the prevention of antibiotic diarrhea. In immunosuppressed patients their

In summary

- Better methods, tools and systems available across an emerging evidence ecosystem in health care
- **People:** culture for sharing work, evidence and common understanding of research methods, including different sources of knowledge
- **Technology:**
 - Rapidly evolving platforms with digitally structured data. G-I-N, Cochrane and others joining forces
 - MAGICapp a useful tool for evidence synthesizers (?)
- BMJ-RapidRecs as a model: Will organizations get the work done or do we need a disruptive innovation, in health care like elsewhere?



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Leader, MAGIC Project

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Dept. of Medicine, Lovisenberg Diaconal Hospital, Norway
Ass.professor, Faculty of Medicine, University of Oslo, Norway
Researcher, Norwegian Institute of Public Health, Norway



Linn Brandt, MD
PLUGGED-IN, technology and collaboration

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PhD student, HELSAM, University of Oslo, Norway



Annette Kristiansen, MD
SNAP-IT, methodology

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Dept. of Medicine, Diakonhjemmet Oslo, Norway
PhD student, HELSAM, University of Oslo, Norway



Gordon Guyatt, MD Professor
MAGIC Mentor

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SHARE-IT

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Dept. of Medicine, Lovisenberg Diaconal Hospital, Norway
PhD student, HELSAM, University of Oslo, Norway



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SHARE-IT

Dept. of Clinical Epidemiology and Biostatistics, McMaster University, Canada



Christopher Friis Berntzen, MD
DYNAM-IT

Dept. of Medicine, Gjøvik , Innlandet Hospital Trust- Norway
Dept. of Medicine, Lovisenberg Diaconal Hospital, Norway
PhD student, HELSAM, University of Oslo, Norway



Romina Brignardello-Petersen, DDS MSc PhD
Network meta-analysis

Dept. of Clinical Epidemiology and Biostatistics, McMaster University, Canada



Reed Siemieniuk, MD
WikiRecs

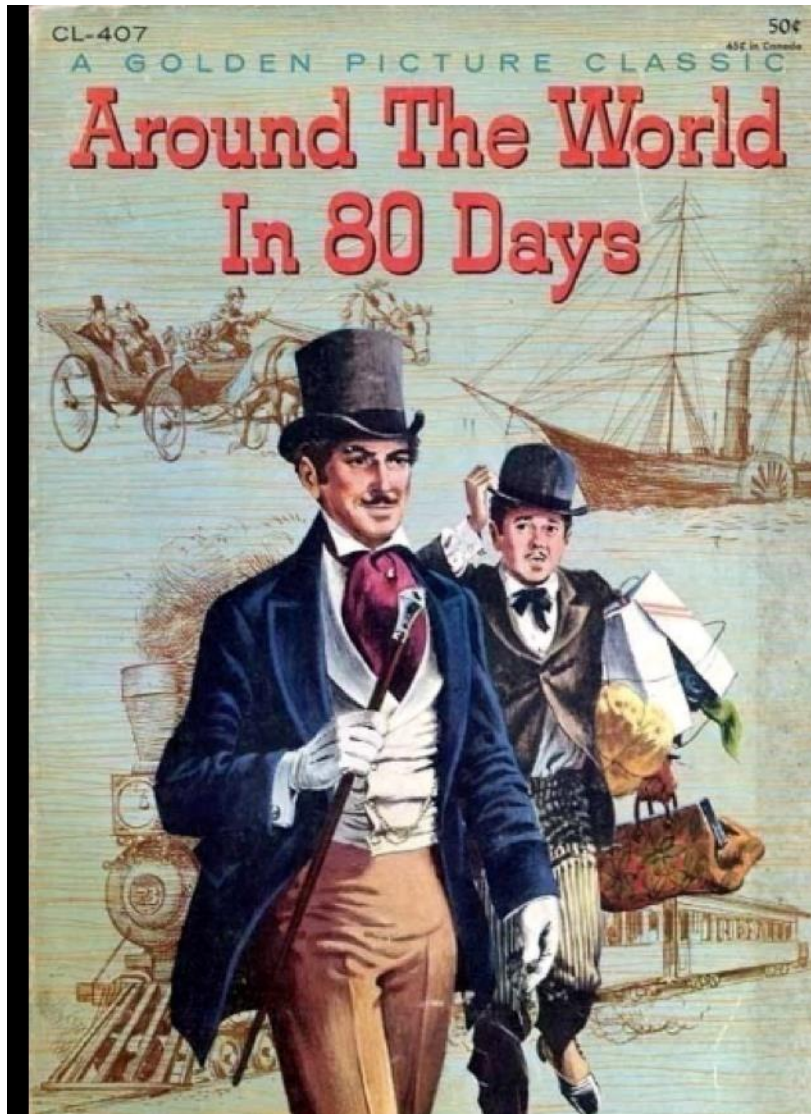
Dept. of Clinical Epidemiology and Biostatistics, McMaster University, Canada
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Lyubov Lytvyn, MSc
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Medical Researcher, Oslo University Hospital, Norway

Ilkka Kunnamo 2016:



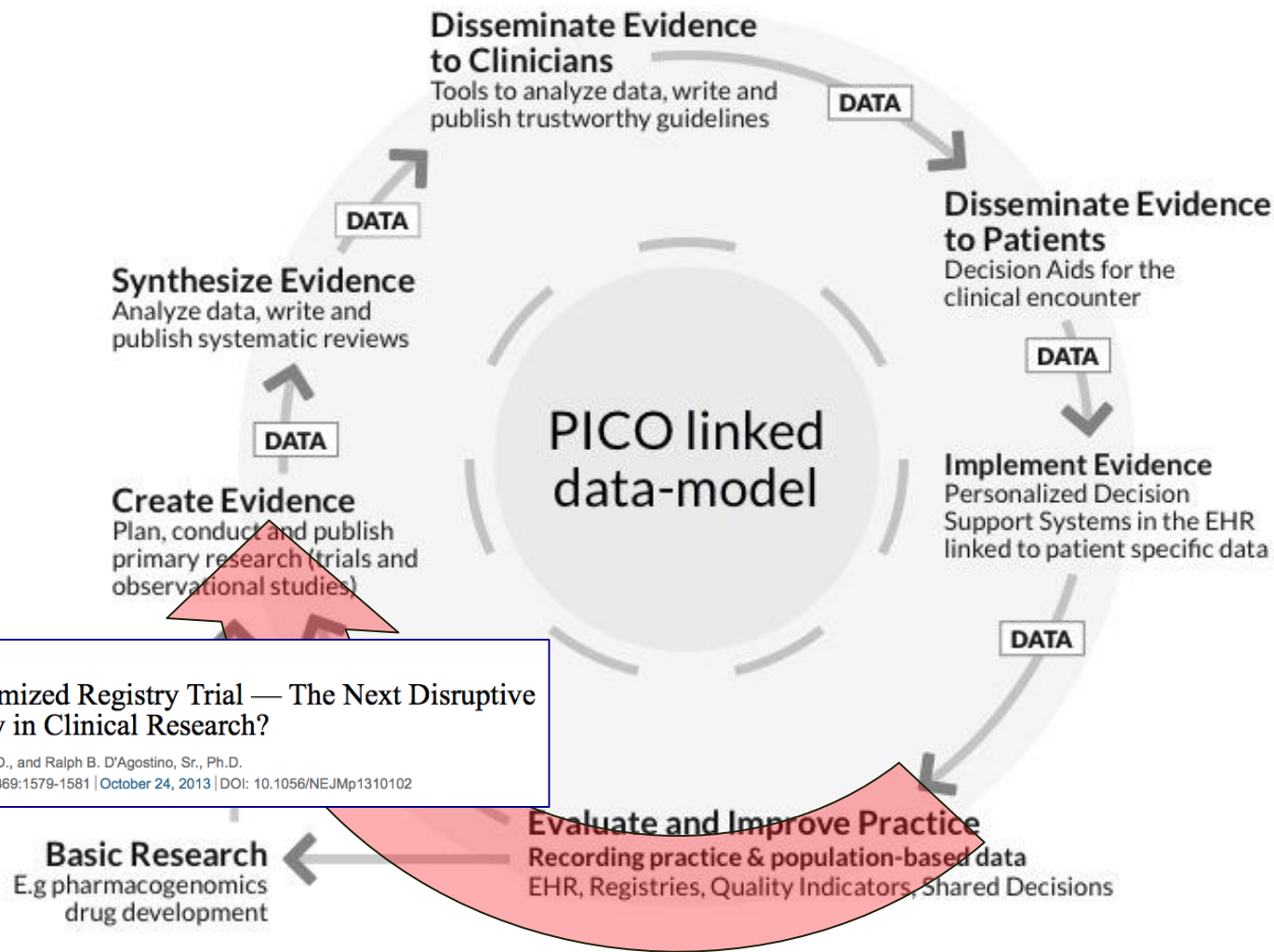
Jules Verne imagined that you could travel around the world in 80 days

The Evidence Ecosystem summarized, circulated and implemented the evidence in 85 days

One day evidence can be circulated as quickly as you travel today

Want to join the journey?

Remaining challenges and unmet needs in the Ecosystem-



PERSPECTIVE

The Randomized Registry Trial — The Next Disruptive Technology in Clinical Research?

Michael S. Lauer, M.D., and Ralph B. D'Agostino, Sr., Ph.D.
N Engl J Med 2013; 369:1579-1581 | October 24, 2013 | DOI: 10.1056/NEJMp1310102