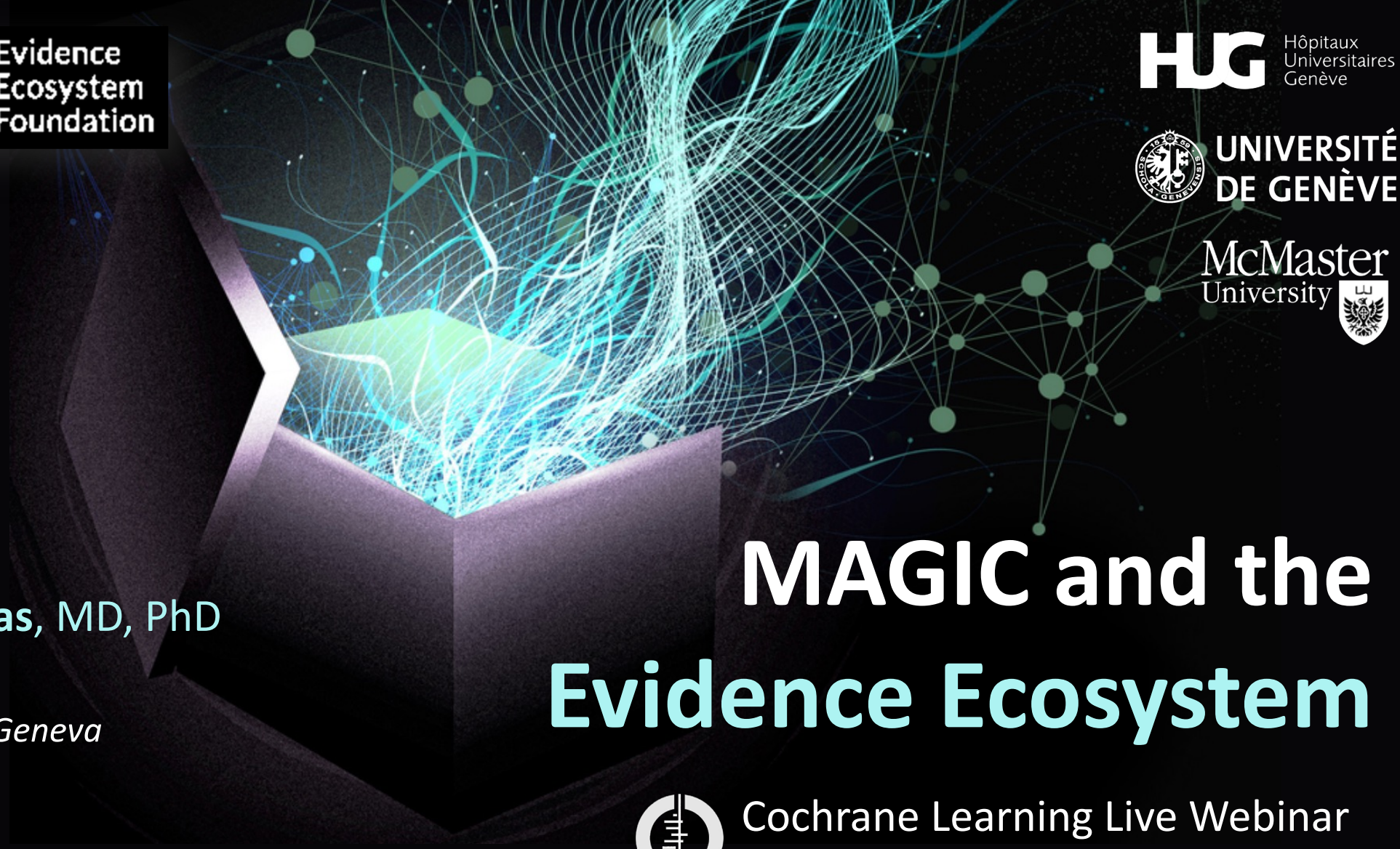
MAGIC Evidence Ecosystem Foundation

HUG Hôpitaux Universitaires Genève

UNIVERSITÉ DE GENÈVE

McMaster University



MAGIC and the Evidence Ecosystem

Prof Thomas Agoritsas, MD, PhD

MAGIC, Chair
University Hospitals of Geneva
McMaster University

Lyubov Lytvyn, MSc, PhD(c)

MAGIC, Client Care Director
McMaster University

Cochrane Learning Live Webinar
6 March 2024

@ThomasAgoritsas @lyubovlytvyn @magicevidence

Image reproduced from https://news.mit.edu/2022/machine-learning-explainability-0505.

Disclosures

No financial conflict of interest in relation to this presentation.

Expertise & intellectual conflict of interests in the field of EBM

- Chair of **MAGIC** Evidence Ecosystem Foundation – http://magicevidence.org
- Co-founder the **BMJ RapidRec** – www.bmj.com/rapid-recommendations
- Active Member of the **GRADE** Working Group – www.gradeworkinggroup.org
- **Deputy editor ACP journal club** – McMaster PLUS Evidence Alerts

Agenda

1. **MAGIC Evidence Ecosystem Foundation**
2. **How to enhance our evidence ecosystem**
   - Focus #1 Methods
   - Focus #2 Digitally structured data
3. **Introducing the MAGICapp**
4. **Key developing areas**
   - Personalized medicine
   - Living evidence & guidelines
   - Multiple comparisons: from NMAs to decisions
5. **Introducing MATCH-IT**
6. **Bridging the gap with implementation projects**

MAGIC Evidence Ecosystem Foundation

magicevidence.org

Key dates for 14 years
- 2009: Conception of MAGIC
- 2013: Launch of MAGICapp
- 2018: Became a Foundation

Worldwide activities
- 32 staff members (17 researchers)
- Norway (base), Switzerland, UK, Canada, USA, Columbia, Portugal
- Leading and contributing to large collaborations with hundreds of partners

MAGICapp use

> 46 000	> 60	190
Users	organizations	Public guidelines

Per Olav Vandvik, M.D, Ph.D
Chief Executive Officer (on sabbatical until August 2024)

Affiliations: Dept. of Medicine, Lovisenberg Diaconal Hospital, Oslo, Norway. Professor, Faculty of Medicine, University of Oslo, Norway. Researcher, Norwegian Institute of Public Health, Oslo, Norway.

Thomas Agoritsas, M.D, Ph.D
Deputy CEO / Chair of the Board

Affiliations: Associate Professor, Department of Medicine, University Hospitals of Geneva, Switzerland. Part-time Faculty, Department of Health Research Methods, Evidence, and Impact, McMaster University.

Linn Brandt, M.D
CTO / Board Member

MAGICapp, Integrations, Data and EHR

Affiliations: Dept. of Medicine, Lovisenberg Diaconal Hospital, Oslo, Norway.

Gordon Guyatt, M.D, Professor
CSO / Board Member

Affiliations: Department of Health Research Methods, Evidence, and Impact, McMaster University.

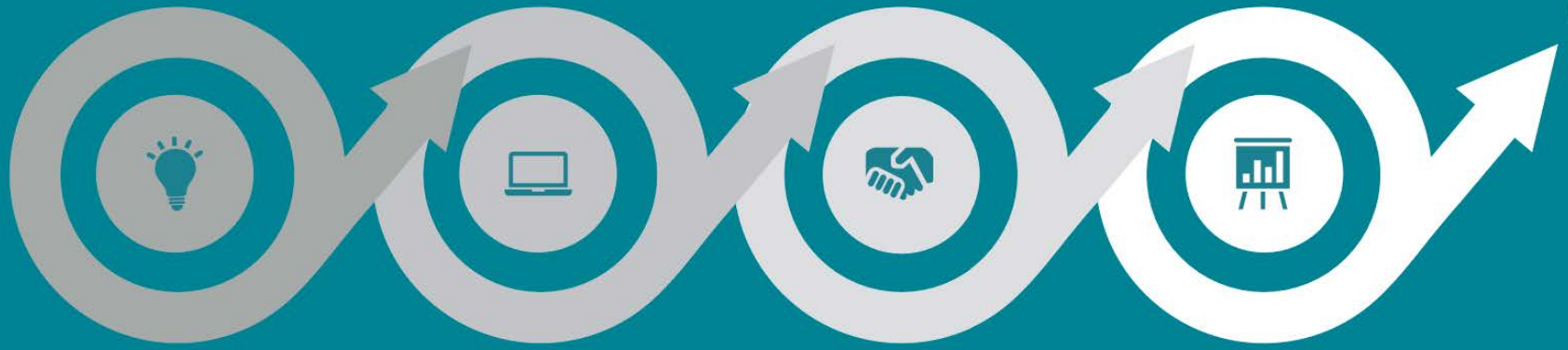
Chris Champion
Acting Chief Executive Officer

Lyubov Lytvyn, MSc
Client Care Director

Projects: BMJ Rapid Recommendations

Affiliations: Department of Health Research Methods, Evidence, and Impact, McMaster University.

How MAGIC creates change



Improved patient care

Research & Innovation

We undertake research and innovation projects to improve how guidance is developed, adapted, disseminated and implemented and contribute to the development of common methods and universal standards

MAGICapp Platform

We build successful innovations into our guideline platform to facilitate the development, updating and dissemination of guidance

Equip Organizations

We provide expert support to organizations to equip them to implement these innovations and create trustworthy guidance

Implementation Support

We create dissemination products and formats to support the implementation and uptake of guidance in practice

All in the context of a collaborative evidence ecosystem

5 key problems in the ecosystem

1. Community is fragmented
   - duplication of effort
   - inefficient sharing of data and resources
   - frequent breaks in the chain of evidence
2. Hard to produce trustworthy guidance efficiently and affordably
   - methods and standards are challenging
   - many groups are working in outdated ways using inefficient tools & processes
3. Not easy to reuse data without structured digital format
4. Evidence, guidance and tools are rapidly outdated & not reaching patient care efficiently
5. New innovation such as AI offer tremendous opportunities but require the same level of scrutiny and rigor

The Evidence Ecosystem

P
I
C
O

Systematic Reviews
Meta-analysis
Network Meta-analysis

Evidence synthesizers

data

Evidence disseminators to clinicians

Recommendations
Guidelines
Clinical summaries

DynaMed®
UpToDate®

data

data

Evidence producers

Randomized trials
Cohort studies
Cross-sectional
Case-Control
Case series
Case reports

Clinical Research

Translational Research

Fundamental Research

Evidence disseminators to patients

Decision Aids
Patient information
Media
Social Media

data

data

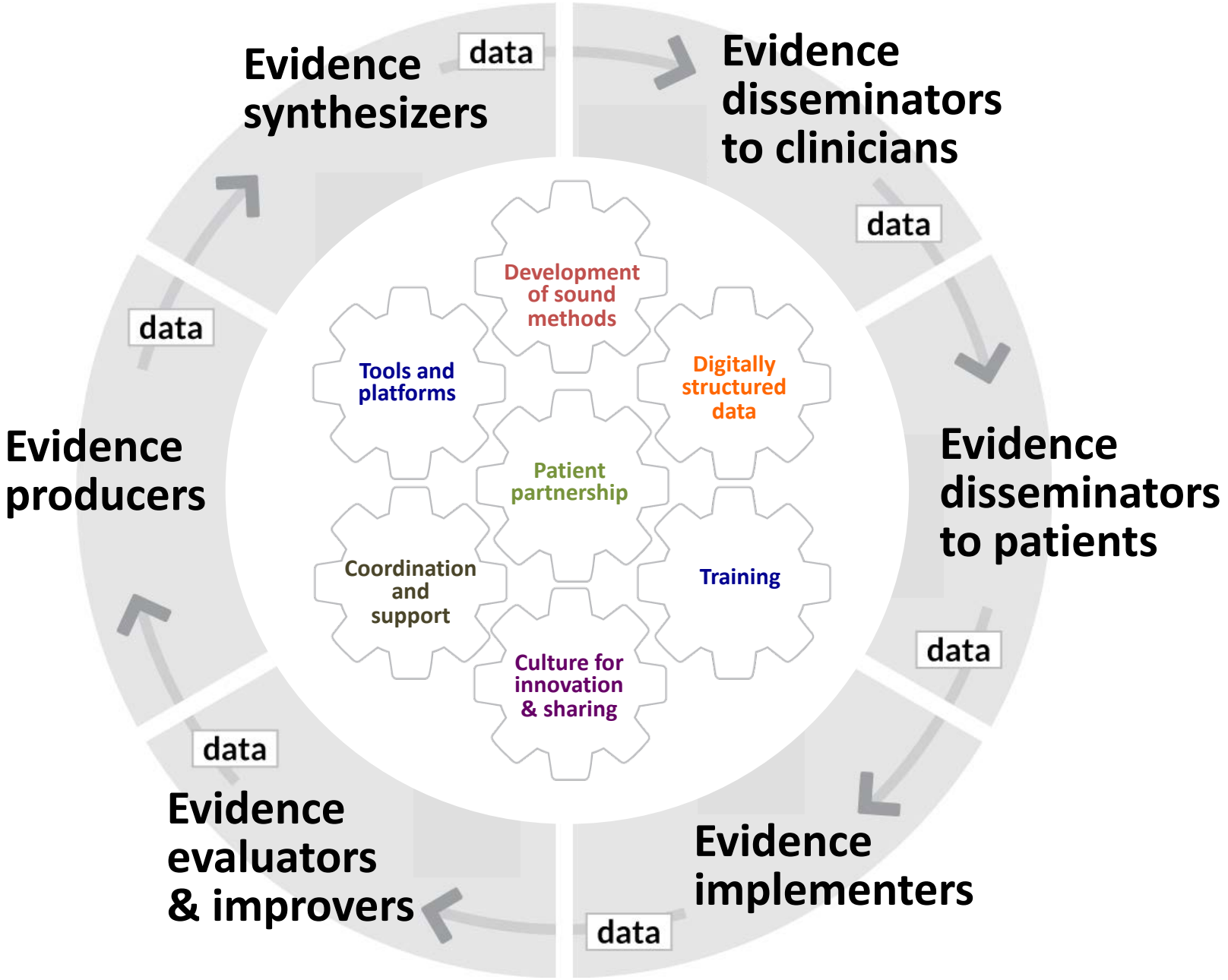
Evidence evaluators & improvers

Evidence implementers

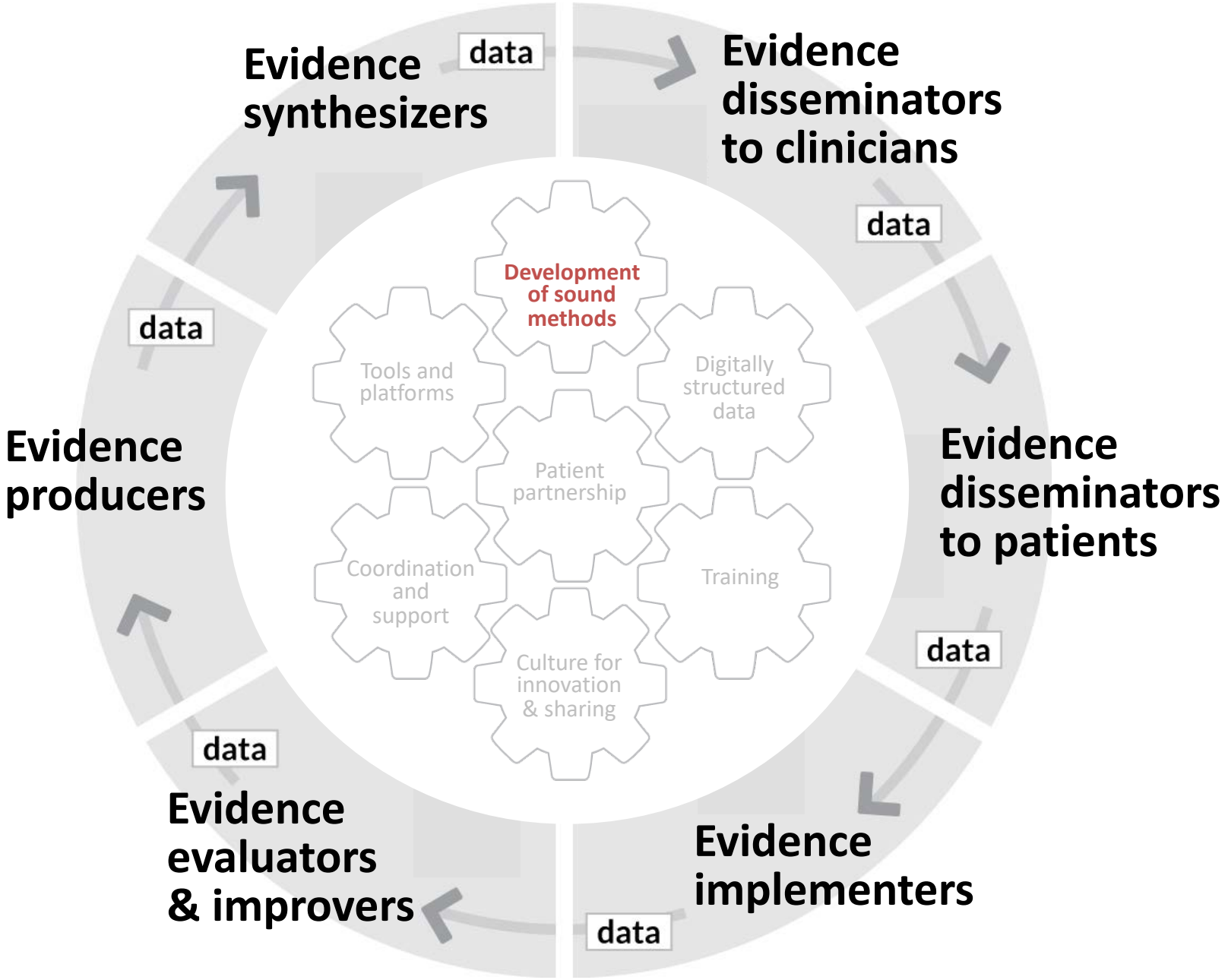
Clinical Pathways
Dashboards
Audit Feedback
...

data

The Evidence Ecosystem



The Evidence Ecosystem



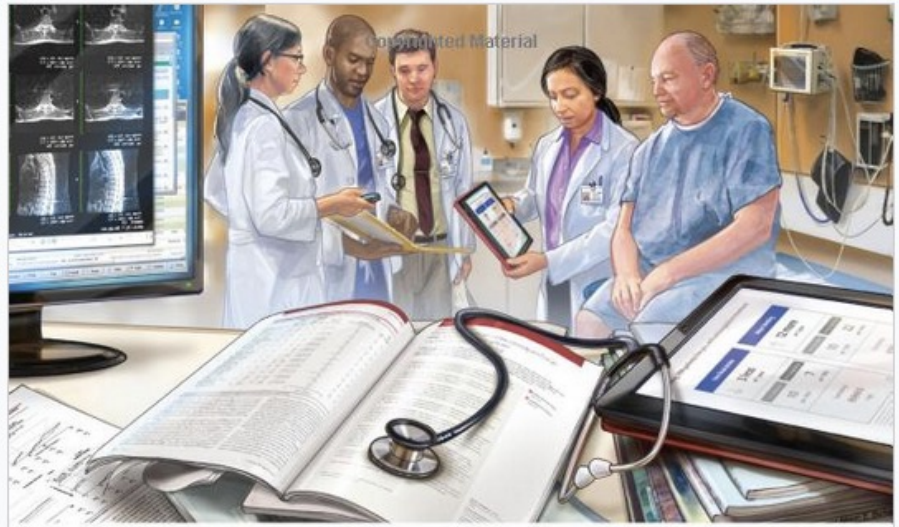
Health care professionals (and their patients) need evidence-based guidelines to be trustworthy, timely and accessible

Societies need to apply best current standards, methods, platforms and processes

Great advances in EBM and digitalization allow this to happen, including living evidence

Cochrane

GRADE



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

Mc Graw Hill Education

JAMAevidence

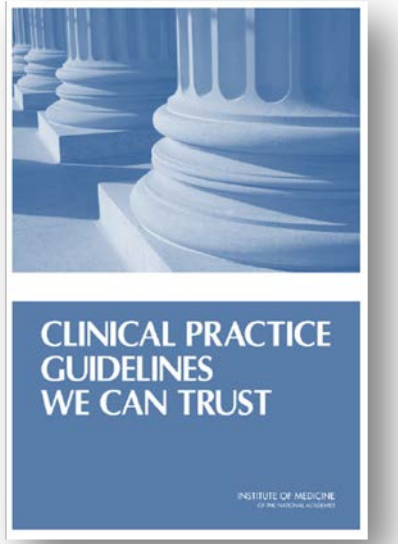
GRADE

JCE
JOURNAL OF CLINICAL EPIDEMIOLOGY

- GRADE guidelines: 1. Introduction—GRADE evidence profiles and summary of findings tables
- GRADE guidelines: 2. **Framing the question** and deciding on important outcomes
- GRADE guidelines: 3. **Rating the quality** of evidence
- GRADE guidelines: 4. Rating the quality of evidence—study limitations (**risk of bias**)
- Getting to grips with GRADE—perspective from **a low-income** setting
- GRADE guidelines: 5. Rating the quality of evidence—**publication bias**
- GRADE guidelines 6. Rating the quality of evidence—**imprecision**
- GRADE guidelines: 7. Rating the quality of evidence—**inconsistency**
- GRADE guidelines: 8. Rating the quality of evidence—**indirectness**
- GRADE guidelines: 9. **Rating up the quality** of evidence
- Strength of evidence and handling uncertainty: practical considerations and general observations
- GRADE guidelines: 10. Considering **resource use** and rating the quality of **economic** evidence
- GRADE guidelines: 11. Making an **overall rating** of confidence in effect estimates for a single outcome and for all outcomes
- GRADE guidelines: 12. Preparing **Summary of Findings** tables—**binary** outcomes
- GRADE guidelines: 13. Preparing Summary of Findings tables and evidence profiles—**continuous outcomes**
- **recommendation's direction and strength**
- Improving GRADE evidence tables part 1: a randomized trial shows improved understanding of content in summary of findings tables with a **new format**
- Improving GRADE evidence tables part 2: a systematic survey of **explanatory notes** shows more guidance is needed
- Improving GRADE evidence tables part 3: detailed guidance for explanatory footnotes supports creating and understanding GRADE certainty in the evidence judgments
- GRADE Guidelines: 16. GRADE **evidence to decision frameworks** for tests in clinical practice and public health
- GRADE guidelines 17: assessing the risk of bias associated with **missing participant outcome data** in a body of evidence
- GRADE guidelines: 18. How ROBINS-I and other tools to assess risk of bias **in nonrandomized studies** should be used to rate the certainty of a body of evidence
- GRADE Guidelines: 19. Assessing the certainty of evidence in the importance of outcomes or **values and preferences—Risk of bias and indirectness**
- GRADE guidelines: 20. Assessing the certainty of evidence in the importance of outcomes **or values and preferences—inconsistency, imprecision, and other domains**
- GRADE guidelines: 22. The GRADE approach **for tests**

Institute of Medicine (IOM) – 2011
Trustworthiness standards (25 items)

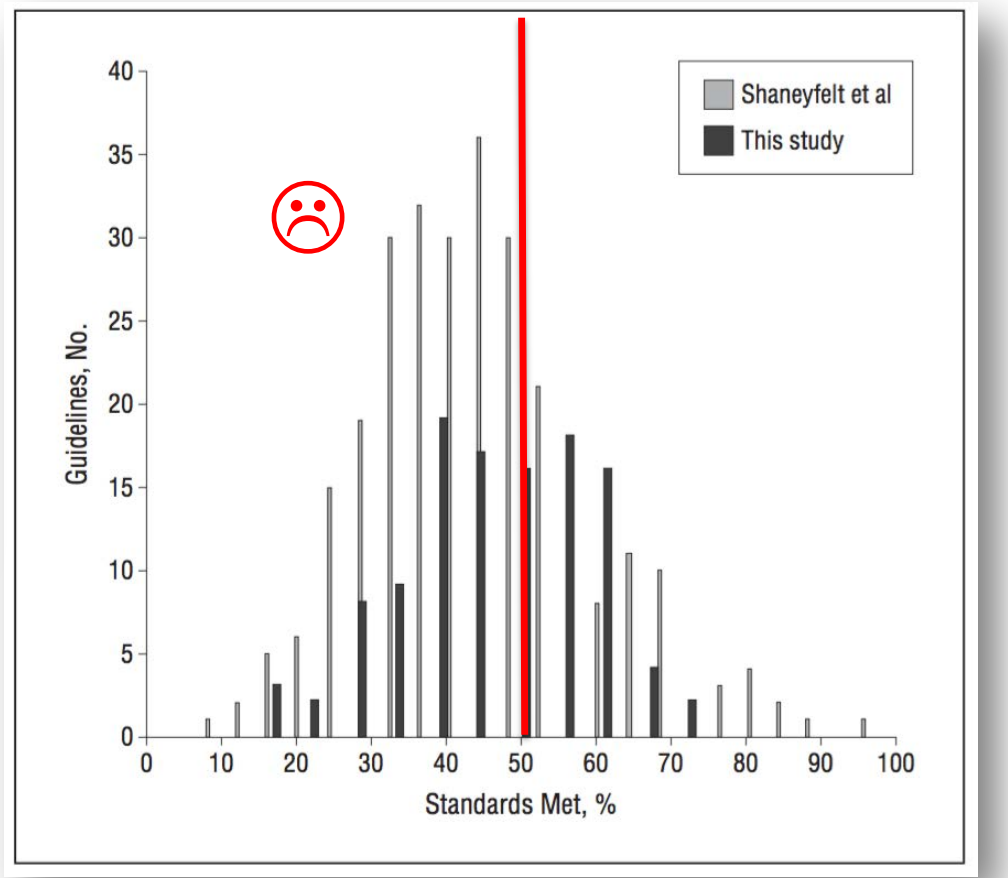
1. Establish transparent process
2. Manage conflict of interest (COI)
3. Panel composition: balanced, multidisciplinary, including patients
4. Based on SR for each question
5. Clarify the "ingredients" for each recommendation
   - Summaries of benefits and harm
   - Quality of the evidence (or lack thereof)
   - Role of values and preferences
6. Articulation of the recommendation :
   - Clarity, strength, rationale
7. External review, patient involvement
8. Updating strategy



AGREE

Failure of Clinical Practice Guidelines to Meet Institute of Medicine Standards

Kung et al. Arch Intern Med. 2012



Financial COI
- **71% of guideline chairs**
- **91% of co-chairs**

Patients included – 15%

BMJ RapidRecs since 2016

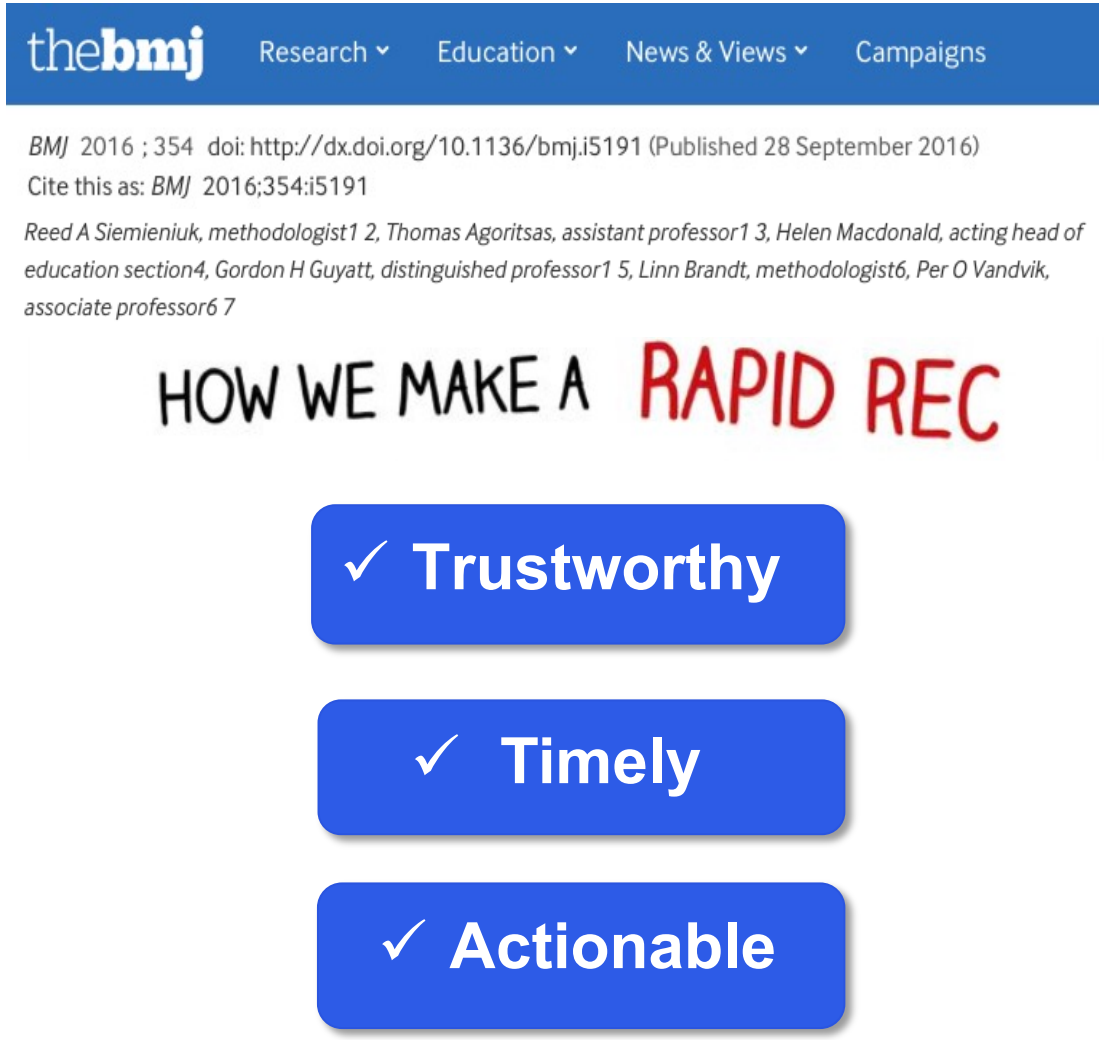
www.bmj.com/rapid-recommendations

MAGIC Evidence Ecosystem Foundation

UNIVERSITÉ DE GENÈVE
FACULTÉ DE MÉDECINE

UiO : University of Oslo

McMaster University



Siemieniuk, Agoritsas et al. Introduction to BMJ Rapid Recommendations. *BMJ* 2016;354:i5191.
Agoritsas et al. The BMJ Rapid Recommendations. *Rev Med Suisse* 2019;15:149-55.

www.bmj.com/rapid-recommendations

n=21 guidelines
n= 53 recs
n = 30 SR
n = 2 LSR

Altmetric *

Screening

Colorectal cancer screening

Prostate cancer screening

Corticosteroids for treatment of sore throat

PCSK9 inhibitors and ezetimibe

Primary Care

Antibiotics for uncomplicated skin abscesses

Medical cannabis or cannabinoids for chronic pain

SGLT-2 inhibitors or GLP-1 receptor agonists for adults with type 2 diabetes

A living WHO guideline on drugs for covid-19

Drugs Acute care

Antiretroviral therapy in pregnant women living with HIV

Corticosteroid therapy for sepsis

Dual vs single antiplatelet therapy

Gastrointestinal bleeding prophylaxis for critically ill patients

Strong Recs Against

Choosing Wisely

Thyroid hormones treatment for subclinical hypothyroidism

Oxygen therapy for acutely ill medical patients

Low intensity pulsed ultrasound (LIPUS) for bone healing

Subacromial decompression surgery for adults with shoulder pain

De-implementation

Arthroscopic surgery for degenerative knee arthritis and meniscal tears *

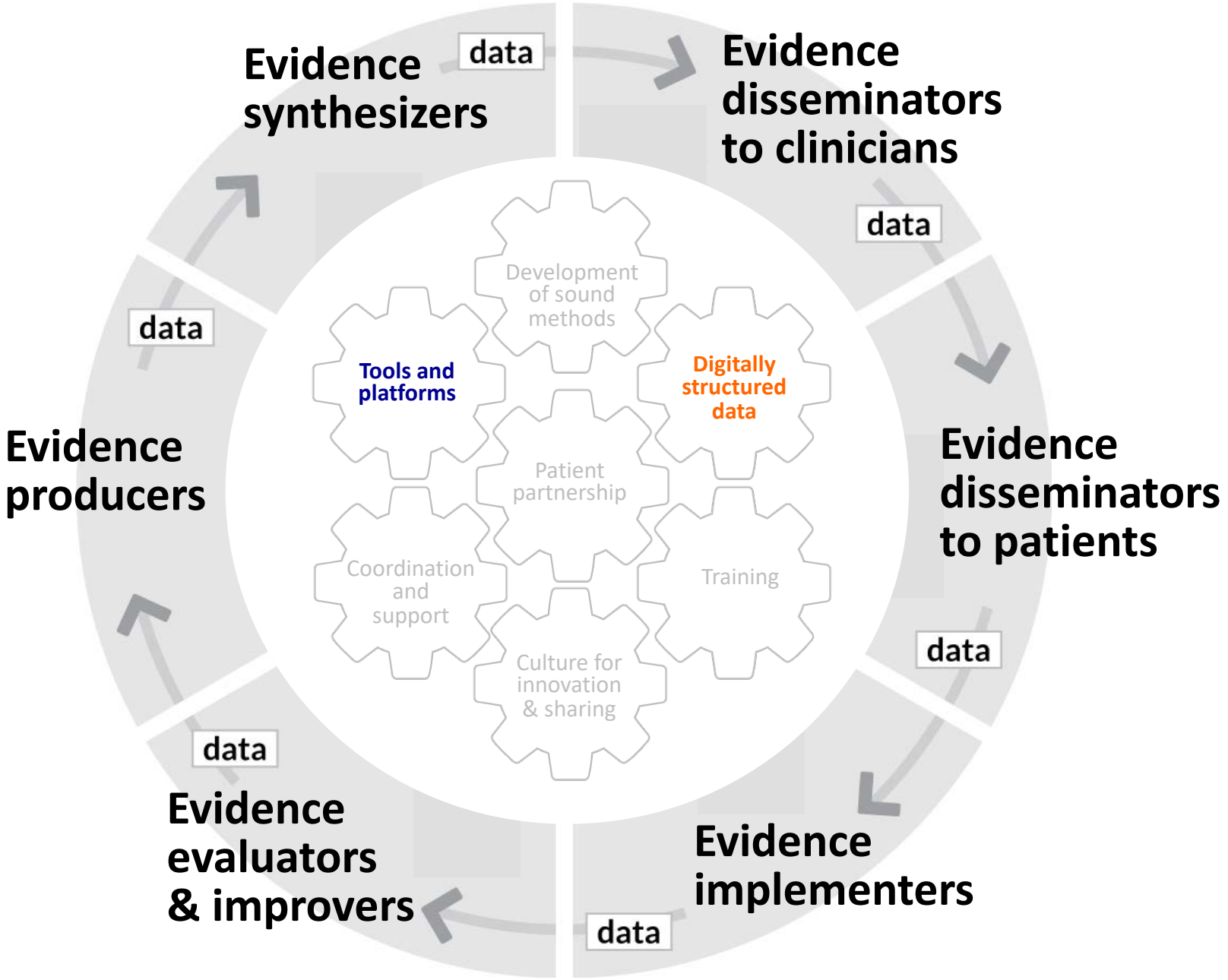
Devices

Atraumatic (pencil-point) versus conventional needles for lumbar puncture

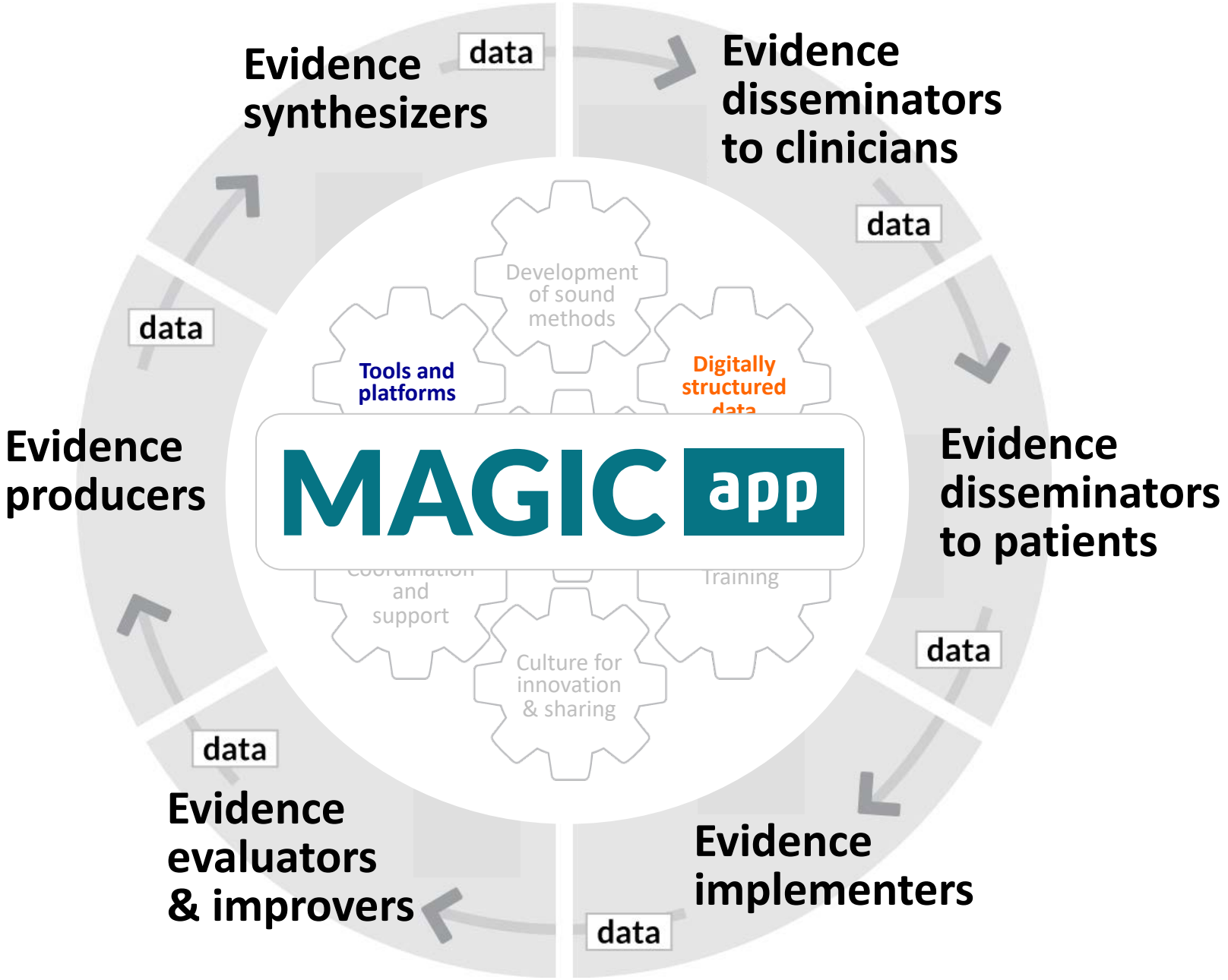
Transcatheter versus surgical aortic valve replacement

Patent foramen ovale closure or drug therapy for management of cryptogenic stroke?

The Evidence Ecosystem



The Evidence Ecosystem



- https://app.magicapp.org

Authoring & Publication Platform

Our "Lab"

MAGIC authoring and publication platform (MAGICapp) - for guidelines and evidence summaries - is developed through our research and innovation program.

The platform allows authors to write and publish their guidelines and evidence summaries in a highly structured fashion, using the GRADE methodology, new technology and a host of recent developed frameworks. MAGICapp is a web based collaborative tool that does not require any software installation and allows publication on all devices.

All researchers in MAGIC are practicing physicians devoted to evidence-based medicine and clinical epidemiology. We are also members of the GRADE working group and know from first hand experience that writing a guideline is a complex task and that many struggle with the methodology and the processes around.

MAGICapp includes features to guide you through the process of writing and publishing a guideline. A lot of research and effort has gone into improving the user interface of the platform – both for authors and readers.

- https://app.magicapp.org

M Authoring & Publication Platform

Our "Lab"

> 46 000
Users

> 60
organizations

190
Public guidelines

interface of the platform – both for authors and readers.

MAGIC app

Dynamic updating

New evidence

Guideline panel
Systematic Reviewers
Using MAGICapp

GRADE

AUTHORING

- Individual studies
- Descriptive tables
- Evidence profiles
- PICO
- Recommendations
- Key information
- Rationale

Database
Structured and tagged content

PUBLICATION

Multilayered formats
For all devices

Integration in the EMR

Adaptation
National and local or EBM textbooks

Decision aids

SHARE-IT

ANALYSIS

SPOTLIGHT: PATIENT CENTRED CARE

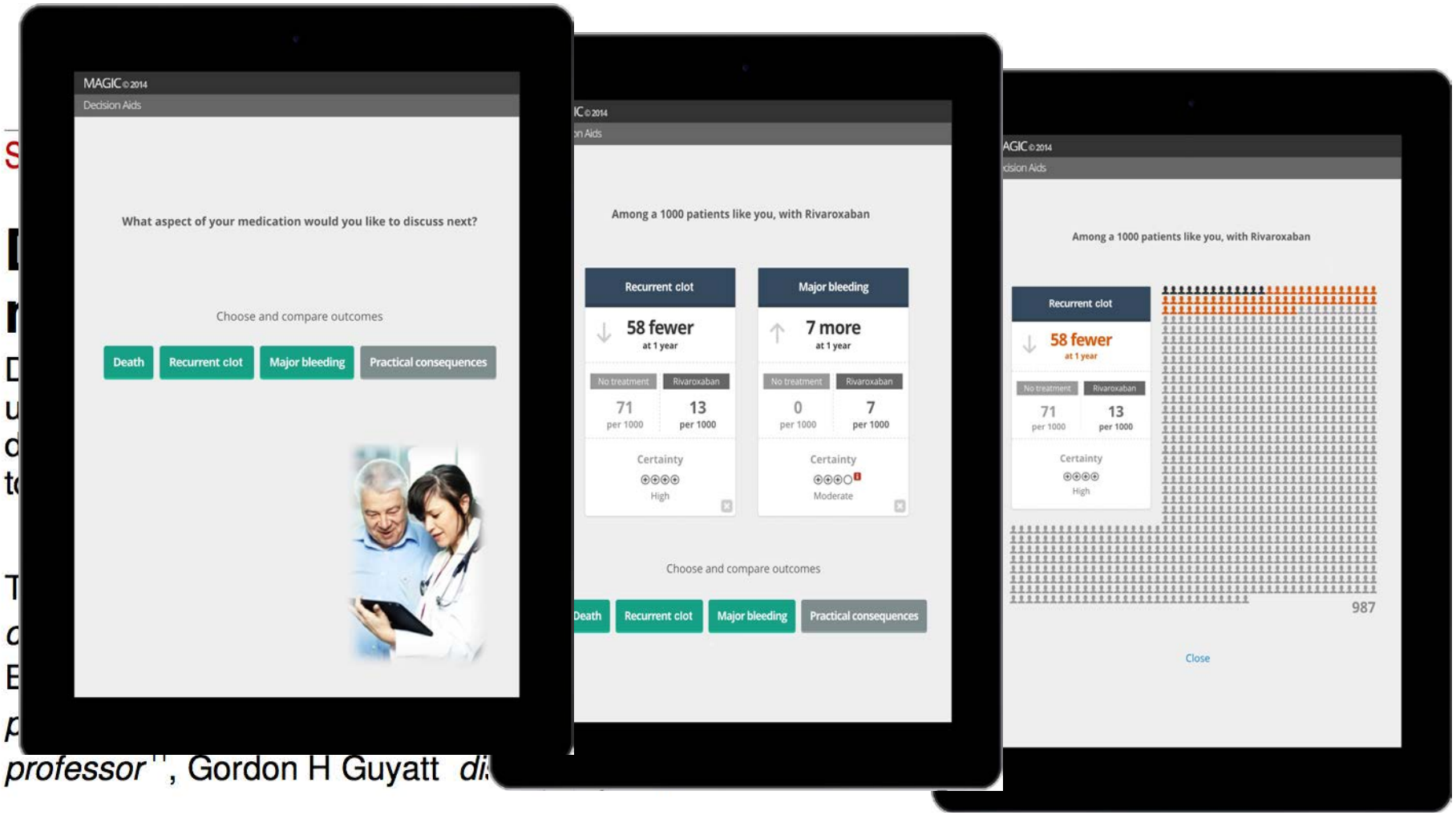
Decision aids that really promote shared decision making: the pace quickens

Decision aids can help shared decision making, but most have been hard to produce, onerous to update, and are not being used widely. **Thomas Agoritsas and colleagues** explore why and describe a new electronic model that holds promise of being more useful for clinicians and patients to use together at the point of care

Thomas Agoritsas *research fellow*[1 2], Anja Fog Heen *doctoral candidate*[3 4], Linn Brandt *doctoral candidate*[3 4], Pablo Alonso-Coello *associate researcher*[1 5], Annette Kristiansen *doctoral candidate*[3 4], Elie A Akl *associate professor*[1 6], Ignacio Neumann *assistant professor*[1 7], Kari AO Tikkinen *adjunct professor*[1 8], Trudy van der Weijden *professor*[9], Glyn Elwyn *professor*[10], Victor M Montori *professor*[11], Gordon H Guyatt *distinguished professor*[1], Per Olav Vandvik *associate professor*[3 4]

SHARE-IT

ANALYSIS



professor", Gordon H Guyatt *di*

Health Professionals

Patients' experiences shared on film.

Related:

- Using healthtalk.org for training
- Trigger films for service improvement
- Patients tell us what makes good healthcare

PEOPLE'S EXPERIENCES OF HEALTH

A problem shared

Reliable health information from patients, for patients.

ELSEVIER

Check for updates

Journal of Clinical Epidemiology

Journal of Clinical Epidemiology 129 (2021) 104–113

ORIGINAL ARTICLE

A framework for practical issues was developed to inform shared decision-making tools and clinical guidelines

Anja Fog Heen[a,*], Per Olav Vandvik[b], Linn Brandt[a], Victor M. Montori[c], Lyubov Lytvyn[d], Gordon Guyatt[d], Casey Quinlan[e], Thomas Agoritsas[d,f]

[a]Department of Medicine, Innlandet Hospital Trust, Gjøvik, Norway
[b]Institute for Health and Society, Faculty of Medicine, University of Oslo, Oslo, Norway
[c]Knowledge and Evaluation Research Unit, Mayo Clinic, Rochester, MN, USA
[d]Department of Health Research Methods, Evidence, and Impact, McMaster University, Ontario, Canada
[e]Mighty Casey Media LLC, Richmond, VA, USA
[f]Division of General Internal Medicine, University Hospitals of Geneva, Geneva, Switzerland

Accepted 6 October 2020; Published online 10 October 2020

Abstract

Objectives: The objective of the study was to develop and test feasibility of a framework of patient-important practical issues.

Study Design and Setting: Guidelines and shared decision-making tools help facilitate discussions about patient-important outcomes of care alternatives, but typically ignore practical issues patients consider when implementing care into their daily routines. Using grounded theory, practical issues in the HealthTalk.org registry and in Option Grids were identified and categorized into a framework. We integrated

SHARE-IT Decision Aids

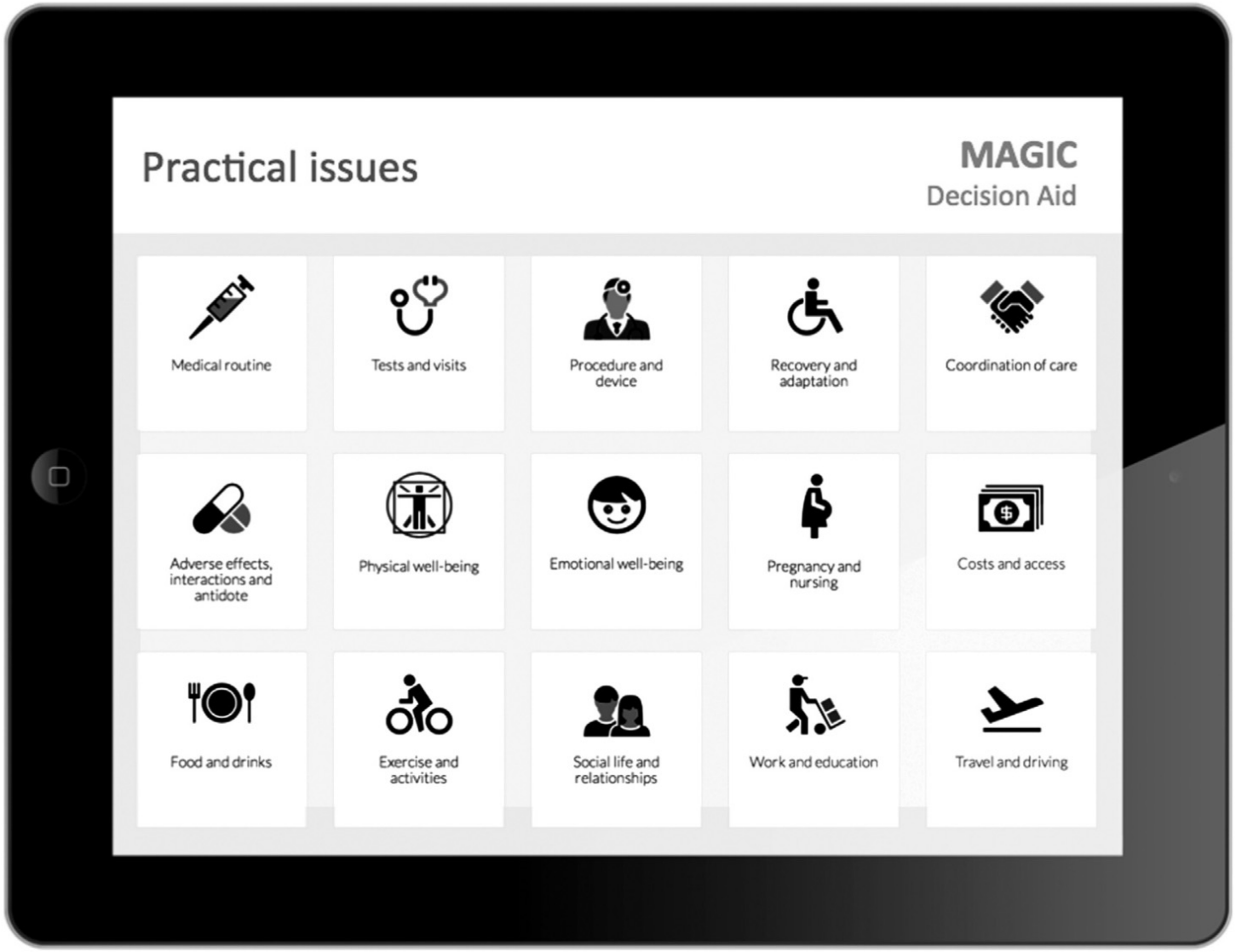


Fig. 2. The final practical issue framework including 15 categories and corresponding icons in SDM tools.

Journal of Clinical Epidemiology 129 (2021) 104e113

Agenda

1. MAGIC Evidence Ecosystem Foundation
2. How to enhance our evidence ecosystem
   - Focus #1 Methods
   - Focus #2 Digitally structured data
3. **Introducing the MAGICapp**
4. Key developing areas
   - Personalized medicine
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   - Multiple comparisons: from NMAs to decisions
5. Introducing MATCH-IT
6. Bridging the gap with implementation projects

Viewing guidelines

MAGIC Evidence Ecosystem Foundation

MAGIC Authoring & Publication Platform

Cochrane

MAGIC A digital authoring and publication platform for the evidence ecosystem, by MAGIC Evidence Ecosystem Foundation

Create an account | Help | MAGIC | English (US) | Log in

Guidelines 282 | Evidence summaries

Search

Content

Organizations

National Clinical Evidence Taskforce - COVID-19 - Australian National Clinical Evidence Taskforce

Australian guidelines for the clinical care of people with COVID-19

Options

v74.1 - 5/29/2023 EXTERNAL REVIEW **201** Recommendations **89** Clinical questions/ PICOs

Recently published

Australian Living Evidence Collaboration - Living Evidence for Australian Pregnancy and Postnatal Care (LEAPP)

Australian Pregnancy Care Guidelines

Options

v1.2 - 12/19/2023 **498** Recommendations **3** Clinical questions/ PICOs

AWMF - Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften - Nina Kreuzberger, Nicole Skoetz, Stefan Kluge

S3-Leitlinie Empfehlungen zur Therapie von Patienten mit COVID-19 AWMF Register Nummer 113-001LG

Options

v1.0 - 1/30/2024 **39** Recommendations **40** Clinical questions/ PICOs

National Health and Medical Research Council (NHMRC) - National Health and Medical Research Council

Australian Guidelines for the Prevention and Control of Infection in Healthcare (2019)

Options

v11.23 - 2/27/2024 UPDATED **42** Recommendations **35** Clinical questions/ PICOs

Sundhedsstyrelsen
64 Guidelines

Nederlands Huisartsen Genootschap
35 Guidelines

MAGIC Evidence Ecosystem Foundation
30 Guidelines

European Stroke Organisation
20 Guidelines

Duodecim Medical Publications Ltd.
16 Guidelines

World Health Organization (WHO)
16 Guidelines

thebmj

RAPID RECOMMENDATIONS

Arthroscopic surgery for degenerative knee arthritis and meniscal tears: a clinical practice guideline

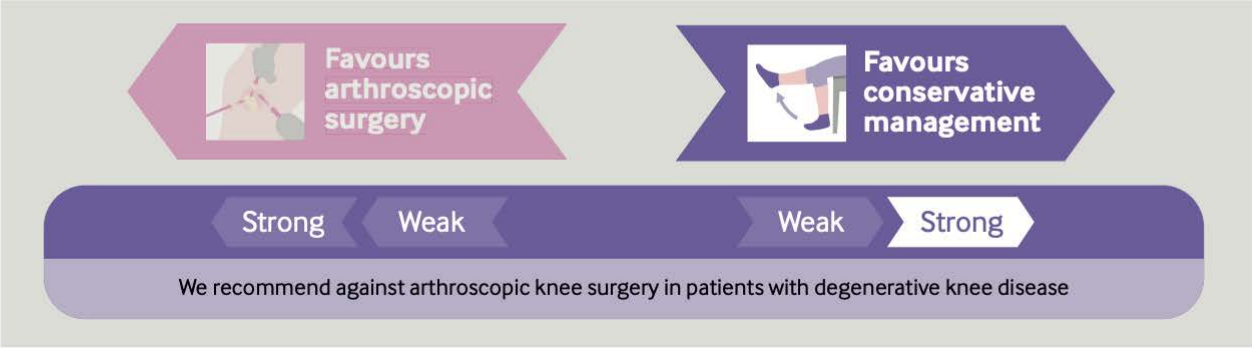
Reed A C Siemieniuk,[1 2] Ian A Harris,[3 4] Thomas Agoritsas,[1 5] Rudolf W Poolman,[6] Romina Brignardello-Petersen,[1 7] Stijn Van de Velde,[8] Rachelle Buchbinder,[9 10] Martin Englund,[11] Lyubov Lytvyn,[12] Casey Quinlan,[13] Lise Helsingen,[14] Gunnar Knutsen,[15] Nina Rydland Olsen,[16] Helen Macdonald,[17] Louise Hailey,[18] Hazel M Wilson,[19] Anne Lydiatt,[20] Annette Kristiansen[21 22]

Full author details can be found at the end of the article

Correspondence to: R Siemieniuk
reed.siemieniuk@medportal.ca

Cite this as: *BMJ* 2017;357:j1982
doi: 10.1136/bmj.j1982

This BMJ Rapid Recommendation article is one of a series that provides clinicians with trustworthy recommendations for potentially practice changing evidence. BMJ Rapid Recommendations represent a collaborative effort between the MAGIC group (www.



TUTORIAL - BMJ RapidRecs: Arthroscopic surgery for degenerative knee disease

v3.1 published on 2/1/2024

Sections

Background

Degenerative knee disease, which many understand as knee osteoarthritis, is one of the most prevalent chronic diseases in middle aged and elderly persons. The limited evidence on the direct correlation between radiological findings and patient reported symptoms has led to differing treatment practic...

More >

Recommendation 1

Strong recommendation against

We recommend against arthroscopic knee surgery in patients with degenerative knee disease.

Research evidence (1) Evidence to decision Rationale Practical info Decision Aids References More Info Feedback 1

TUTORIAL - BMJ RapidRecs: Arthroscopic surgery for degenerative knee disease

v3.1 published on 2024-02-01

Sections

Background

Degenerative knee disease, which many understand as knee osteoarthritis, is one of the most prevalent chronic diseases in middle aged and elderly persons. The limited evidence on the direct correlation between radiological findings and patient reported symptoms has led to differing treatment practices. Both operative and non-operative treatment options are available. Currently, arthroscopic surgery is a widespread practice, despite a fairly recent systematic review by Thorlund et al. [1] questioning the net long-term effect and value. [2]

We have systematically reviewed the effects of arthroscopic irrigation, debridement and/or partial meniscectomy versus non-operative management or placebo in patients with symptomatic degenerative knee disease. We have evaluated the benefit on patient important outcomes such as pain, function and quality of life and considered the potential harms. The estimates of effect are measured in units of minimal important difference, defined as the smallest difference in score informed patients perceive as important [3].

Below you will find the recommendations with evidence summaries (GRADE Summary of Findings-tables), practical information and decision aids for use in the clinical encounter. A detailed account of the background, methods and processes for BMJ RapidRecs can be found in the last section or you can read a brief outline in a recent BMJ Editorial by Siemieniuk et al. [2].

< Less

MAGIC Evidence Ecosystem Foundation

MAGIC Authoring & Publication Platform

Cochrane

TUTORIAL - BMJ RapidRecs: Arthroscopic surgery for degenerative knee disease

v3.1 published on 2/1/2024

Home Help MAGIC English (US) Log in

Sections

Subscribe PDF

- Introduction
- Background
- Recommendation
- Methods

Background

Degenerative knee disease, which many understand as knee osteoarthritis, is one of the most prevalent chronic diseases in middle aged and elderly persons. The limited evidence on the direct correlation between radiological findings and patient reported symptoms has led to differing treatment practic...

More >

Recommendation 1

Strong recommendation against

We recommend against arthroscopic knee surgery in patients with degenerative knee disease.

Research evidence (1) | Evidence to decision | Rationale | Practical info | Decision Aids | References | More Info | Feedback 1

Strong recommendation against

We recommend against arthroscopic knee surgery in patients with degenerative knee disease.

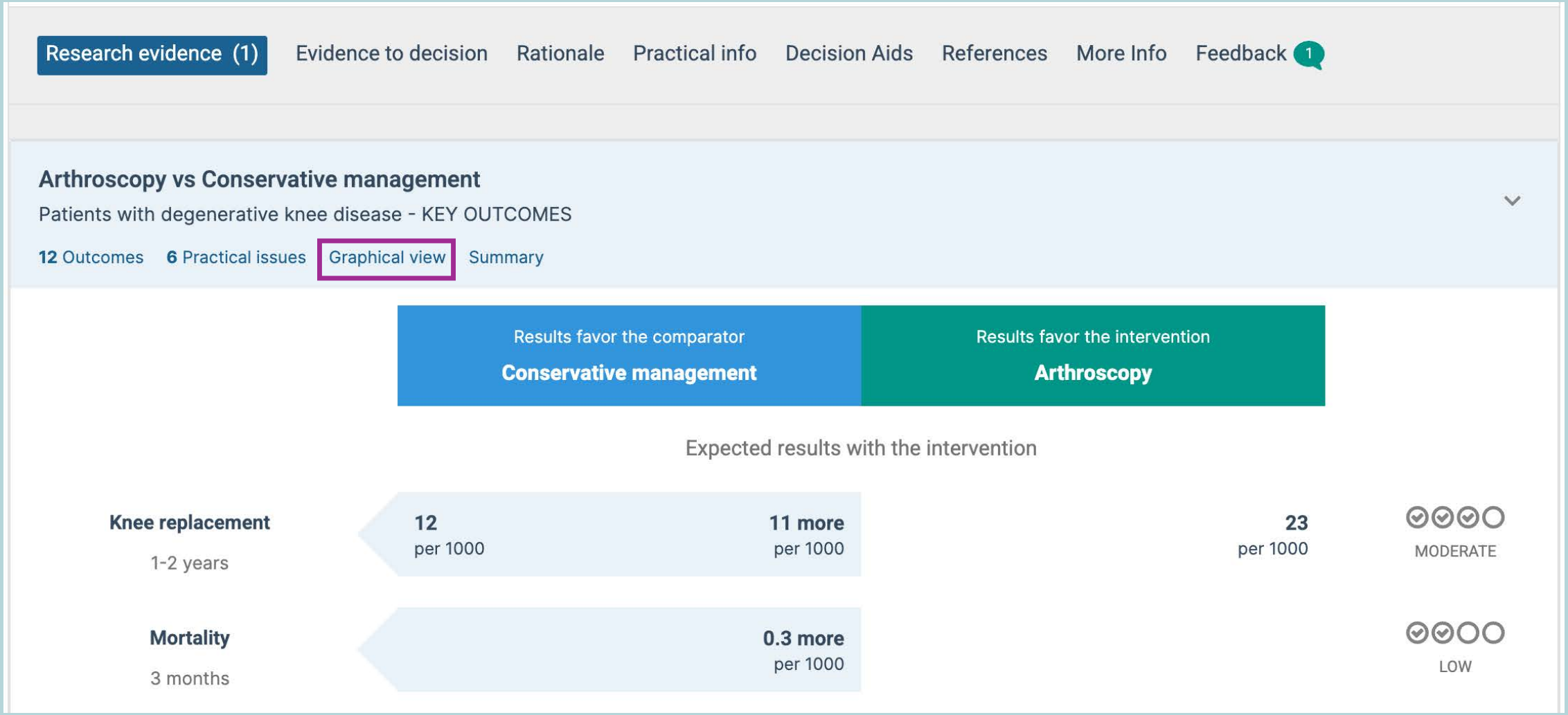
Research evidence (1) | Evidence to decision | Rationale | Practical info | Decision Aids | References | More Info | Feedback 1

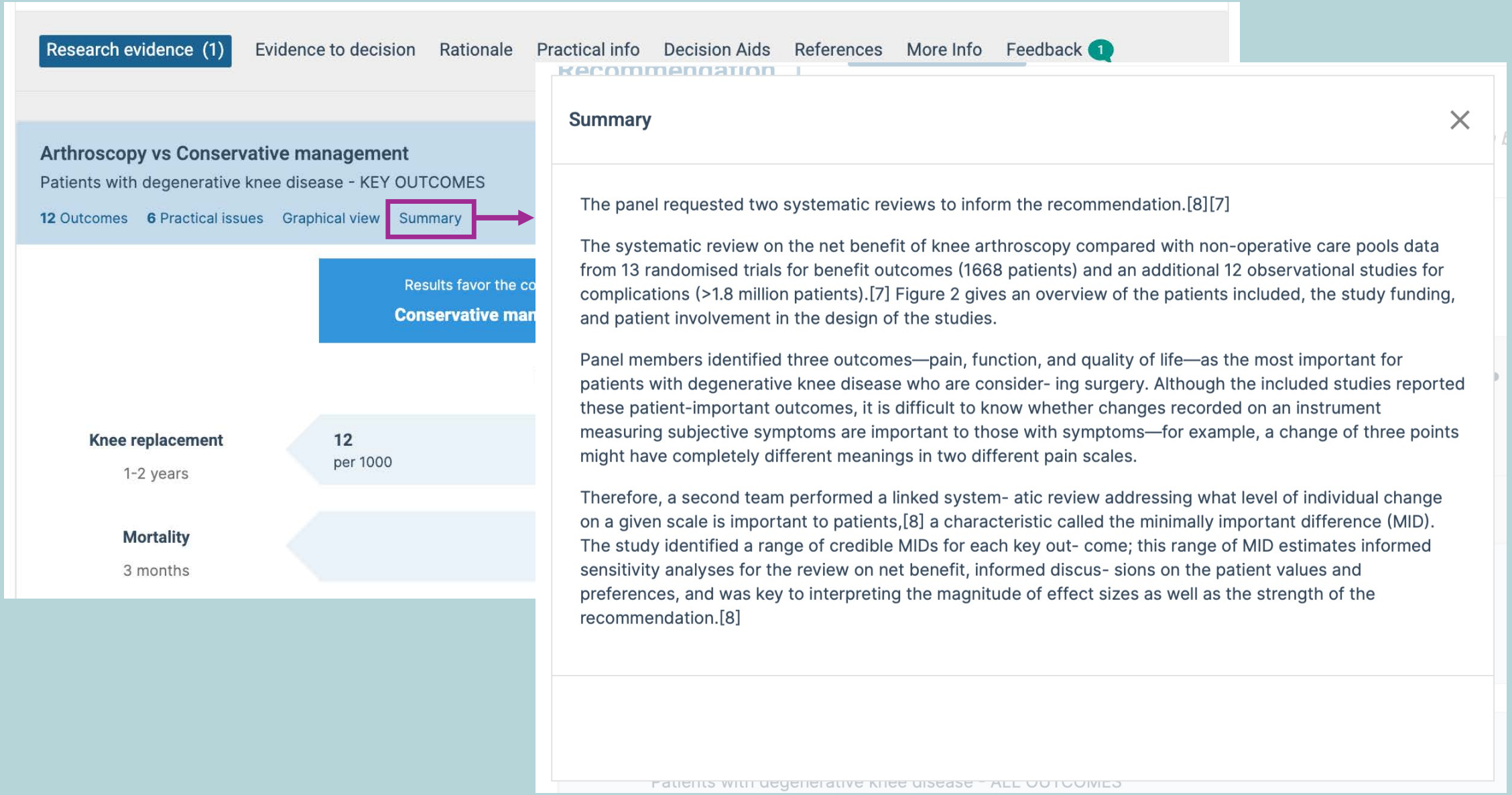
Arthroscopy vs Conservative management

Patients with degenerative knee disease - KEY OUTCOMES

12 Outcomes | 6 Practical issues | Graphical view | Summary

Outcome Timeframe	Study results and measurements	Absolute effect estimates Conservative management	 Arthroscopy	Certainty of the Evidence (Quality of evidence)	Plain language summary
Knee replacement 1-2 years 9 Critical	Relative risk 1.89 (CI 95% 0.51 — 7.00) Based on data from 497 participants in 2 studies Follow up: 1 year.	12 per 1000	23 per 1000 Difference: **11 more per 1000** (CI 95% 6 fewer — 72 more)	**Moderate** Due to serious imprecision	Knee arthroscopy may increase the chance of having a knee replacement Comparator
Mortality 3 months 8 Critical	Based on data from 454086 participants in 7 studies Follow up: 3 months.	0 per 1000	0 per 1000 Difference: **0.3 more per 1000** (CI 95% 0.1 more — 0.6 more)	**Low** Due to serious risk of bias and inconsistency	Arthroscopy may have an extremely small risk of mortality Comparator


Research evidence (1)
Evidence to decision
Rationale
Practical info
Decision Aids
References
More Info
Feedback 1
Arthroscopy vs Conservative management
Patients with degenerative knee disease - KEY OUTCOMES
12 Outcomes
6 Practical issues
Graphical view
Summary
Results favor the comparator
Conservative management
Results favor the intervention
Arthroscopy
Expected results with the intervention
Knee replacement
1-2 years
12
per 1000
11 more
per 1000
23
per 1000
MODERATE
Mortality
3 months
0.3 more
per 1000
LOW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Patients with degenerative knee disease - KEY OUTCOMES
12 Outcomes
6 Practical issues
Graphical view
Summary
Results favor the co
Conservative man
Knee replacement
1-2 years
12
per 1000
Mortality
3 months
Summary
The panel requested two systematic reviews to inform the recommendation.[8][7]
The systematic review on the net benefit of knee arthroscopy compared with non-operative care pools data from 13 randomised trials for benefit outcomes (1668 patients) and an additional 12 observational studies for complications (>1.8 million patients).[7] Figure 2 gives an overview of the patients included, the study funding, and patient involvement in the design of the studies.
Panel members identified three outcomes—pain, function, and quality of life—as the most important for patients with degenerative knee disease who are consider- ing surgery. Although the included studies reported these patient-important outcomes, it is difficult to know whether changes recorded on an instrument measuring subjective symptoms are important to those with symptoms—for example, a change of three points might have completely different meanings in two different pain scales.
Therefore, a second team performed a linked system- atic review addressing what level of individual change on a given scale is important to patients,[8] a characteristic called the minimally important difference (MID). The study identified a range of credible MIDs for each key out- come; this range of MID estimates informed sensitivity analyses for the review on net benefit, informed discus- sions on the patient values and preferences, and was key to interpreting the magnitude of effect sizes as well as the strength of the recommendation.[8]

Strong recommendation against

We recommend against arthroscopic knee surgery in patients with degenerative knee disease.

Research evidence (1) | Evidence to decision | Rationale | Practical info | Decision Aids | References | More Info | Feedback 1

Benefits and harms

Small net benefit, or little difference between alternatives

Patients undergoing arthroscopic knee surgery have an approximately 12% chance of achieving a small, short-term improvement in pain and function. [6] On average, compared to non-operative management or placebo, improvement is below the *minimally important difference* [7] and there is little or no difference at 1 year. [6]

The recovery period following arthroscopy varies, but typically lasts 2-6 weeks and incurres pain and limited function. There is a small risk of pulmonary embolism, deep vein thrombosis and infection, and a very small risk of death and nerve injury. [6]

Certainty of the Evidence

High

We have high certainty that arthroscopy does not, on average, result in an important long term improvement in pain or quality of life, and moderate certainty that it does not substantially improve knee function. There is low certainty in the magnitude of serious adverse effects, as these data are mostly observational. [6] There is high certainty that nearly all patients will have exacerbated pain and function immediately following arthroscopy, although the severity and duration of the recovery period varies. [8] [9]

Values and preferences

No substantial variability expected

Most patients are unlikely to consider a 2-6 week recovery period following arthroscopy worthwhile for a small chance of a minor improvement in short-term pain and function. The multidisciplinary panel, which included persons with lived experience of the disease and experts in shared decision making, unanimously agreed that almost every patient would agree that the harms from arthroscopy clearly outweigh the benefits.

Strong recommendation against

We recommend against arthroscopic knee surgery in patients with degenerative knee disease.

Research evidence (1) | Evidence to decision | Rationale | Practical info | Decision Aids | References | More Info | Feedback 1

We issue a strong recommendation against arthroscopy for patients with degenerative knee disease because we believe that the undesirable consequences clearly outweigh the desirable consequences. Further, the quality of the evidence is high or moderate for key outcomes - pain, function, and quality of life. Results are consistent in all trials and there is no trial evidence that any patient group achieves greater benefit, including those without imaging evidence of osteoarthritis, with mechanical symptoms, with acute onset of pain, or with meniscal tears. We expect very little variability in patient values and preferences.

Strong recommendation against

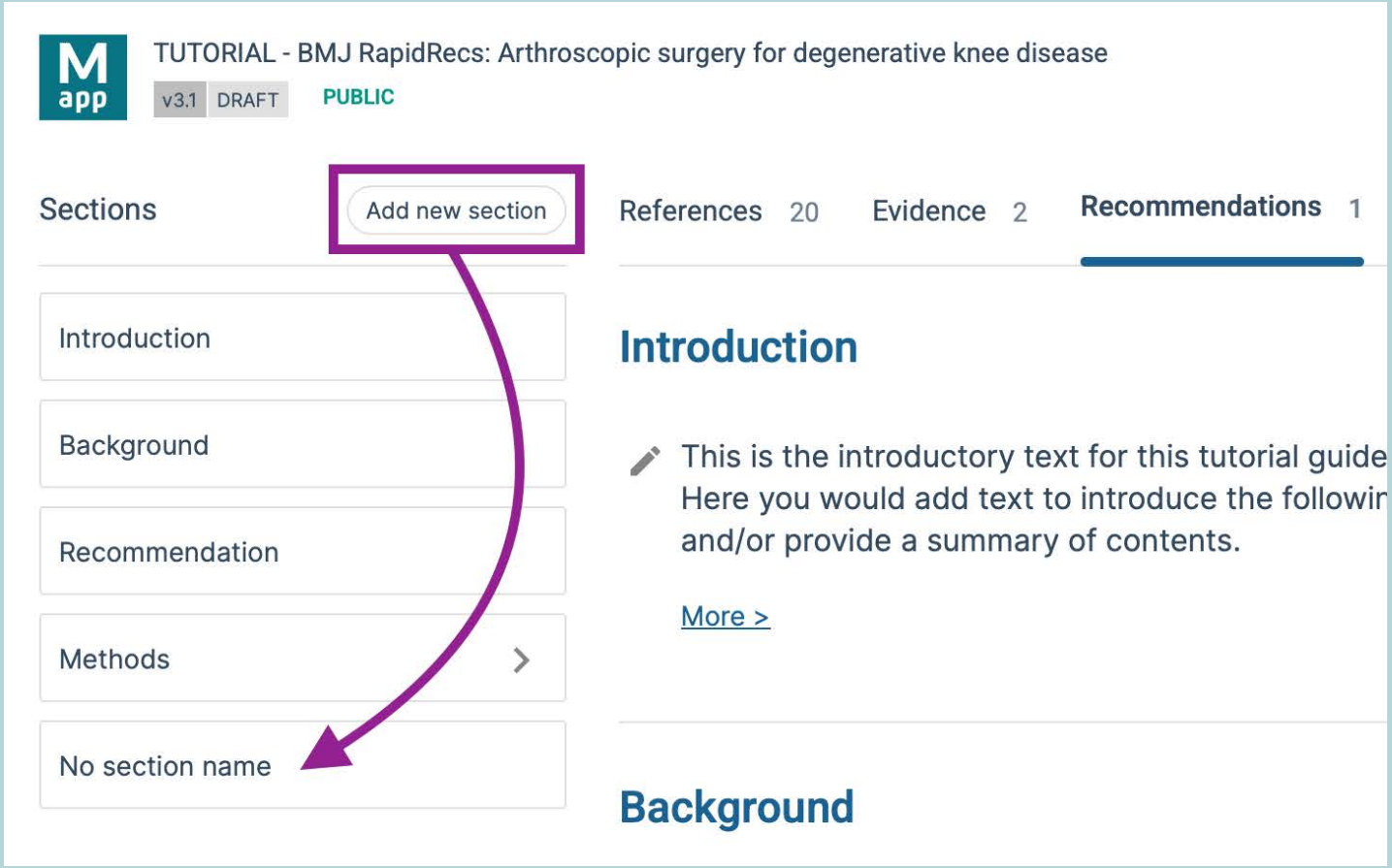
We recommend against arthroscopic knee surgery in patients with degenerative knee disease.

Management options:
Non-operative management options include watchful waiting, weight loss in patients who are overweight, physical therapy, exercise, oral or topical pain medications, and intra-articular corticosteroid or other injections. [10] For patients with severe osteoarthritis, options also include total or partial knee arthroplasty and proximal tibial osteomy. [11] However, symptoms tend to fluctuate and vary between patients, thus delaying surgical management is preferrable for many patients. [11]

Are there patients with knee pain who might benefit from arthroscopy?
Degenerative knee disease is a broadly encompassing diagnosis in patients who are typically 35 years of age or older and which many consider synonymous with osteoarthritis but explicitly includes patients without radiographic or MRI evidence of osteoarthritis who have meniscal tears or mechanical symptoms like locking. Pain can occur acutely - including sudden onset during sports or physical activity - or insidiously. The trials included in the evidence summary include adequate patient representation from each of these groups; [6] there was no suggestion that any specific subgroup of patients with degenerative knee disease have a greater benefit from arthroscopy.

The trials generally excluded patients with persisent, frequent, and the severe symptom where they were unable to objectively fully extend their leg (locked knee). It is possible that this very small group would benefit from arthroscpy, but any benefit in this group of patients is highly speculative. Given that there is indirect evidence that harms outweigh benefits - from patients with meniscal tears and severe mechanical symptoms - these patients would ideally be offered arthroscopy in the context of a randomised trial.

Authoring guidelines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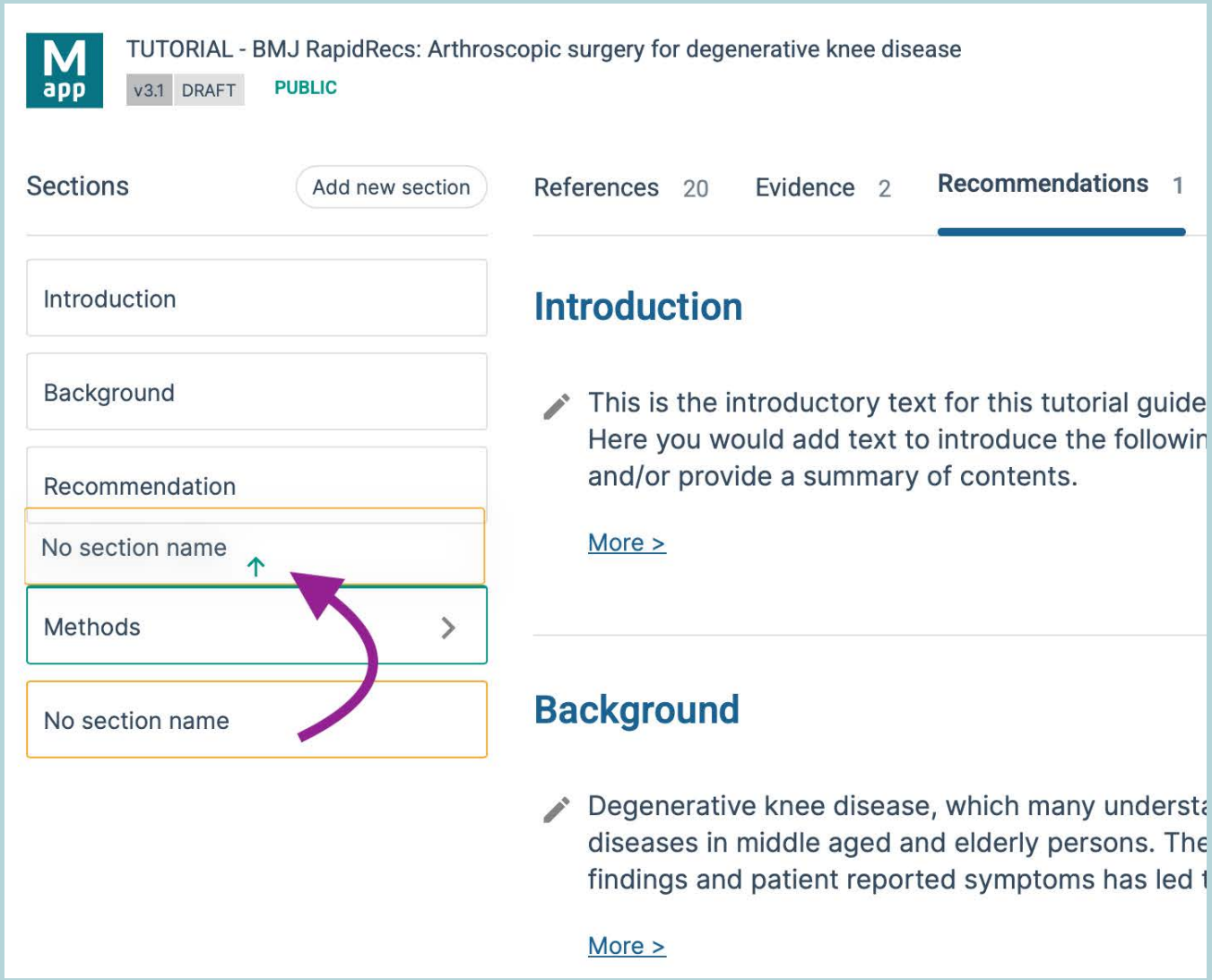
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Background
Degenerative knee disease, which many understa
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Degenerative knee disease, which many understand as knee osteoarthritis, is one of the most prevalent chronic diseases in middle aged and elderly persons. The limited evidence on the direct correlation between radiological findings and patient reported symptoms has led to differing treatment practic...
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Recommendation 2

Add PICO

- Add PICO
- Import PICOs from a RevMan5 file
- Import PICO using a MAGIC Zip file
- Import PICO using a GDT Gradepro file
- Links and widgets
- Activities, tasks and stats
- Remove section

Write general section text here (e.g. etiology, methods, about the topic) - to show a few li
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3.1

Population	Intervention
Patients with degenerative knee disease - KEY OUTCOMES	Arthroscopy

Outcomes

Publication Ready | Knee replacement | Mortality | Venous thromboembolism | Nerve dan

Pain (change from baseline) | Pain (change from baseline) | Function (change from baseline)

Quality of life (change from baseline) | Quality of life (change from baseline)

Under development | Test

Find evidence • Evidence profile • Practical issues • Graphical view • Summary • References • PICO codes • Places used (1)

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Find evidence | • Evidence profile | • Practical issues | • Graphical view | • Summary | • References | • PICO codes | • Places used (1) | Help

Outcome Timeframe	Study results and measurements	Absolute effect estimates Conservative management	 Arthroscopy	Certainty of the Evidence (Quality of evidence)	Plain language summary	+ Outcome
Dichotomous Outcome						
Knee replacement 1-2 years 9 Critical	Relative risk 1.89 (CI 95% 0.51 — 7.00) Based on data from 497 participants in 2 studies Follow up: 1 year.	12 per 1000	23 per 1000 Difference: **11 more per 1000** (CI 95% 6 fewer — 72 more)	**Moderate** Due to serious imprecision	Knee arthroscopy may increase the chance of having a knee replacement Comparator	Finished
Mortality 3 months 8 Critical	Based on data from 454086 participants in 7 studies Follow up: 3 months.	0 per 1000	0 per 1000 Difference: **0.3 more per 1000** (CI 95% 0.1 more — 0.6 more)	**Low** Due to serious risk of bias and inconsistency	Arthroscopy may have an extremely small risk of mortality Comparator	Finished

Knee replacement 1-2 years 9 Critical	Relative risk 1.89 (CI 95% 0.51 — 7.00) Based on data from 497 participants in 2 studies Follow up: 1 year.	**12** per 1000 **23** per 1000 Difference: **11 more per 1000** (CI 95% 6 fewer — 72 more)	**Moderate** Due to serious imprecision	Knee arthroscopy may increase the chance of having a knee replacement Comparator

Finished

← Plain language summary

Save | Close

Absolute effect estimates →

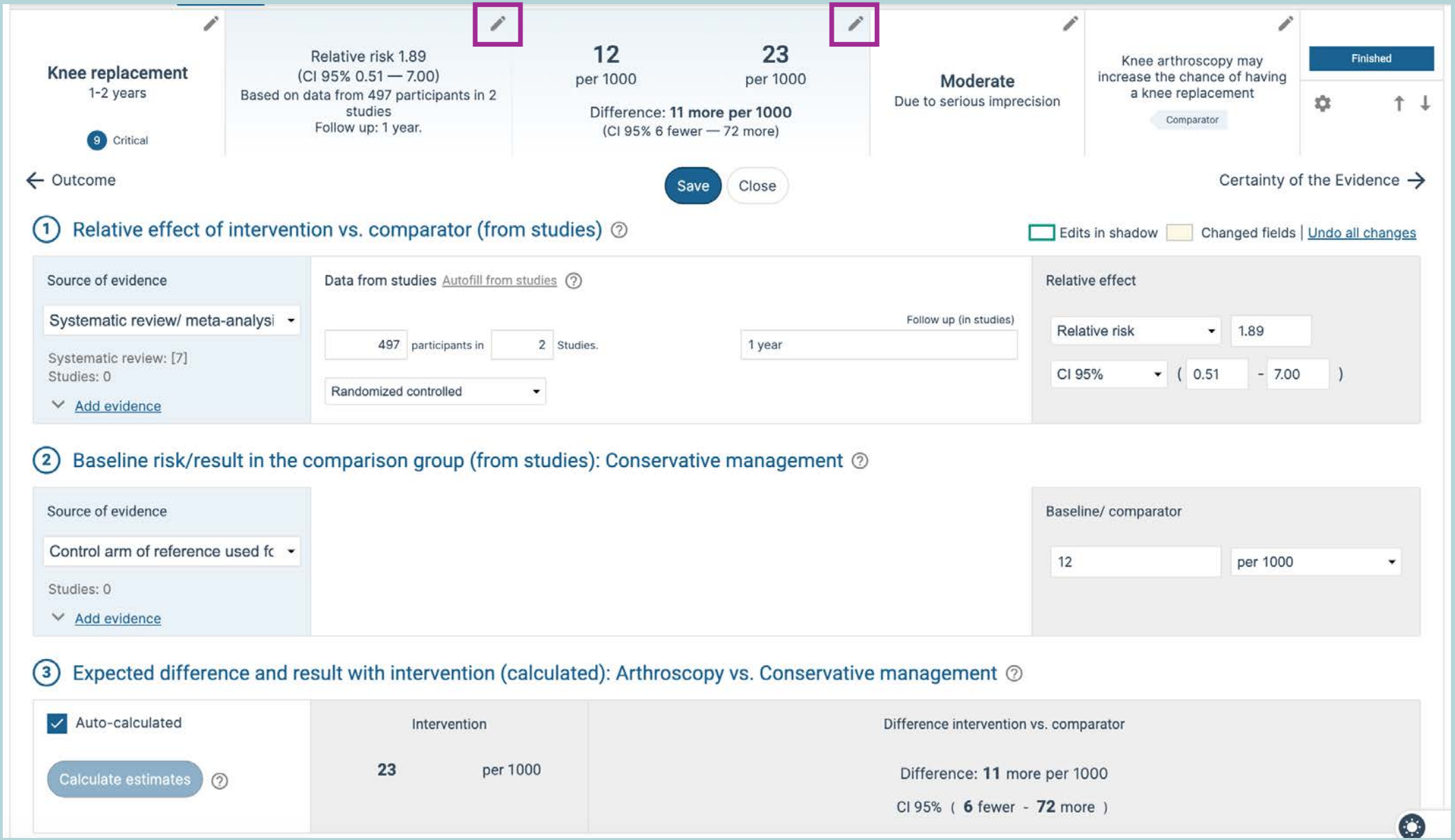
Edits in shadow | Changed fields | Undo all changes

1 Outcome

Outcome short name (in tables)	Outcome		
Knee replacement	Knee replacement		
Timeframe of estimates	**Clinical importance of outcome**	**MeSH Term**	**MeSH Code**
1-2 years	9: Critical	Arthroplasty, Replacement, Knee	D019645

Detailed description

Here you can add details about your outcome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1-2 years
9 Critical
Relative risk 1.89
(CI 95% 0.51 — 7.00)
Based on data from 497 participants in 2 studies
Follow up: 1 year.
12
per 1000
23
per 1000
Difference: 11 more per 1000
(CI 95% 6 fewer — 72 more)
Moderate
Due to serious imprecision
Knee arthroscopy may increase the chance of having a knee replacement
Comparator
Finished
Outcome
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Certainty of the Evidence
1 Relative effect of intervention vs. comparator (from studies)
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Source of evidence
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Systematic review: [7]
Studies: 0
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Data from studies
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497 participants in 2 Studies.
Follow up (in studies)
1 year
Randomized controlled
Relative effect
Relative risk
1.89
CI 95%
(0.51 - 7.00)
2 Baseline risk/result in the comparison group (from studies): Conservative management
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Baseline/ comparator
12
per 1000
3 Expected difference and result with intervention (calculated): Arthroscopy vs. Conservative management
Auto-calculated
Calculate estimates
Intervention
23
per 1000
Difference intervention vs. comparator
Difference: 11 more per 1000
CI 95% (6 fewer - 72 more)

1 Step 1: Are the studies you took results from randomized?

Study type

Randomized controlled

Randomized trials provide high certainty in effect estimates. Serious limitations such as risk of bias, imprecision, inconsistency between studies, indirectness or publication bias lower our certainty that the effect estimates reflects the true effects in our target population. Certainty/ quality of evidence is rated as high, moderate, low or very low.

2 Step 2: Factors that might cause rating down your certainty

Indicate in which areas where you find issues. You can indicate areas as problematic without having to rate down. it just helps you to keep track of judgements. The most important rule is to be transparent. When you tick off an item, a standard text suggestion will be added to the comment box.

Risk of Bias Help No serious	Problem areas **The 6 Cochrane RoB items:** ☐ **Sequence (Randomization)** ☐ **Concealment** ☐ **Blinding of participants/ personnel** ☐ **Blinding of assessors** ☐ **Incomplete data** ☐ **Selective outcome reporting** ☐ No intention-to-treat ☐ Carryover effects ☐ Stopped early ☐ Unvalidated measures ☐ Other issue	Comment
Inconsistency Help No serious	Problem areas ☐ Point estimates vary widely ☐ CIs not overlapping ☐ Direction not consistent ☐ Statistical heterogeneity ☐ Other issue	Comment
Indirectness Help No serious	Problem areas ☐ Population dissimilarity ☐ Outcome dissimilarity ☐ No direct comparison ☐ Intervention/ comparator dissimilarity ☐ Time frame insufficient ☐ Other issue	Comment
Imprecision Help Serious	Problem areas ☐ Wide confidence intervals ☐ Few patients ☐ Only one study ☐ Other issue	Comment The confidence interval suggests that the risk of knee replacement would be reduced by 50% with knee arthroscopy in one extreme, while it could be increased by

3 Step 3: Factors that might cause rating up your certainty

These factors are primarily relevant to observational studies that are not rated down for risk of bias. Read more.

Upgrade Help	Comment
○ Large magnitude of effect ○ Very large magnitude of effect ○ All plausible confounding would have reduced the effect ○ Clear dose-response gradient ☑ None	

4 Step 4: Certainty level: How confident are you that your estimates reflect the true values of your target population?

Certainty level (GRADE)	Short summary of assessments (shown to readers in table)
Moderate	Due to serious imprecision

1 Direction of benefit

- Intervention favourable
- Comparator favourable
- [x] No important difference
- High uncertainty
- Direction not set
- Favored direction not applicable

2 Summary

Short-term systemic corticosteroids may have little or no difference on all-cause mortality

Choose standard text

- High
- Moderate
- Low
- Very low
- No / rare events
- No studies

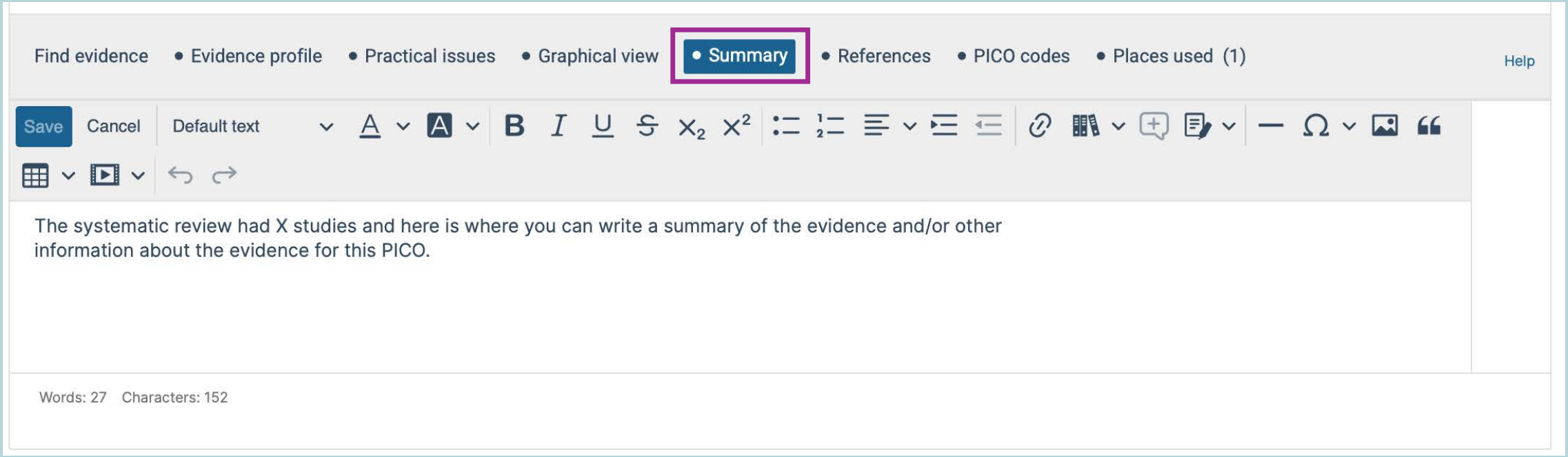
- Important benefit/ harm
- Less important benefit/ harm
- No important benefit/ harm or null effect

{Intervention} may have little or no difference on {outcome}

Suggested standard phrases

Indicates the suggested phrase based on certainty

Find suggested phrases in crosspoint between effect size and certainty	Important benefit/ harm	Less important benefit/ harm	No important benefit/ harm or null effect
High	Improves or Worsen (alt. increase or reduce)	Slightly improve or worsen (alt. slightly increase or reduce)	Little or no difference
Moderate	Probably improve or worsen (alt. probably increase or reduce)	Probably slightly improve or worsen (alt. probably slightly increase or reduce)	Probably little or no difference
Low	May improve or worsen (alt. may increase or reduce)	May slightly improve or worsen (alt. may slightly increase or reduce)	May have little or no difference
Very low	We are uncertain whether [intervention] improves or worsen (increases/ reduce) [outcome]		
No / rare events	There were too few who experienced the [outcome], to determine whether [intervention] made a difference		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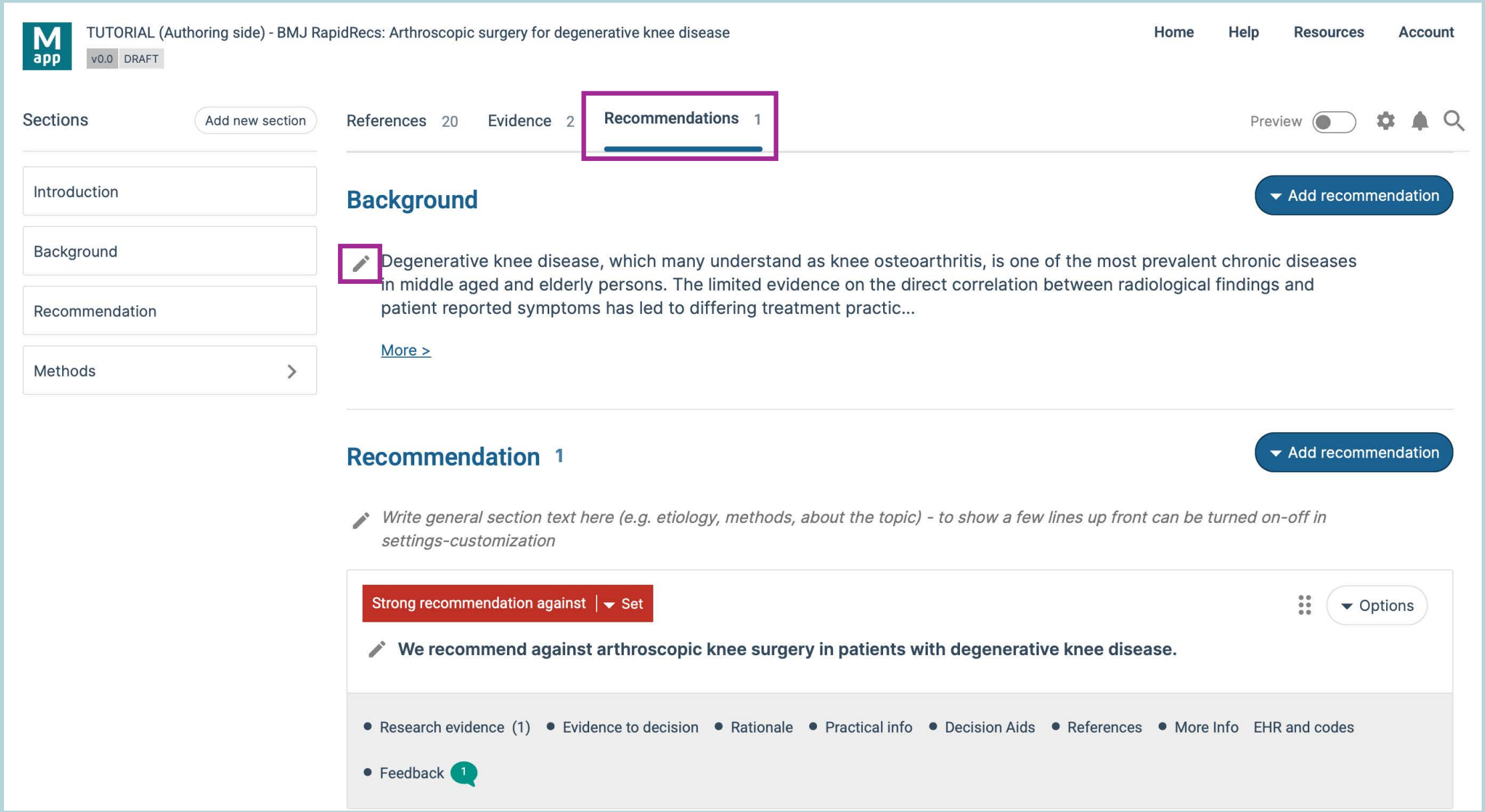
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Write general section text here (e.g. etiology, methods, about the topic) - to show a few lines up front can be turned on-off in settings-customization
Strong recommendation against
Set
Options
We recommend against arthroscopic knee surgery in patients with degenerative knee disease.
Research evidence (1)
Evidence to decision
Rationale
Practical info
Decision Aids
References
More Info
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1

Background

Add recommendation

Save Cancel Default text

Degenerative knee disease, which many understand as knee osteoarthritis, is one of the most prevalent chronic diseases in middle aged and elderly persons. The limited evidence on the direct correlation between radiological findings and patient reported symptoms has led to differing treatment practices. Both operative and non-operative treatment options are available. Currently, arthroscopic surgery is a widespread practice, despite a fairly recent systematic review by Thorlund et al. [1] questioning the net long-term effect and value. [2]

We have systematically reviewed the effects of arthroscopic irrigation, debridement and/or partial meniscectomy versus non-operative management or placebo in patients with symptomatic degenerative knee disease. We have evaluated the benefit on patient important outcomes such as pain, function and quality of life and considered the potential harms. The estimates of effect are measured in units of minimal important difference, defined as the smallest difference in score informed patients perceive as important [3].

Below you will find the recommendations with evidence summaries (GRADE Summary of Findings-tables), practical information and decision aids for use in the clinical encounter. A detailed account of the background, methods and processes for BMJ RapidRecs can be found in the last section or you can read a brief outline in a recent BMJ Editorial by Siemieniuk et al. [2].

Words: 205 Characters: 1422

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Background

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Degenerative knee disease, which many understand as knee osteoarthritis, is one of the most prevalent chronic diseases in middle aged and elderly persons. The limited evidence on the direct correlation between radiological findings and patient reported symptoms has led to differing treatment practic...

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Strong recommendation against | Set

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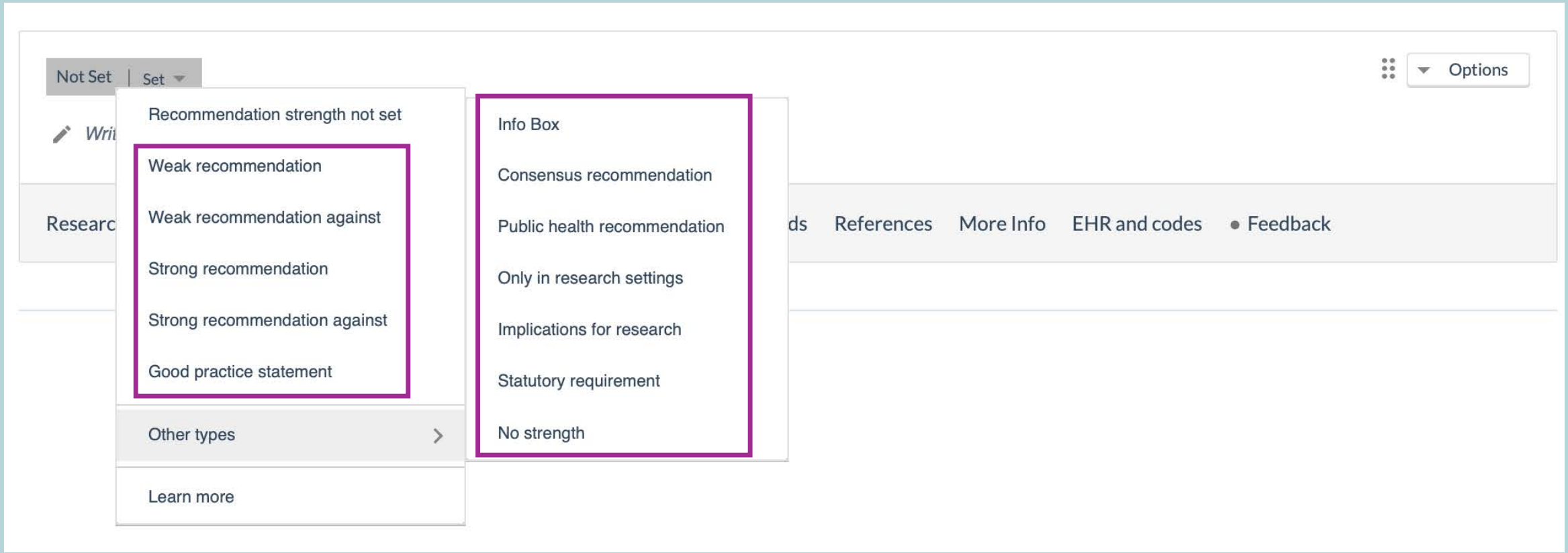
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Background

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Strong recommendation against | Set

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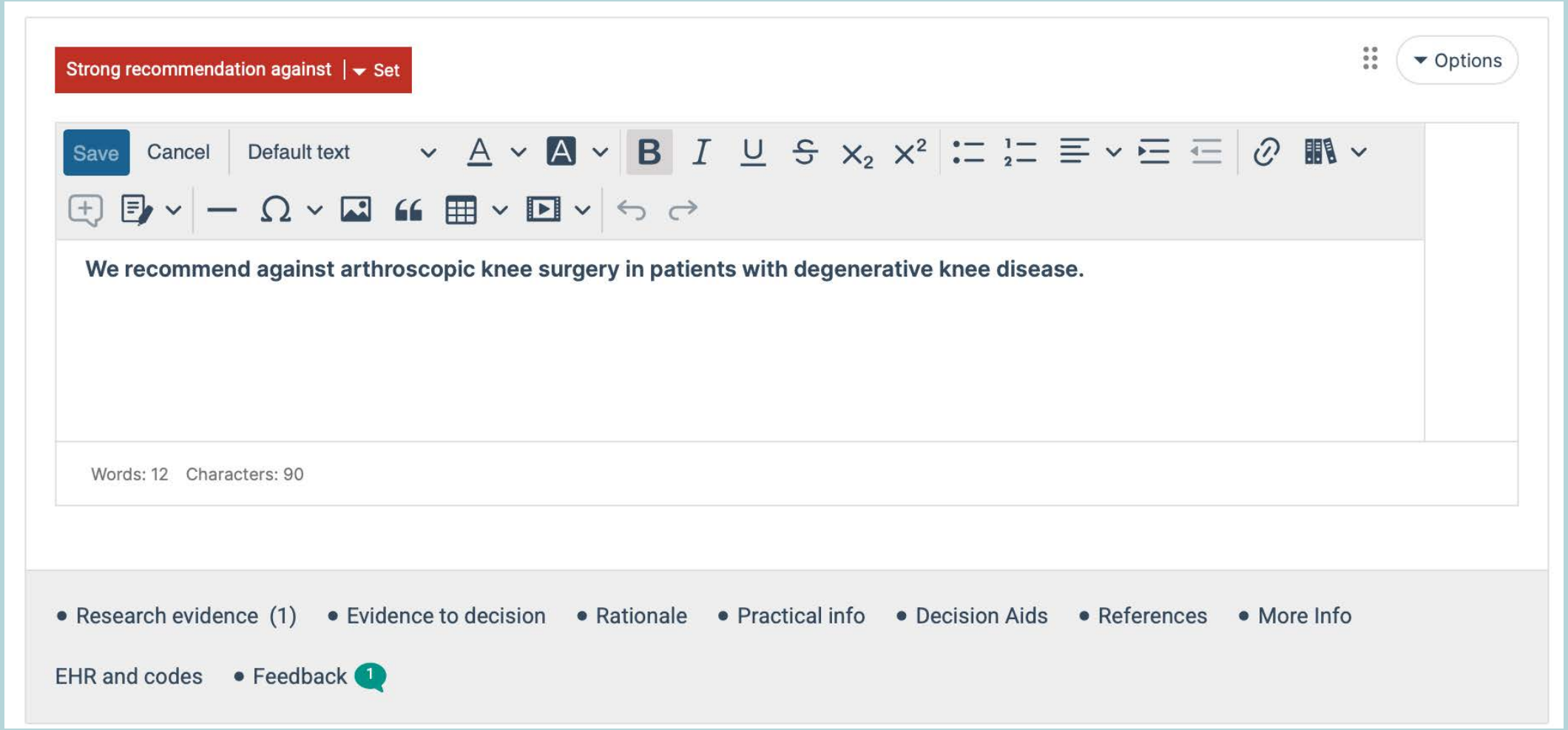
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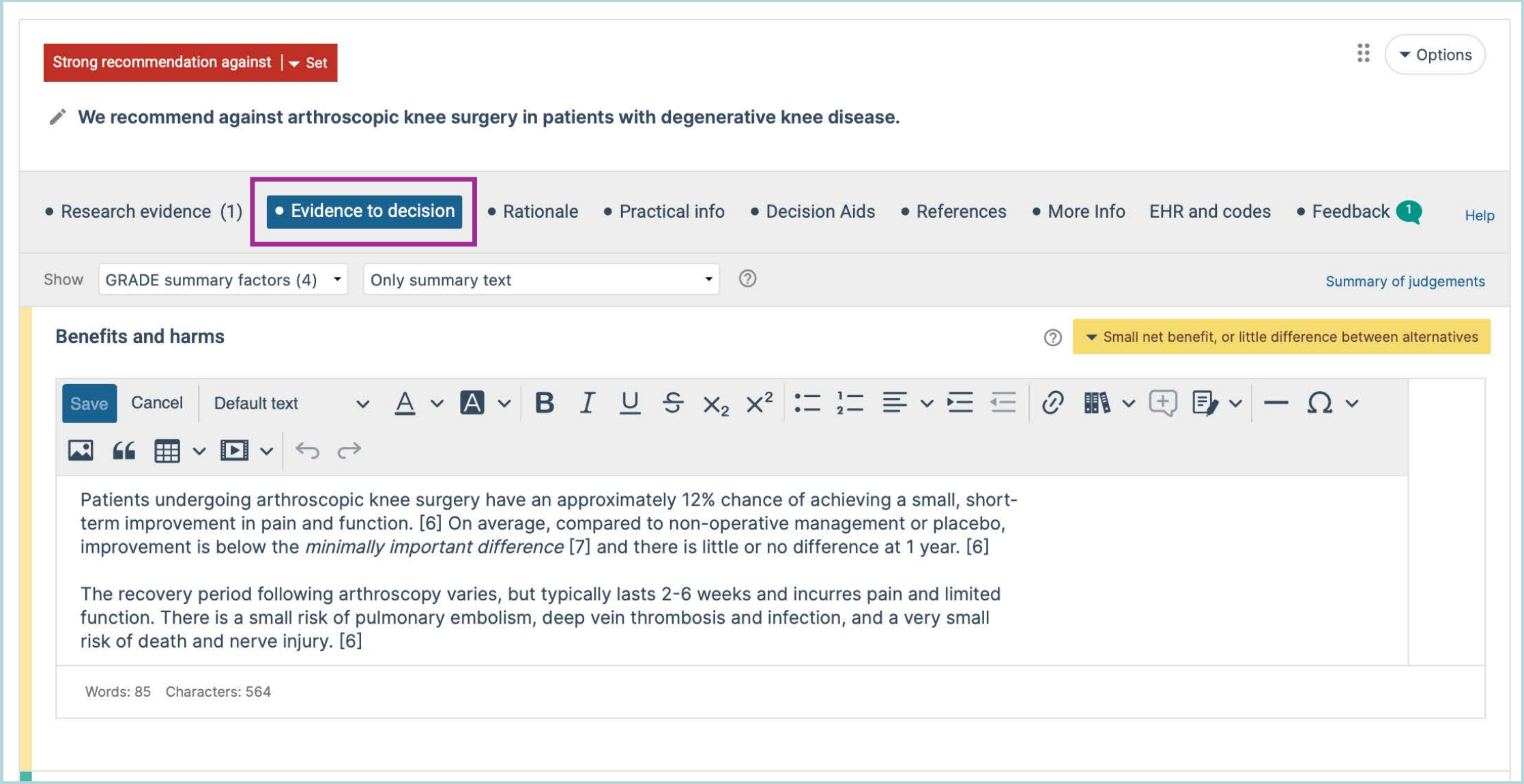
EHR and codes • Feedback 1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Summary of judgements
Benefits and harms
Small net benefit, or little difference between alternatives
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Patients undergoing arthroscopic knee surgery have an approximately 12% chance of achieving a small, short-term improvement in pain and function. [6] On average, compared to non-operative management or placebo, improvement is below the minimally important difference [7] and there is little or no difference at 1 year. [6]
The recovery period following arthroscopy varies, but typically lasts 2-6 weeks and incurres pain and limited function. There is a small risk of pulmonary embolism, deep vein thrombosis and infection, and a very small risk of death and nerve injury. [6]
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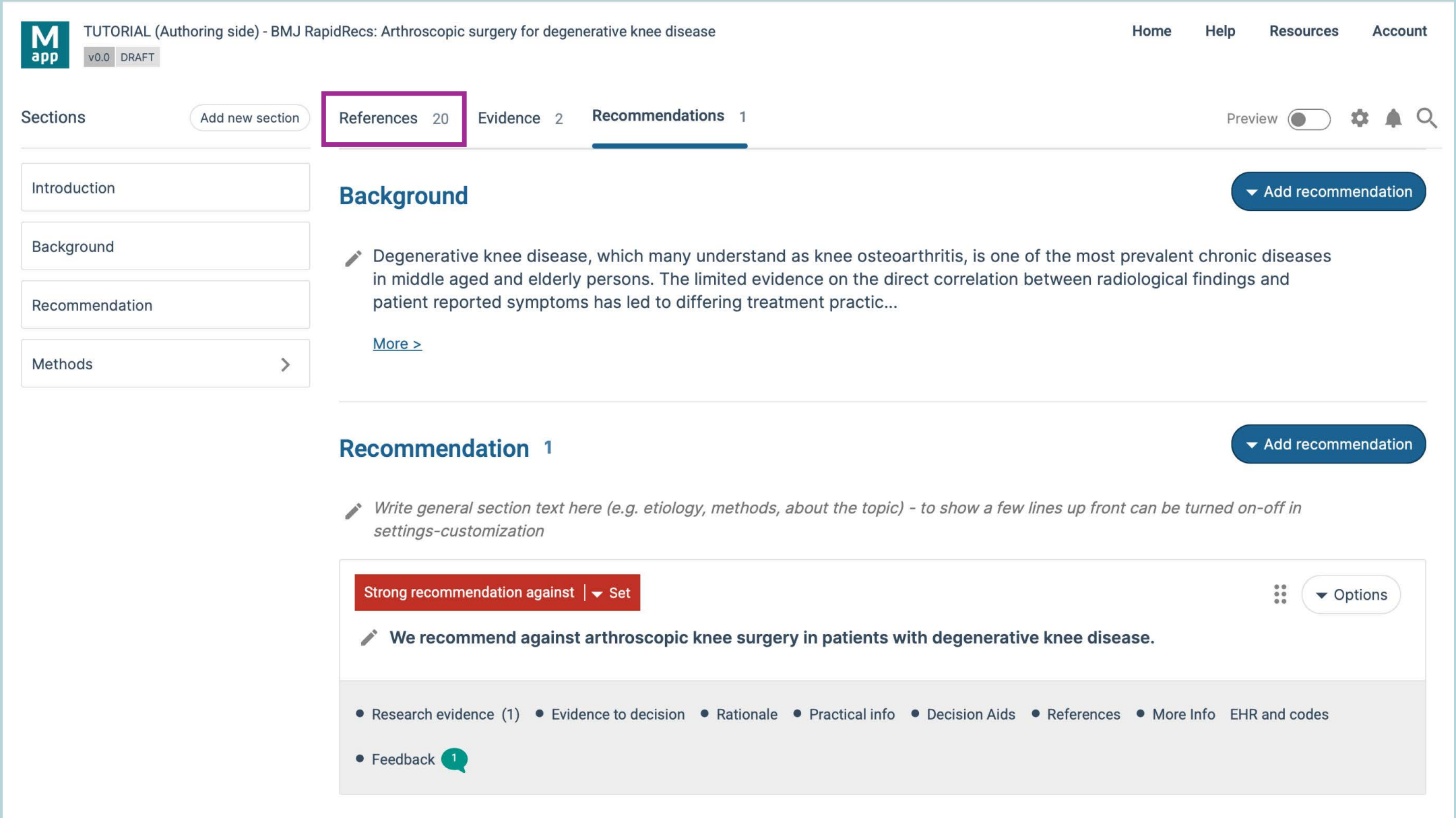
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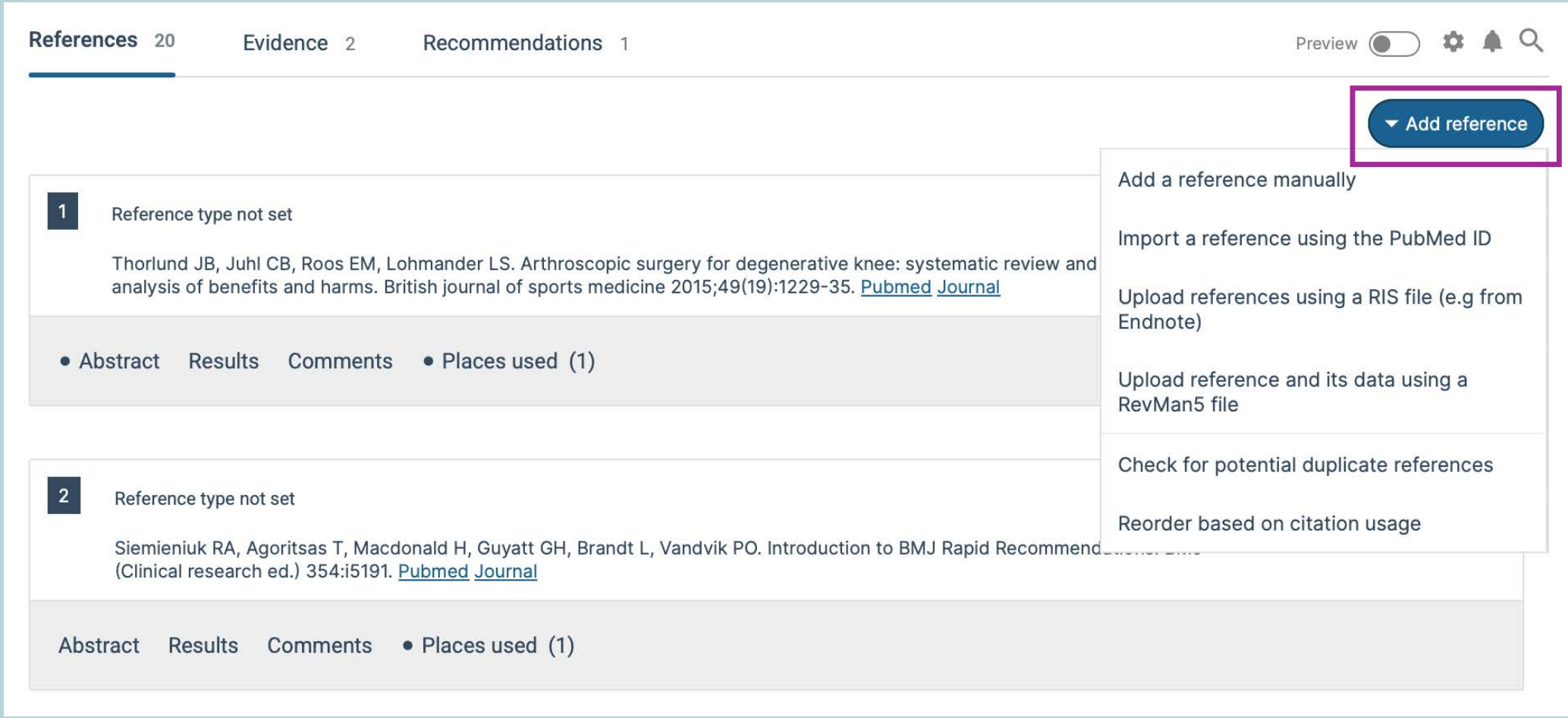
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Reorder based on citation usage
1
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Thorlund JB, Juhl CB, Roos EM, Lohmander LS. Arthroscopic surgery for degenerative knee: systematic review and analysis of benefits and harms. British journal of sports medicine 2015;49(19):1229-35. Pubmed Journal
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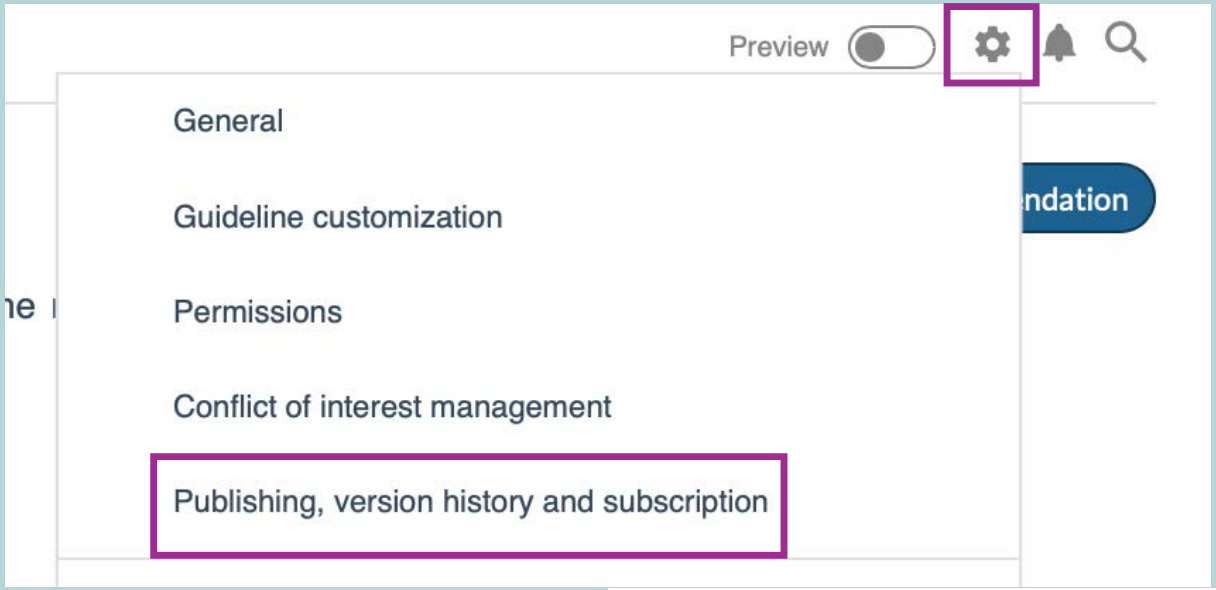
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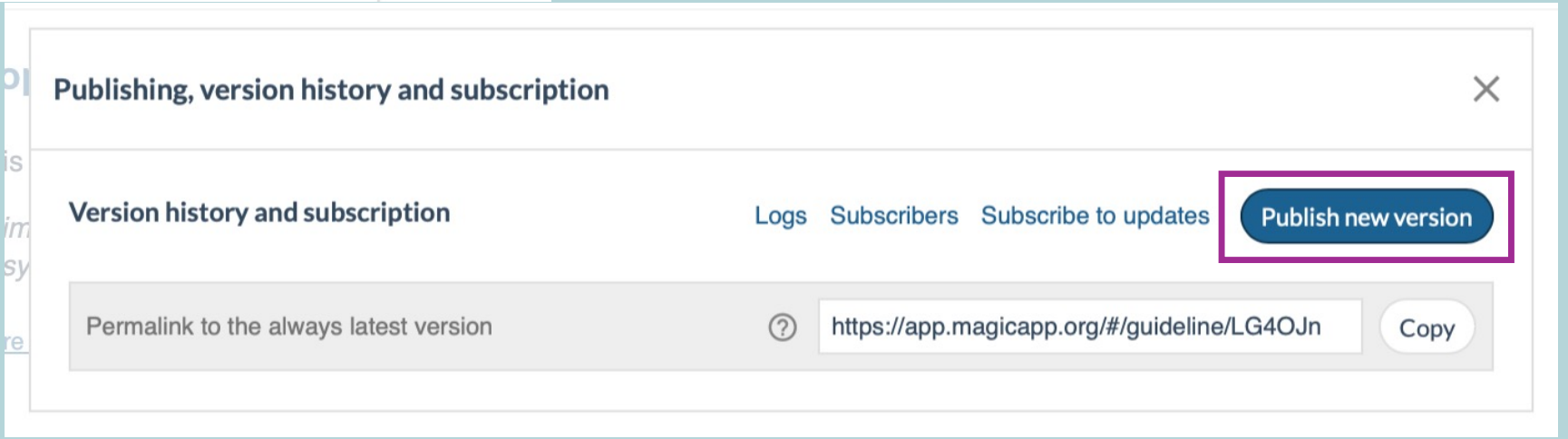
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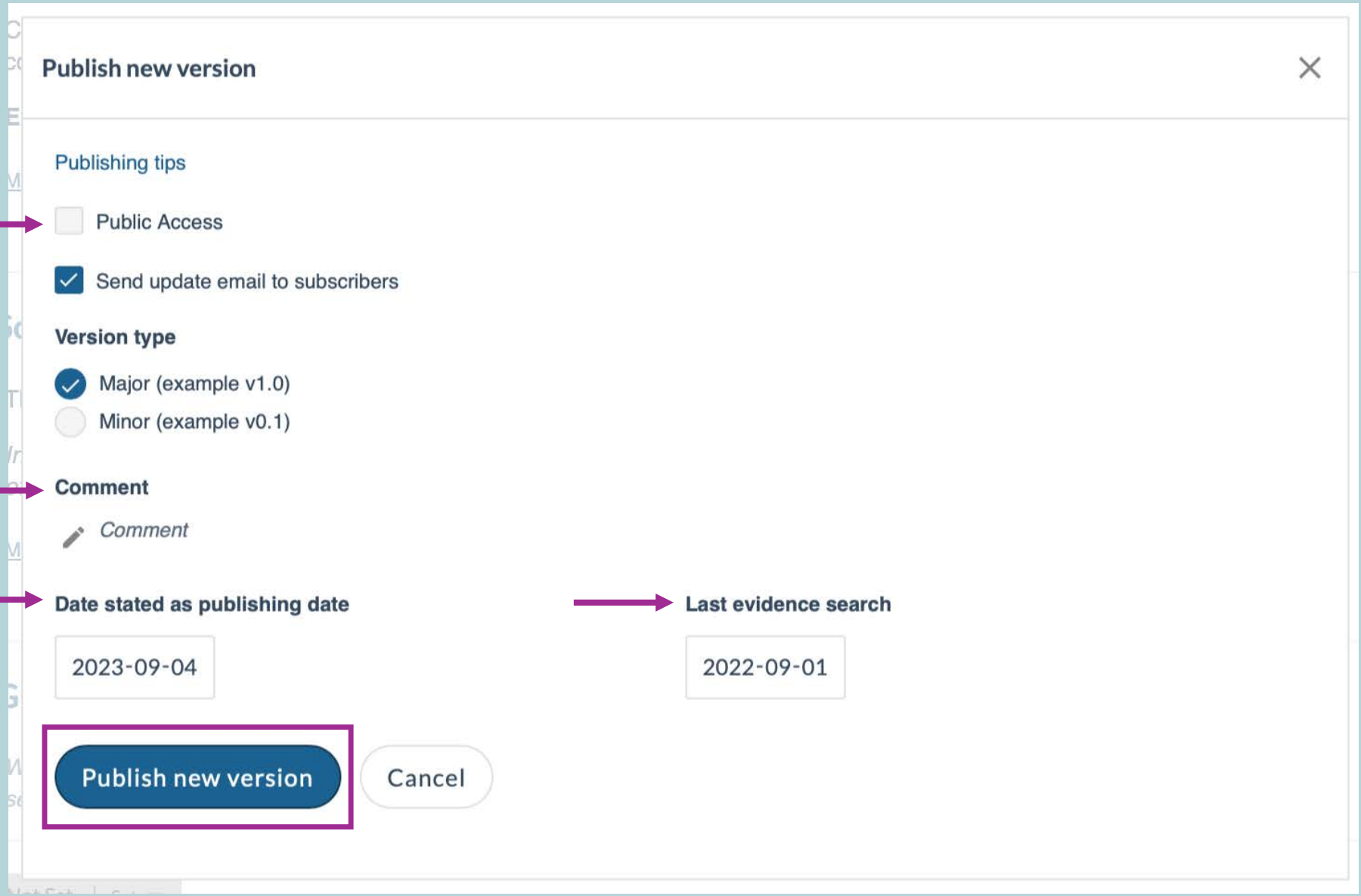
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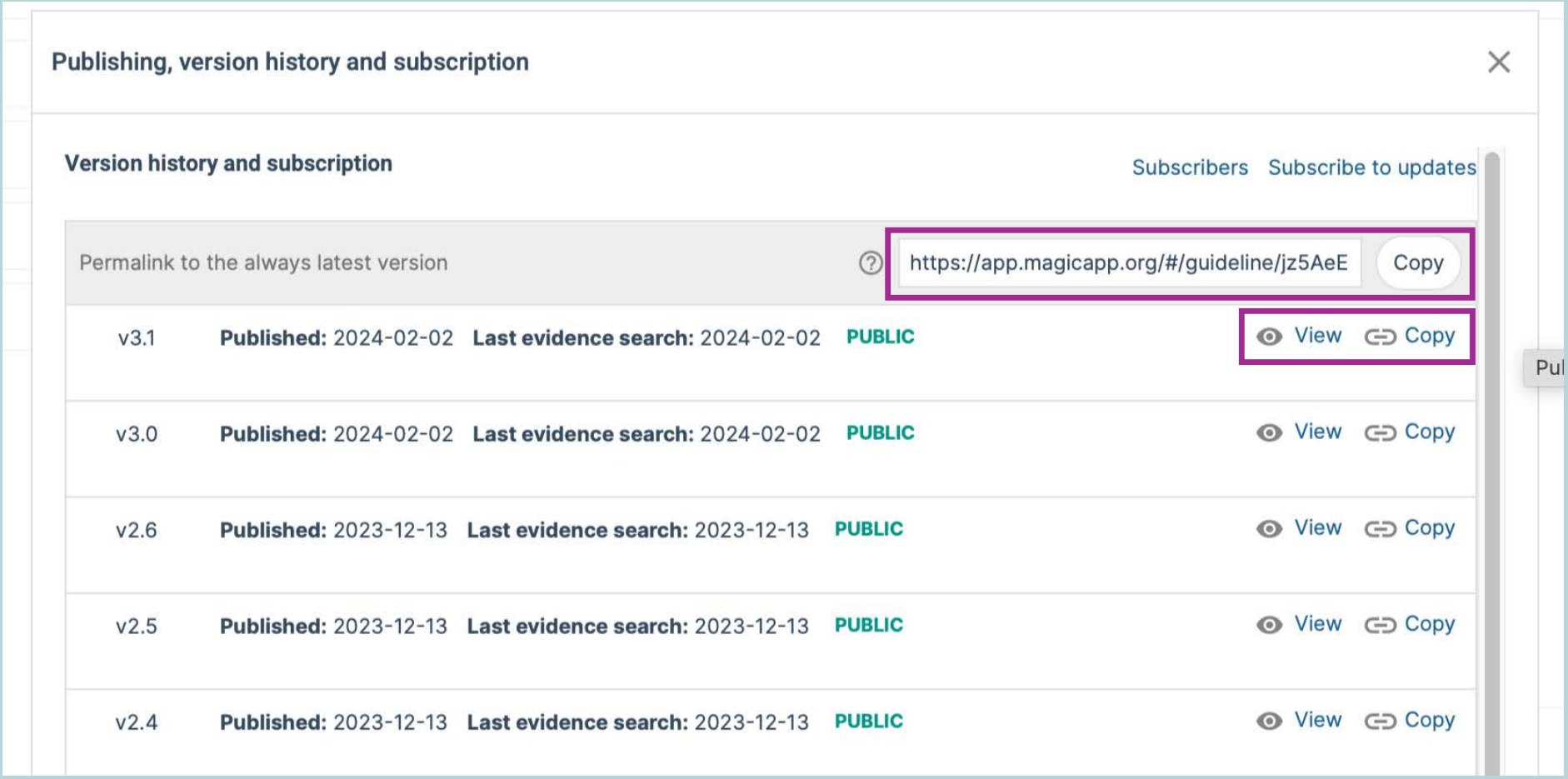
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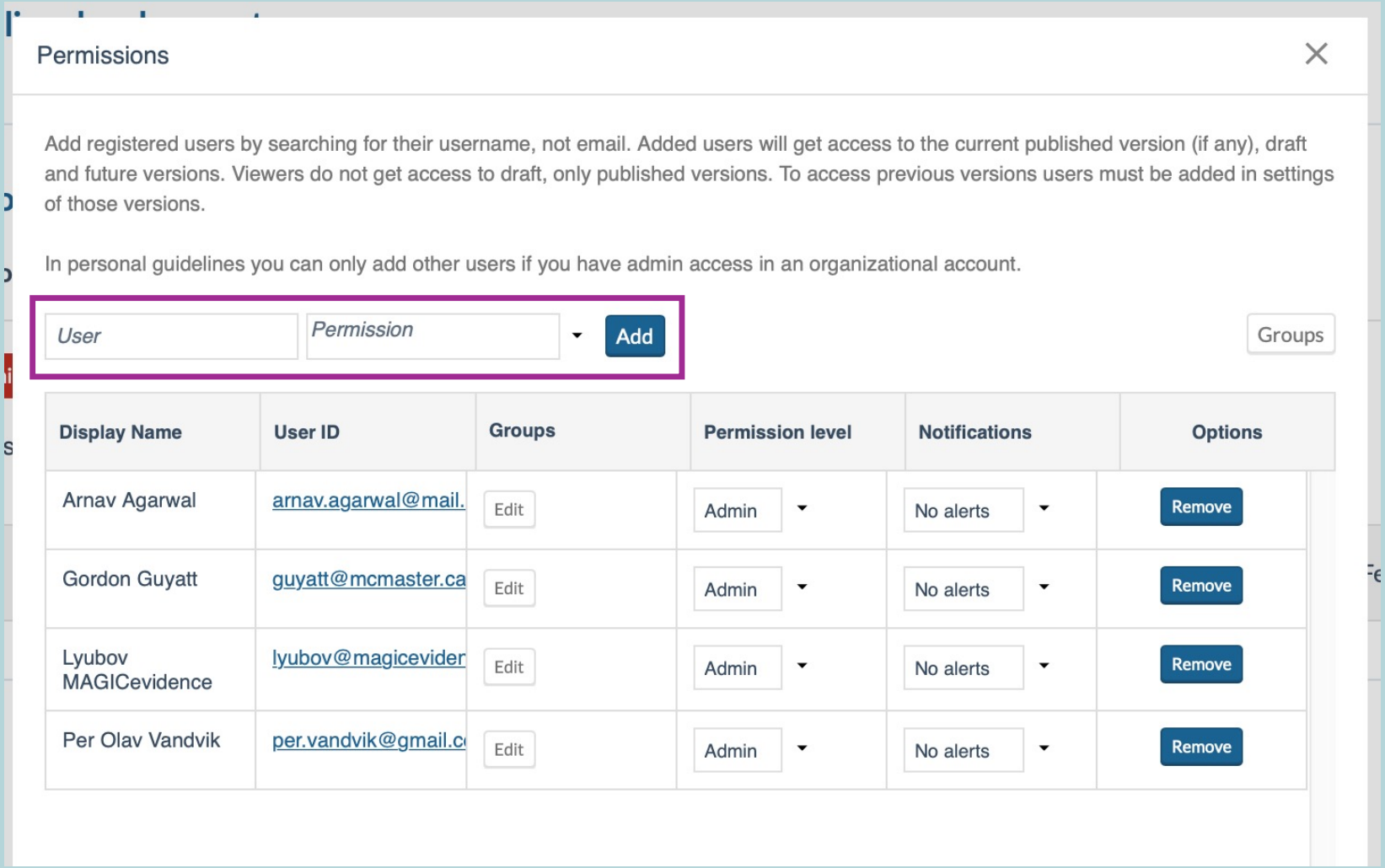
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arnav.agarwal@mail.
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guyatt@mcmaster.ca
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lyubov@magicevider
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No alerts
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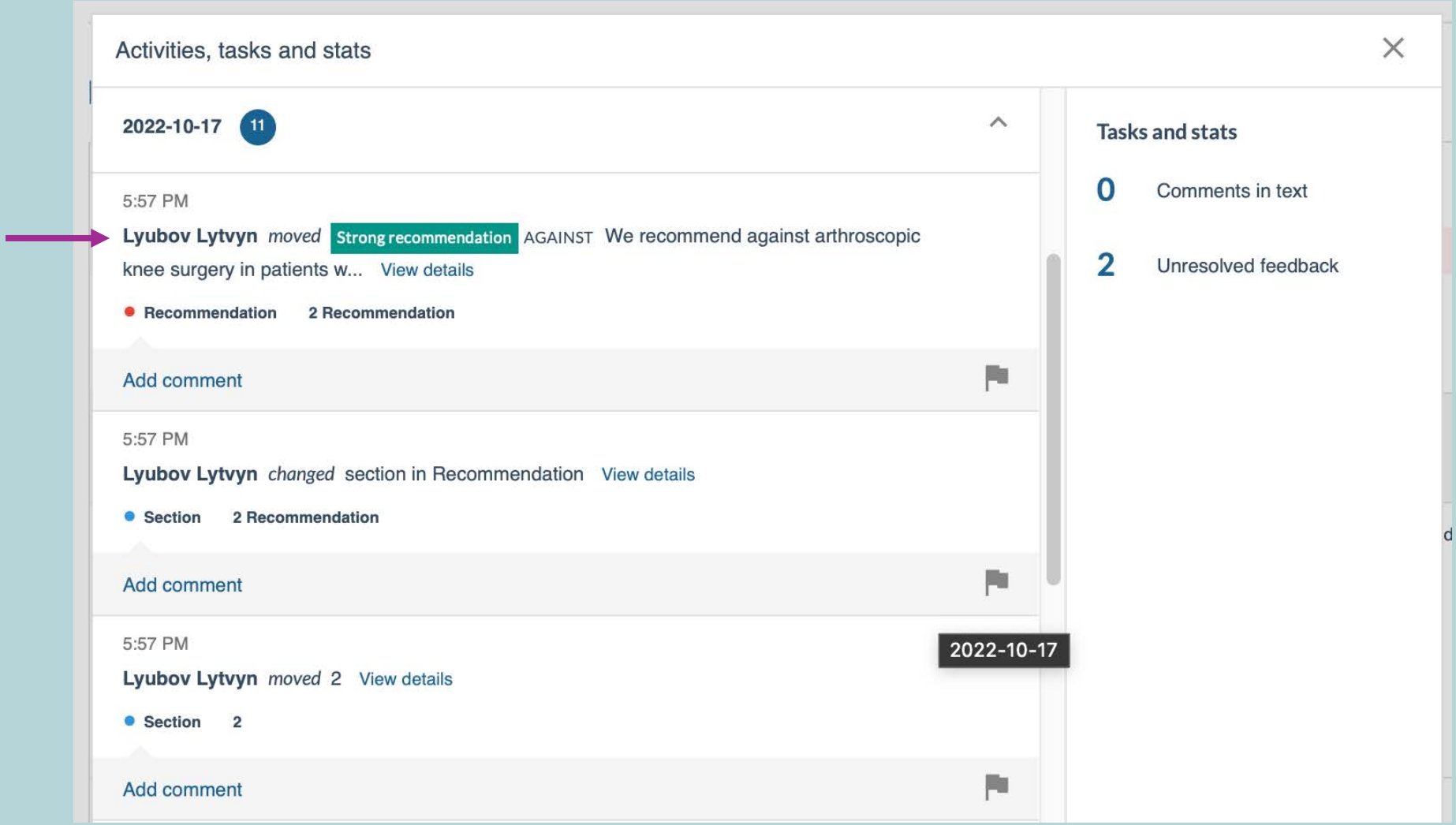
Activities, tasks and stats
2022-10-17
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Lyubov Lytvyn moved Strong recommendation AGAINST We recommend against arthroscopic knee surgery in patients w... View details
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2022-10-17
Tasks and stats
0
Comments in text
2
Unresolved feedback

Agenda

1. MAGIC Evidence Ecosystem Foundation
2. How to enhance our evidence ecosystem
   - Focus #1 Methods
   - Focus #2 Digitally structured data
3. Introducing the MAGICapp
4. **Key developing areas**
   - Personalized medicine
   - Living evidence & guidelines
   - Multiple comparisons: from NMAs to decisions
5. Introducing MATCH-IT
6. Bridging the gap with implementation projects

Personalized Medicine … according to what?

Risk stratification

Patient characteristics, such as:

- Age
- Severity
- Comorbidities

Predicting treatment response (the ultimate goal of precision medicine)

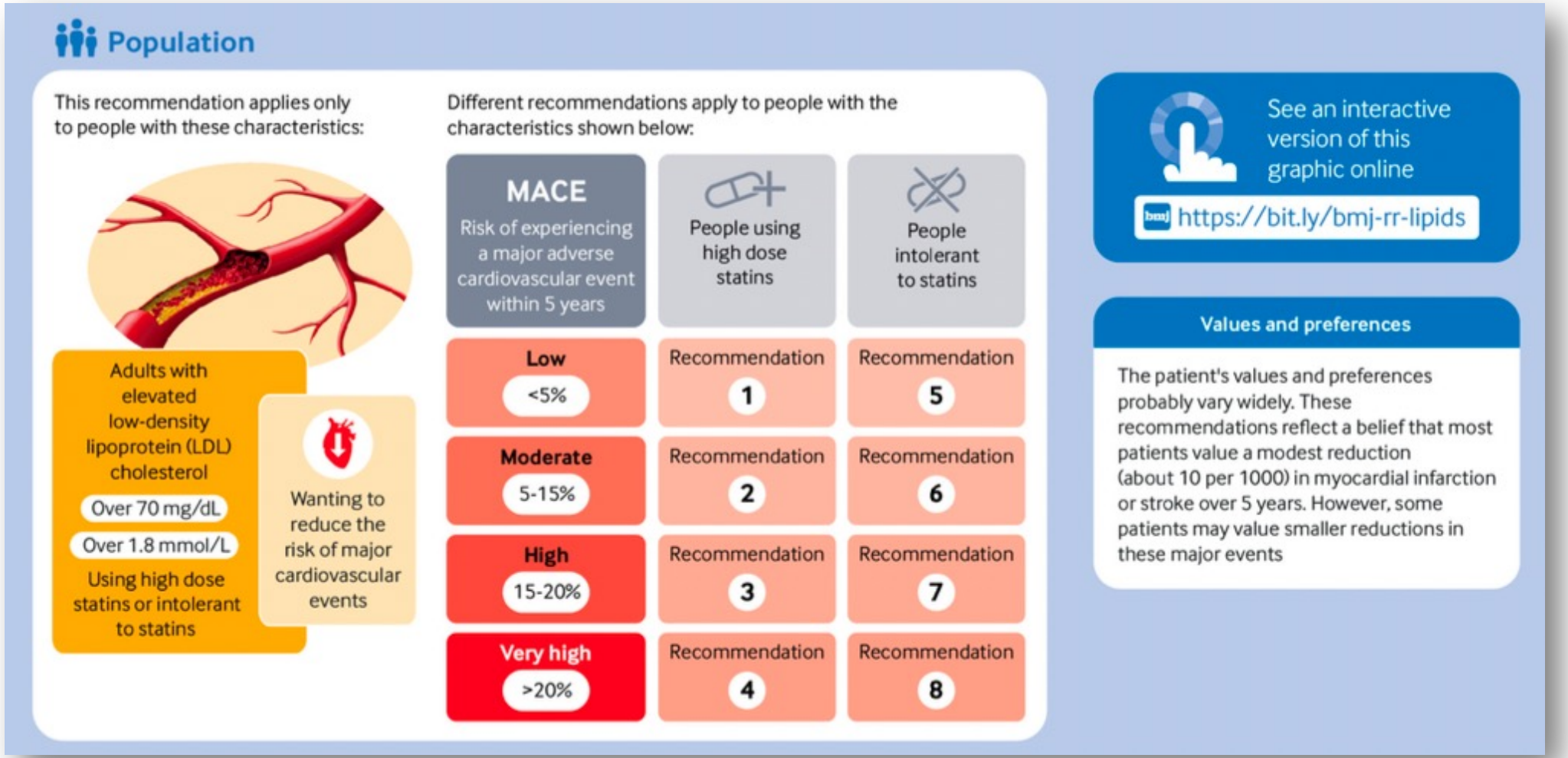
- E,g, biological or genetic factors modifying how an intervention works
- This will translate into different relative effects according to these factors

Values and Preferences

- Relative important of each outcome
- Regarding experiencing the intervention itself
- Personal context matters in shared decision making

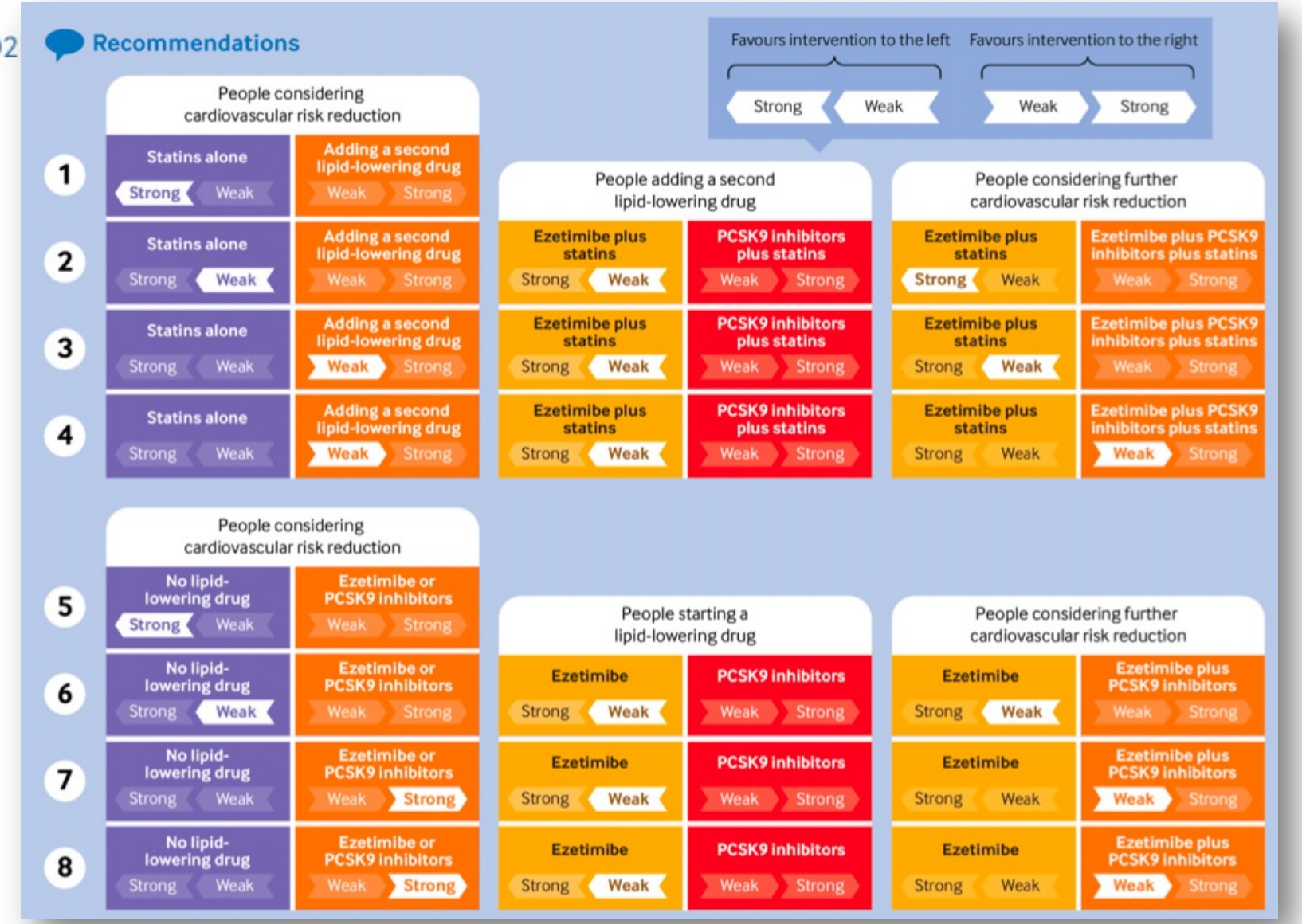
PCSK9 inhibitors and ezetimibe for the reduction of cardiovascular events: a clinical practice guideline with risk-stratified recommendations

BMJ 2022 ; 377 doi: https://doi.org/10.1136/bmj-2021-069066 (Published 04 May 2022)



PCSK9 inhibitors and ezetimibe for the reduction of cardiovascular events: a clinical practice guideline with risk-stratified recommendations

BMJ 2022 ; 377 doi: https://doi.org/10.1136/bmj-202



COVID-19 breakthrough for Living Evidence & Guidelines

COVID-19 breakthrough for Living Evidence & Guidelines

Decision makers need 'living' evidence synthesis

Nature | Vol 600 | 16 December 2021 | 383

Julian H. Elliott, Rebecca Lawrence, Jan C. Minx, Olufemi T. Oladapo, Philippe Ravaud, Britta Tendal Jeppesen, James Thomas, Tari Turner, Per Olav Vandvik & Jeremy M. Grimshaw

Living Systematic Reviews

LSR International Network

1. Living systematic reviews: 1. Introduction—the why, what, when, and how. J Clin Epidemiol. 2017 Nov;91:23-30.
2. Living systematic reviews: 2. Combining human and machine effort. J Clin Epidemiol. 2017 Nov;91:31-37.
3. Living systematic reviews: 3. Statistical methods for updating meta-analyses. J Clin Epidemiol. 2017 Nov;91:38-46.
4. Living systematic reviews: 4. Living guideline recommendations. J Clin Epidemiol. 2017 Nov;91:47-53.

Cochrane Library

✓ Guidance for the production and publication of Cochrane living systematic reviews: Cochrane Reviews in living mode
https://community.cochrane.org/sites/default/files/uploads/inline-files/Transform/201912_LSR_Revised_Guidance.pdf

thebmj Interactive

Current evidence for covid-19 treatments

Visual summary of living systematic review and network meta-analysis

Last updated
21 Jul 2020

View past versions

This graphic gives a visual overview of the evidence for covid-19 treatments that is published to date, and will be updated regularly as more trials are published. The information presented comes from a network meta-analysis that combines all the evidence and allows us to obtain estimates for all potential comparisons, even those that have not been included in trials. We assessed how trustworthy the evidence is using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach, and present the most trustworthy estimates of effect.

Data sources	Published	Preprints	Upcoming
Trials	13	10	9
Participants	2568	7167	6156

Included in review

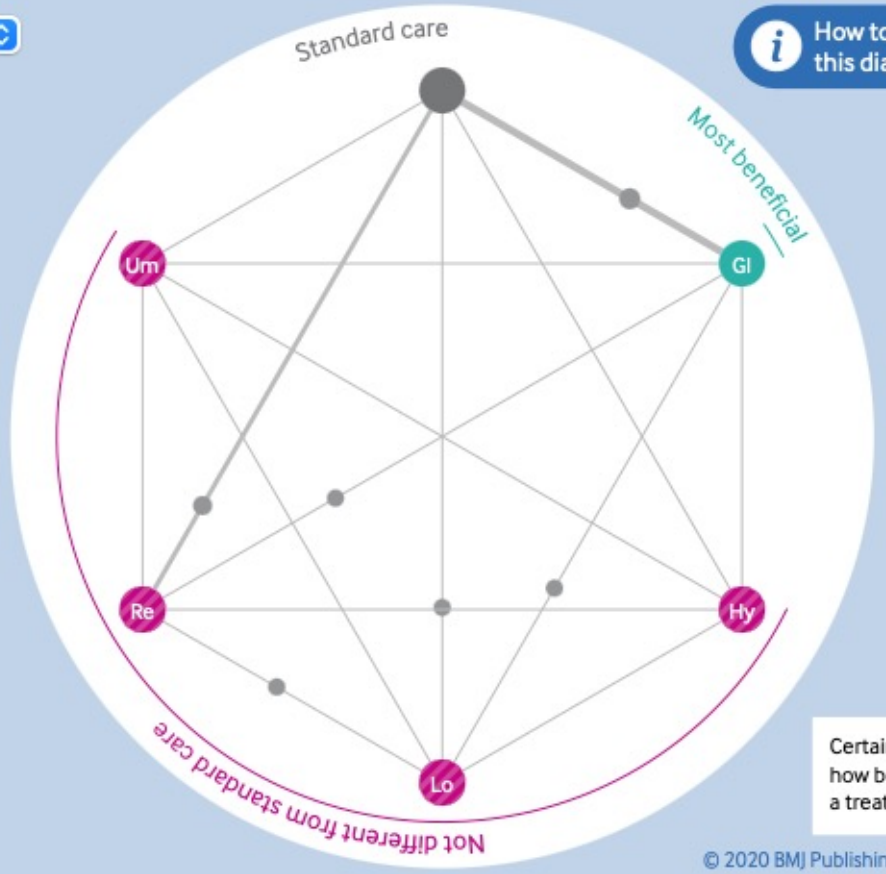
To be included in next update

Mortality

15 trials 8654 participants

Glucocorticoids are likely to reduce mortality. So far no convincing evidence indicates that any of the other treatments have a benefit for mortality when compared to standard care or each other. The main limitations of the evidence across comparisons are risk of bias and imprecision.

How to read this diagram



Higher

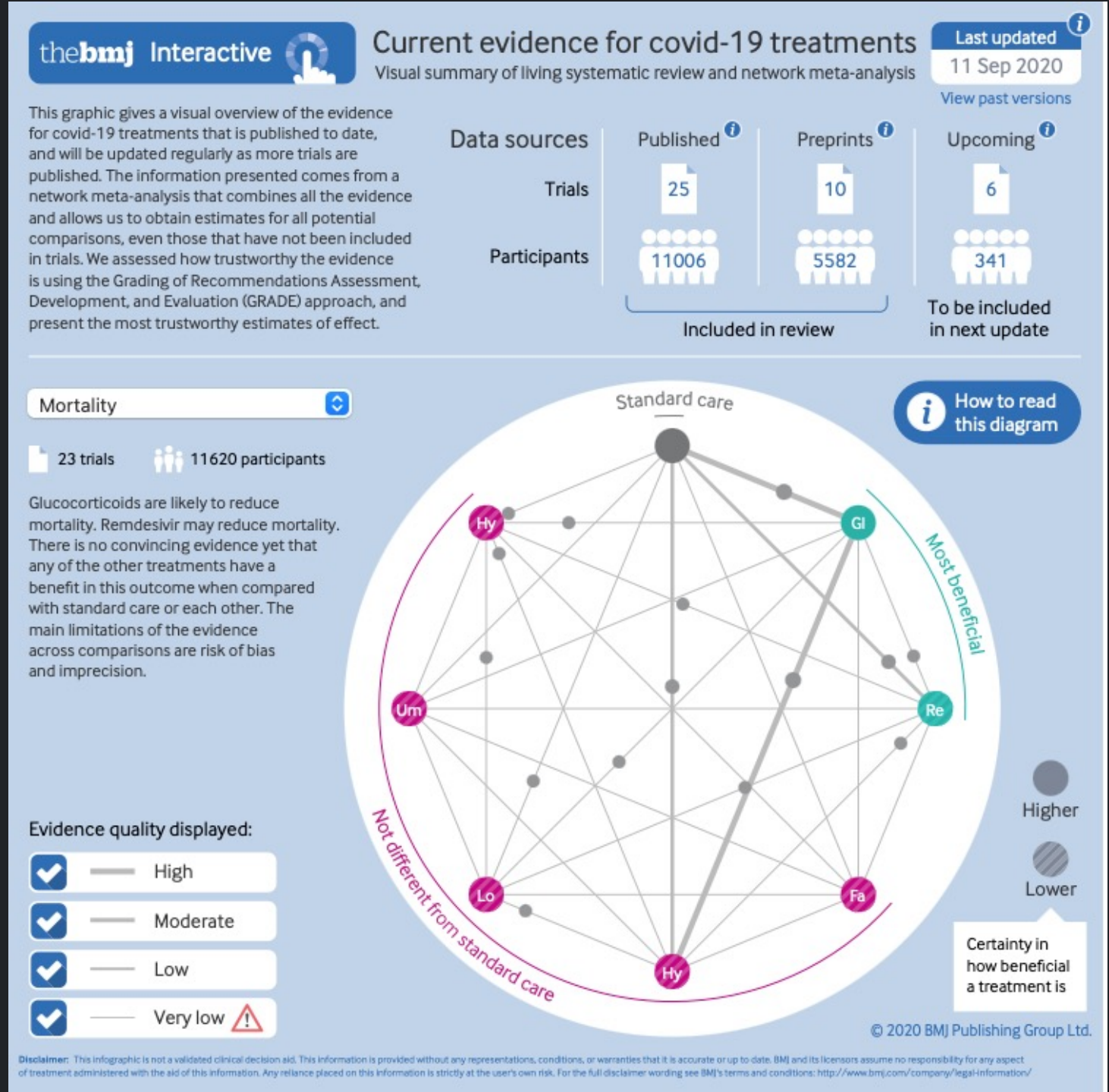
Lower

Certainty in how beneficial a treatment is

Evidence quality displayed:

- High
- Moderate
- Low
- Very low

BMJ 2020;370:m2980



BMJ 2020;370:m2980

thebmj Interactive

Current evidence for covid-19 treatments

Visual summary of living systematic review and network meta-analysis

Last updated 17 Dec 2020

View past versions

This graphic gives a visual overview of the evidence for covid-19 treatments that is published to date, and will be updated regularly as more trials are published. The information presented comes from a network meta-analysis that combines all the evidence and allows us to obtain estimates for all potential comparisons, even those that have not been included in trials. We assessed how trustworthy the evidence is using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach, and present the most trustworthy estimates of effect.

Data sources	Published	Preprints	Upcoming
Trials	60	26	32
Participants	25077	16592	6142

Included in review

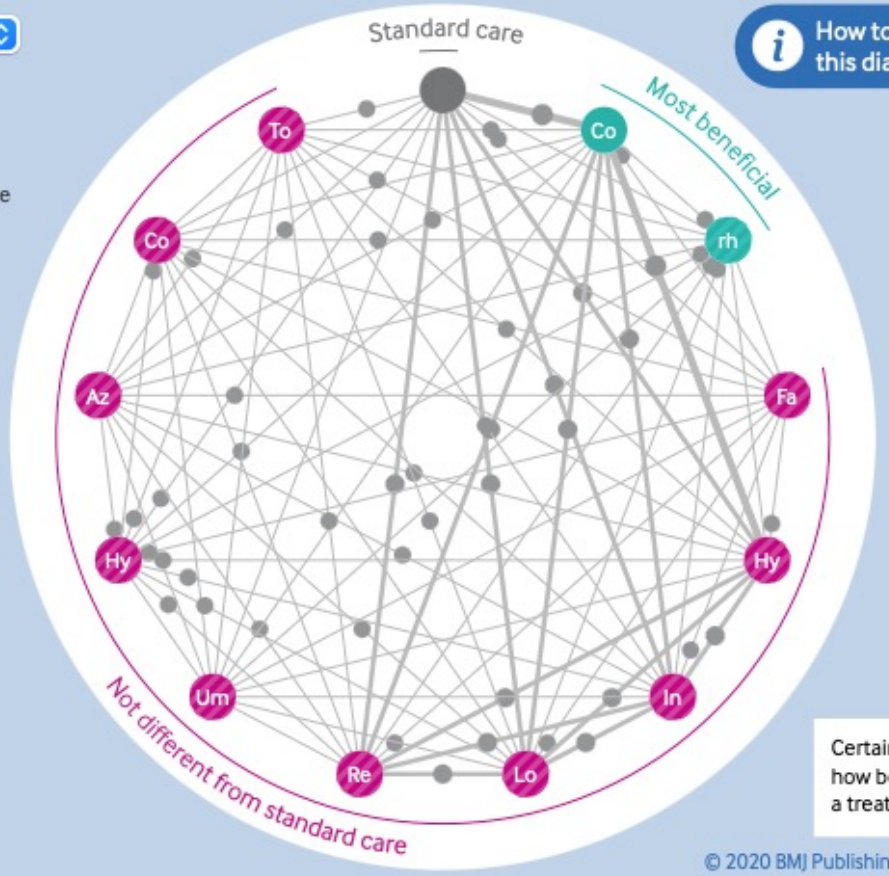
To be included in next update

Mortality

72 trials 40083 participants

Corticosteroids are likely to reduce mortality. Recombinant Human Granulocyte Colony-Stimulating Factor may reduce mortality. There is no convincing evidence yet that any of the other treatments have a benefit in this outcome when compared with standard care or each other. The main limitations of the evidence across comparisons are risk of bias and imprecision.

How to read this diagram



Higher

Lower

Certainty in how beneficial a treatment is

Evidence quality displayed:

- High
- Moderate
- Low
- Very low

BMJ 2020;370:m2980

Current evidence for covid-19 treatments

thebmj Interactive

Visual summary of living systematic review and network meta-analysis

Last updated 14 Jul 2022

View past versions

This graphic gives a visual overview of the evidence for covid-19 treatments that is published to date, and will be updated regularly as more trials are published. The information presented comes from a network meta-analysis that combines all the evidence and allows us to obtain estimates for all potential comparisons, even those that have not been included in trials. We assessed how trustworthy the evidence is using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach, and present the most trustworthy estimates of effect.

Data sources	Published	Preprints	Unpublished	Upcoming
Trials	278	96	46	43
Participants	102 307	47 336	11 454	5 484

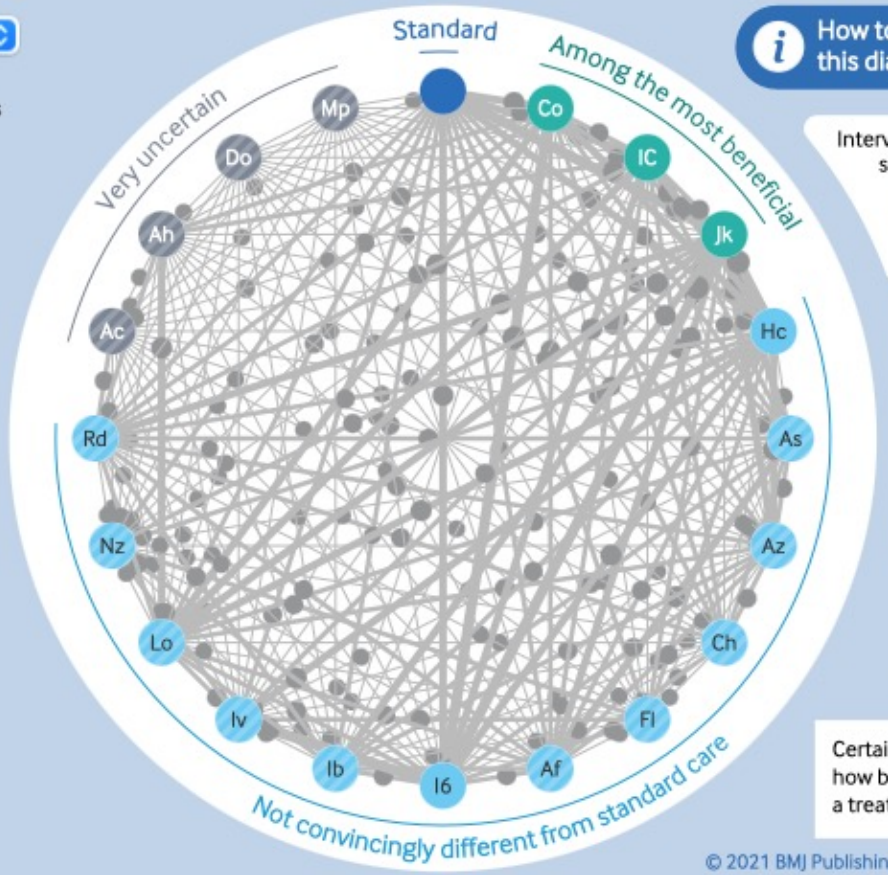
Analysed in review

To be included in next update

Mortality

267 trials 138 345 participants

Corticosteroids alone, and IL6 receptor antagonists with corticosteroids, and Janus kinase inhibitors probably reduce mortality. Tyrosine kinase inhibitors may reduce mortality. There was no convincing evidence that any of the other treatments have a benefit in this outcome when compared with standard care or each other. The main limitations of the evidence across comparisons are risk of bias and imprecision.



How to read this diagram

Interventions selected: 20 of 57

Higher

Lower

Certainty in how beneficial a treatment is

Evidence quality displayed:

- High
- Moderate
- Low
- Very low

BMJ 2020;370:m2980

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NATIONAL COVID-19 CLINICAL EVIDENCE TASKFORCE

Caring for people with COVID-19

Supporting Australia's healthcare professionals with continually updated, evidence-based clinical guidelines

27/09/22: Communique from the National Steering Committee »

LIVING GUIDELINES

CLINICAL FLOWCHARTS

TOPICS UNDE REVIEW

LATEST GUIDANCE

10 OCTOBER 2022

Updates include:

- PANORAMIC trial - molnupiravir
- Favipiravir
- Ensovibep & opaganib 'only in research'

MAGIC app

Australian guidelines for the clinical care of people with COVID-19

v65.1 published on 9/28/22 EXTERNAL REVIEW

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Reading Guide
Introduction
Methods and processes
Definition of disease severity
Monitoring and markers of clinical deterioration
Drug treatments
Chemoprophylaxis
Respiratory support in adults
Respiratory support in neonates, children and adolescents
Venous thromboembolism (VTE) prophylaxis
Therapies for existing indications in patients with COVID-19
Care after COVID-19
Timing of surgery following COVID-19 infection
Pregnancy and perinatal care

Research evidence (1) | Evidence to decision | Rationale | Decision Aids | Feedback

Nirmatrelvir plus ritonavir vs Placebo

Patients with COVID-19

6 Outcomes | Graphical view | Summary

Outcome Timeframe	Study results and measurements	Absolute effect estimates Placebo	 Paxlovid	Certainty of the Evidence (Quality of evidence)	Plain language summary
Hospitalisation or death Day 28, ≤5 days symptom onset 9 Critical	Relative risk 0.12 (CI 95% 0.06 — 0.25) Based on data from 2085 participants in 1 study	63 per 1000	8 per 1000 Difference: **55 fewer per 1000** (CI 95% 59 fewer — 47 fewer)	**Moderate** Due to serious imprecision	Paxlovid probably decreases hospitalisation or death (74 events) Intervention
All-cause mortality Day 28, ≤5 days symptom onset 9 Critical	Relative risk 0.04 (CI 95% 0.00 — 0.68) Based on data from 2085 participants in 1 study	11 per 1000	0 per 1000 Difference: **11 fewer per 1000** (CI 95% 11 fewer — 4 fewer)	**Low** Due to very serious imprecision	Paxlovid may have little impact on all-cause mortality (12 events). No imp. diff.
Hospitalisation Day 28, ≤ 5 days symptom onset 6 Important	Relative risk 0.12 (CI 95% 0.06 — 0.26) Based on data from 2085 participants in 1 study	62 per 1000	7 per 1000 Difference: **55 fewer per 1000** (CI 95% 58 fewer — 46 fewer)	**Moderate** Due to serious imprecision	Paxlovid probably decreases hospitalisation (73 events). Intervention

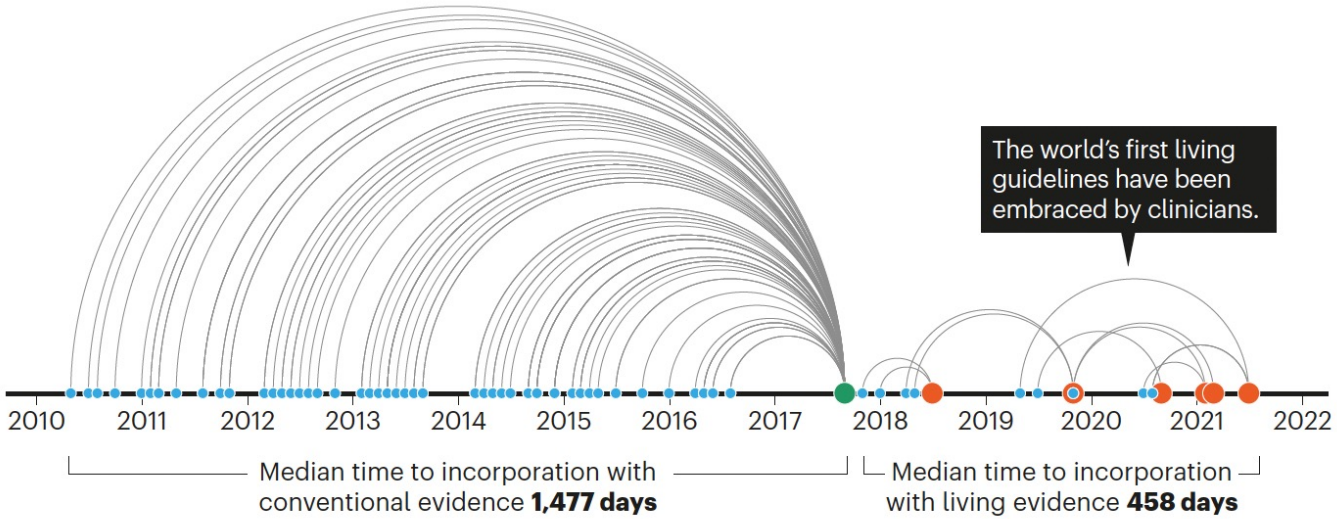
EVIDENCE ACCELERATED

Using a living-evidence approach, researchers find, appraise and incorporate research in frequent cycles, rather than always starting from scratch.

● Primary study ● Guideline publication (conventional) ● Guideline publication (living) — Time to publication

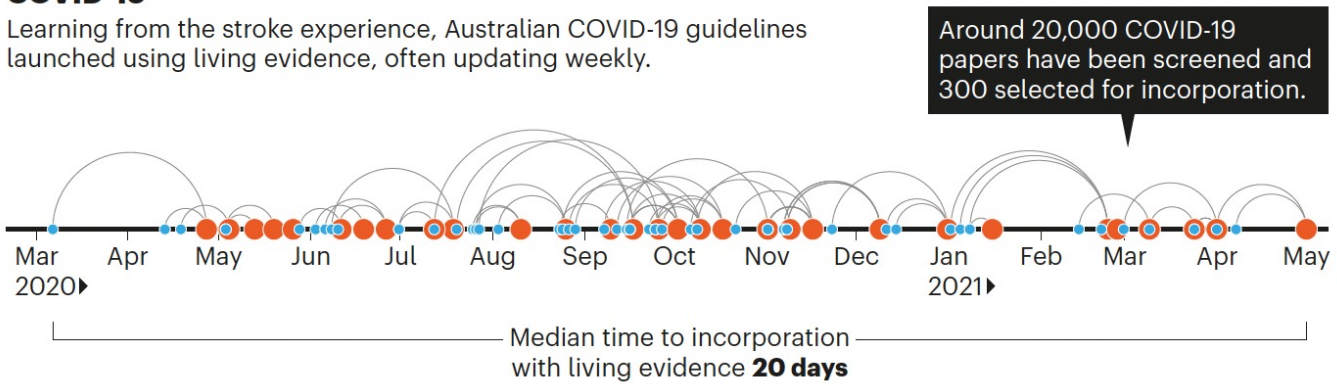
Stroke

The Australian Stroke Foundation reduced the time between guideline updates from 7 years to under 3 months.



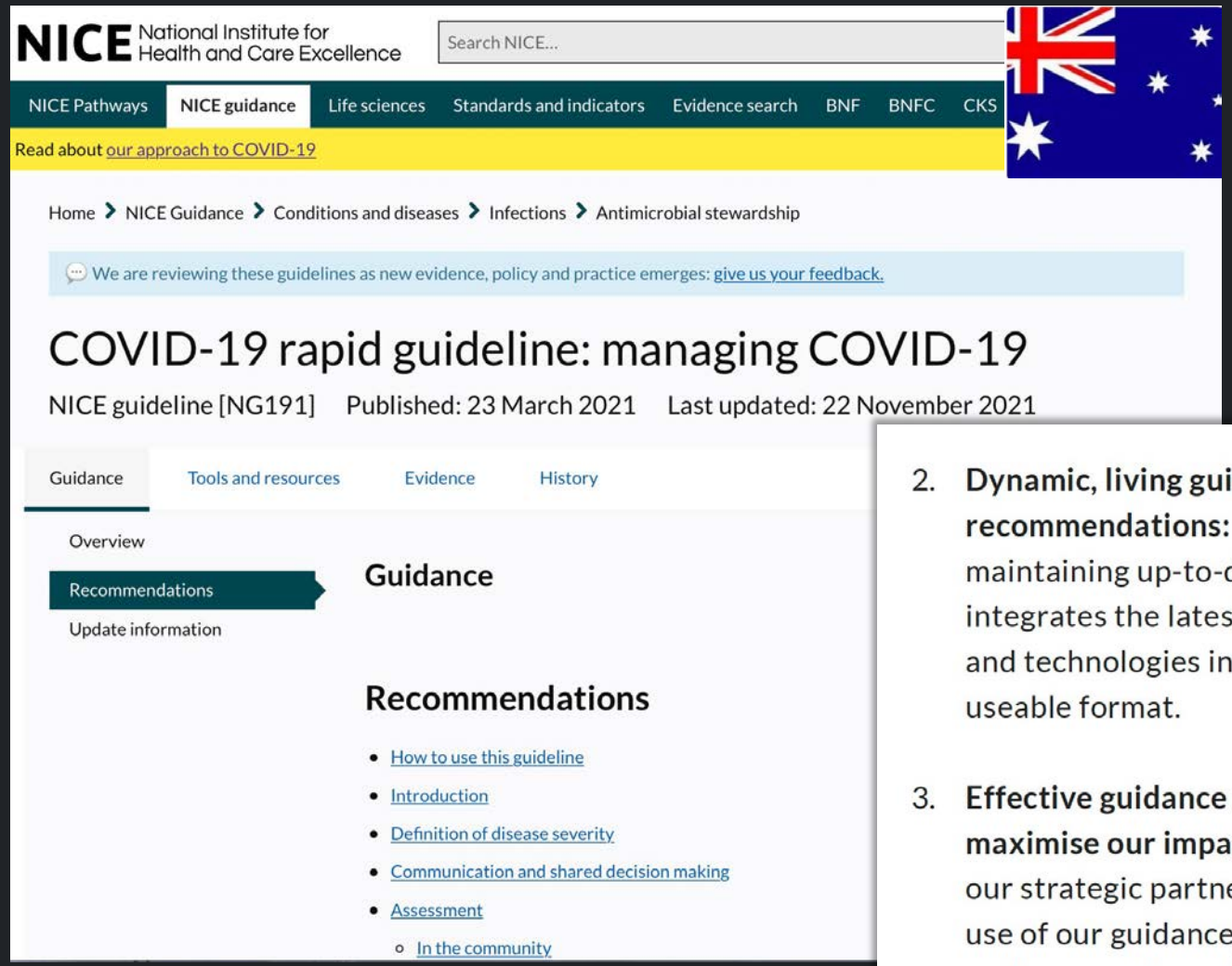
COVID-19

Learning from the stroke experience, Australian COVID-19 guidelines launched using living evidence, often updating weekly.



NICE living guidelines for COVID-19

Strategy 2021-2026

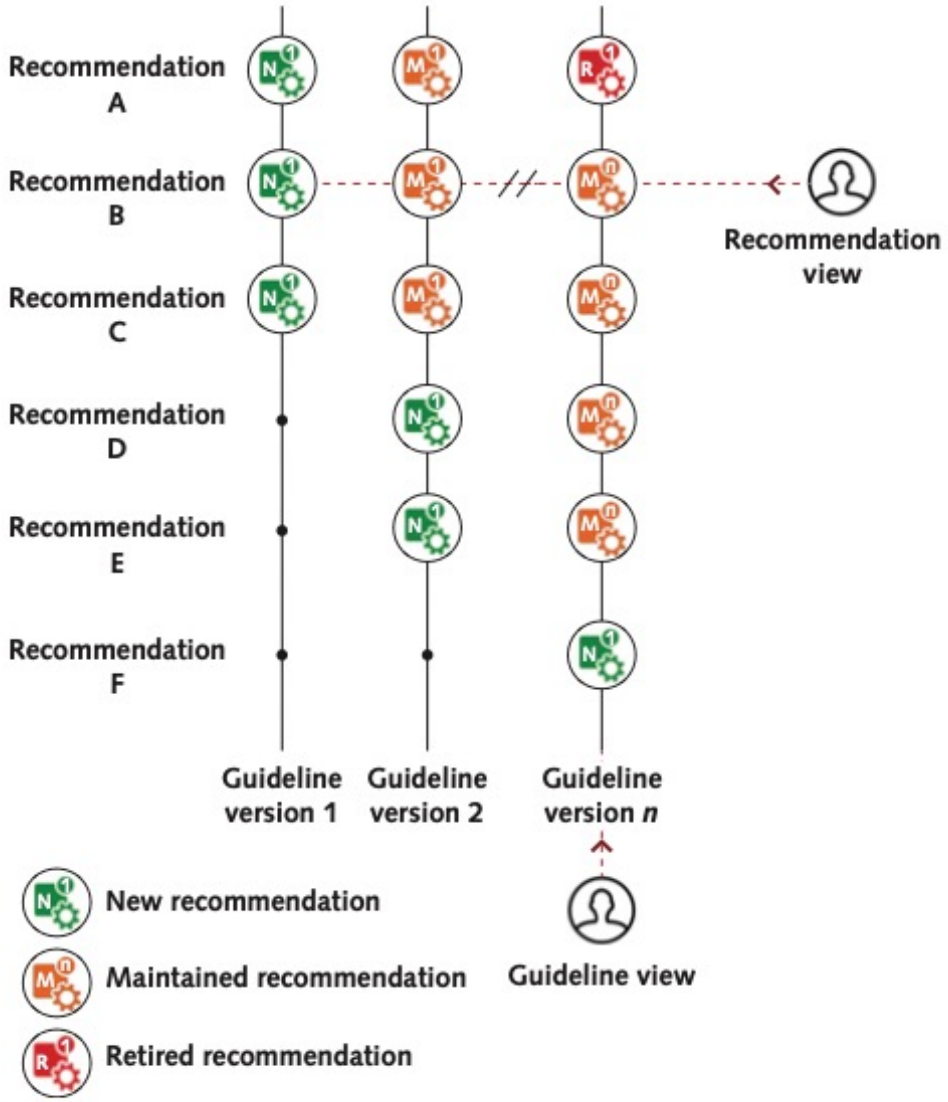


2. **Dynamic, living guideline recommendations:** creating and maintaining up-to-date guidance that integrates the latest evidence, practice and technologies in a useful and useable format.

3. **Effective guidance uptake to maximise our impact:** working with our strategic partners to increase the use of our guidance, monitor adoption and measure impact on health outcomes and health inequalities.

COVID-END
COVID-19 Evidence Network to support Decision-making

Figure 4. Versioning and accessibility of a living practice guideline.



Versionning

Translation

Updating

Adaptation

Living

A Framework for the Development of Living Practice Guidelines in Healthcare. Ann Intern Med. 2022;175:1154-1160

Benefits and harms of drug treatment for type 2 diabetes: systematic review and network meta-analysis of randomised controlled trials

Qingyang Shi,[1] Kailei Nong,[1] Per Olav Vandvik,[2] Gordon H G
Nikolaus Marx,[6] Frank C Brosius III,[7] Reem A Mustafa,[8] Arna
Yunhe Mao,[10] Aminreza Asadollahifar,[11] Saifur Rahman Ch
Sana Gupta,[3] Ya Gao,[3,13] João Pedro Lima,[3] Kenji Numata,[1
Qinbo Yang,[16] Yinghui Jin,[17] Long Ge,[18] Qiuyu Yang,[19] Hong
Xi Lu,[1] Siyu He,[23] Xiangyang Chen,[24] Xiafei Lyu,[25] Xingxing
Eberhard Standl,[4] Reed Siemieniuk,[3] Thomas Agoritsas,[3,27

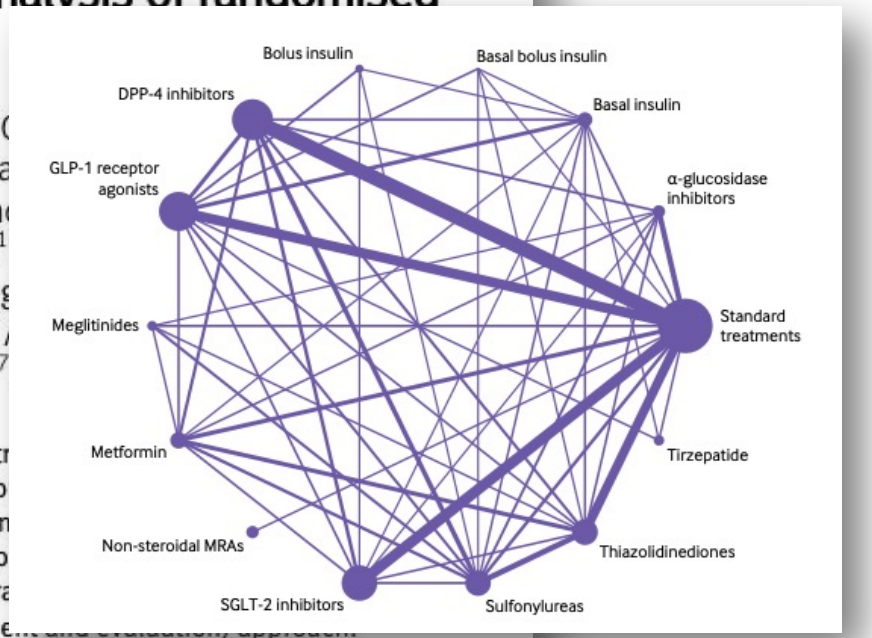
For numbered affiliations see end of the article

Correspondence to: S Li
lisheyu@gmail.com
(or @LisheyuSheyu on Twitter;
ORCID 0000-0003-4299-5889)

Additional material is published online only. To view please visit the journal online.

Cite this as: *BMJ* 2023;381:e074068
http://dx.doi.org/10.1136/bmj-2022-074068

Accepted: 01 March 2023



ABSTRACT

OBJECTIVE

To compare the benefits and harms of drug treatments for adults with type 2 diabetes, adding non-steroidal mineralocorticoid receptor antagonists (including finerenone) and tirzepatide (a dual glucose dependent insulinotropic polypeptide (GIP)/glucagon-like peptide-1 (GLP-1) receptor agonist) to previously existing treatment options.

DESIGN

Systematic review and network meta-analysis.

DATA SOURCES

Ovid Medline, Embase, and Cochrane Central up to 14 October 2022.

ELIGIBILITY CRITERIA FOR SELECTING STUDIES

Eligible randomised controlled trials compared drugs of interest in adults with type 2 diabetes. Eligible trials had a follow-up of 24 weeks or longer. Trials systematically comparing combinations of more than one drug t
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RESULTS

The analysis identified 816 trials with 471 038 patients, together evaluating 13 different drug classes; all subsequent estimates refer to the comparison with standard treatments. Sodium glucose cotransporter-2 (SGLT-2) inhibitors (odds ratio 0.88, 95% confidence interval 0.83 to 0.94; high certainty) and GLP-1 receptor agonists (0.88, 0.82 to 0.93; high certainty) reduce all cause death; non-steroidal mineralocorticoid receptor antagonists, so far tested only with finerenone in patients with chronic kidney disease, probably reduce mortality (0.89, 0.79 to 1.00; moderate certainty); other drugs may not. The study confirmed the benefits of SGLT-2 inhibitors and GLP-1 receptor agonists in reducing

Interventions	All cause death (OR, 95%CI)	Cardiovascular death (OR, 95%CI)	Non-fatal myocardial infarction (OR, 95%CI)	Non-fatal stroke (OR, 95%CI)	Admission to hospital for heart failure (OR, 95%CI)	End stage kidney disease* (OR, 95%CI)	Health related quality of life score (OR, 95%CI)	Severe hypoglycaemia (OR, 95%CI)	Drug specific adverse events (OR, 95%CI)
SGLT-2 inhibitors	0.88 (0.83 to 0.94)	0.86 (0.80 to 0.94)	0.90 (0.82 to 0.98)	0.99 (0.88 to 1.11)	0.66 (0.60 to 0.73)	0.61 (0.55 to 0.67)	0.30 (0.10 to 0.49)	0.90 (0.79 to 1.02)	Genital infection 3.30 (2.88 to 3.78) Amputation 1.27 (1.01 to 1.61) Ketoacidosis 2.07 (1.44 to 2.98)
GLP-1 receptor agonists	0.88 (0.82 to 0.93)	0.87 (0.81 to 0.94)	0.91 (0.85 to 0.98)	0.85 (0.77 to 0.94)	0.91 (0.83 to 0.99)	0.83 (0.75 to 0.92)	0.17 (0.07 to 0.27)	0.98 (0.90 to 1.06)	Severe gastrointestinal events 1.97 (1.39 to 2.80)
Non-steroidal MRAs	0.89 (0.79 to 1.00)	0.88 (0.75 to 1.02)	0.91 (0.74 to 1.12)	1.00 (0.82 to 1.22)	0.78 (0.66 to 0.92)	0.83 (0.75 to 0.92)	-	0.64 (0.43 to 0.96)	Hyperkalaemia leading to hospital admission 5.92 (3.02 to 11.62)
Tirzepatide	0.83 (0.48 to 1.44)	1.00 (0.35 to 2.85)	0.69 (0.08 to 6.10)	-	0.63 (0.16 to 2.39)	0.68 (0.09 to 4.84)	0.39 (0.13 to 0.65)	1.13 (0.42 to 3.02)	Severe gastrointestinal events 4.59 (1.89 to 11.14)
Metformin	0.84 (0.67 to 1.04)	0.95 (0.48 to 1.88)	0.86 (0.68 to 1.09)	0.97 (0.71 to 1.33)	1.45 (0.28 to 7.36)	1.61 (0.36 to 7.24)	0.04 (-0.25 to 0.33)	1.73 (0.89 to 3.37)	Severe gastrointestinal events 2.22 (0.64 to 7.71)
α-glucosidase inhibitors	0.89 (0.30 to 2.61)	0.99 (0.21 to 4.70)	0.33 (0.06 to 1.92)	9.44 (0.76 to 116.58)	3.25 (0.13 to 82.49)	-	0.03 (-0.34 to 0.39)	1.30 (0.31 to 5.43)	Severe gastrointestinal events 3.40 (0.30 to 38.15)
Thiazolid-inediones	0.95 (0.83 to 1.09)	0.93 (0.77 to 1.12)	0.97 (0.81 to 1.15)	0.85 (0.70 to 1.03)	1.54 (1.27 to 1.88)	0.69 (0.37 to 1.28)	0.20 (-0.13 to 0.52)	1.42 (0.97 to 2.10)	-
DPP-4 inhibitors	1.01 (0.95 to 1.08)	1.00 (0.92 to 1.09)	1.01 (0.92 to 1.11)	0.91 (0.80 to 1.03)	1.05 (0.95 to 1.16)	1.04 (0.93 to 1.16)	0.03 (-0.12 to 0.17)	1.11 (1.00 to 1.23)	-
Sulfonylureas	1.10 (0.97 to 1.26)	1.01 (0.83 to 1.23)	1.00 (0.83 to 1.22)	1.05 (0.84 to 1.32)	0.99 (0.79 to 1.23)	0.68 (0.37 to 1.24)	0.23 (-0.19 to 0.64)	5.22 (3.88 to 7.01)	-
Meglitinides	1.58 (0.51 to 4.92)	0.64 (0.11 to 3.69)	0.28 (0.05 to 1.60)	1.71 (0.26 to 11.40)	-	-	0.17 (-0.29 to 0.63)	3.21 (0.96 to 10.75)	-
Basal insulin	1.10 (0.81 to 1.49)	1.28 (0.83 to 1.99)	0.98 (0.47 to 2.06)	0.76 (0.33 to 1.77)	0.94 (0.62 to 1.43)	1.20 (0.62 to 2.30)	0.00 (-0.25 to 0.24)	2.38 (1.82 to 3.12)	-
Basal bolus insulin	0.79 (0.19 to 3.32)	2.23 (0.23 to 21.92)	0.33 (0.03 to 3.27)	0.58 (0.10 to 3.35)	-	-	-	4.94 (1.06 to 22.96)	-
Bolus insulin	0.48 (0.15 to 1.59)	1.05 (0.11 to 10.26)	1.18 (0.40 to 3.50)	0.86 (0.16 to 4.48)	0.64 (0.07 to 6.22)	2.55 (0.10 to 62.86)	-0.11 (-0.29 to 0.07)	2.46 (1.31 to 4.63)	-
Standard treatments	Reference	Reference	Reference	Reference	Reference	Referenc			

High to moderate certainty evidence	Low to very low certainty evidence
Among the most effective	Possibly among the most effective
Among the intermediate effective	Possibly among the intermediate effective
Not convincingly different from standard treatment	Possibly not convincingly different from standard treatment
Among the intermediate harmful	Possibly among the intermediate harmful
Among the most harmful	Possibly among the most harmful

Benefits and harms of drug treatment for type 2 diabetes: systematic review and network meta-analysis of randomised controlled trials
BMJ2023;381:e074068

Introducing MATCH-IT

- to explore multiple comparisons from NMA
- to help decision makers move from NMA to recommendations
- for shared decision making (SHARE-IT 2.0 in progress)

FAQ

- What do certainty ratings imply?
- What is the origin of this evidence?
- What is the cardiovascular risk factor?
- What is the established cardiovascular disease and chronic kidney disease?
- More information about interventions
- Information about outcomes
- How do I use this tool?
- What is a network meta-analysis?
- Colour guide

Close

Selecting baseline risk

MATCH-IT is an interactive tool designed to help you explore the evidence

Adults with type 2 diabetes plus

- 3 or fewer cardiovascular risk factors
- More than 3 cardiovascular risk factors
- Established cardiovascular disease but not chronic kidney disease
- Established chronic kidney disease but not cardiovascular disease
- Both established cardiovascular disease and chronic kidney disease

FAQ | How do I use MATCH-IT

Evidence summary: Adults with type 2 diabetes plus both established cardiovascular disease and chronic kidney disease

FAQ How do I use MATCH-IT

What aspect of treatment would you like to explore next? Choose one or several outcomes to start exploring the evidence.

- All-cause death
- Cardiovascular death
- Non-fatal myocardial infarction
- Non-fatal stroke
- Hospitalisation for heart failure
- End-stage kidney disease
- Quality of life score (SF-36)
- Bodyweight change
- Retinopathy
- Neuropathy
- Dementia
- Severe hypoglycaemia
- Severe gastrointestinal events
- Genital infection
- Amputation
- Ketoacidosis due to diabetes
- Major osteoporotic fractures
- Fall
- Hyperkalaemia leading to admission to hospital

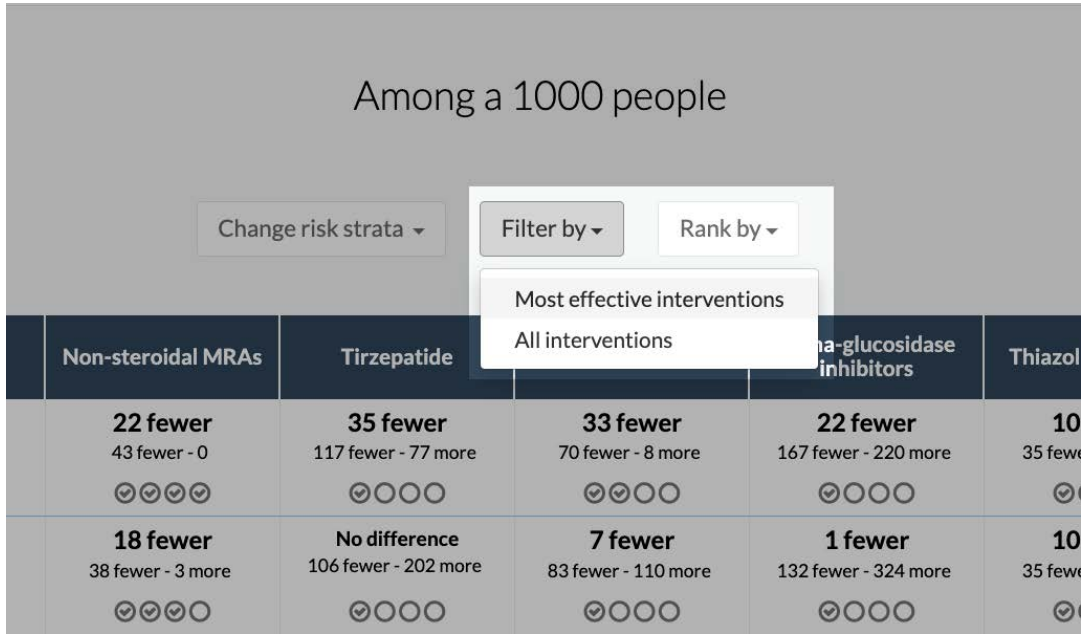
MATCH-IT

	Standard treatments	SGLT2 inhibitors	GLP-1 receptor agonists	Non-steroidal MRAs	Tirzepatide	Metformin	Alpha-glucosidase inhibitors	Thiazolidinediones	DPP-4 inhibitors	Sulfonylureas	Meglitinides	Basal insulin	Basal-Bolus insulin	Bolus insulin
All-cause death 5 years	265 per 1000	**24 fewer** 35 fewer - 12 fewer ⊘⊘⊘⊘	**24 fewer** 37 fewer - 14 fewer ⊘⊘⊘⊘	**22 fewer** 43 fewer - 0 ⊘⊘⊘⊘	**35 fewer** 117 fewer - 77 more ⊘○○○	**33 fewer** 70 fewer - 8 more ⊘⊘○○	**22 fewer** 167 fewer - 220 more ⊘○○○	**10 fewer** 35 fewer - 17 more ⊘○○○	**2 more** 10 fewer - 15 more ⊘⊘○○	**19 more** 6 fewer - 47 more ⊘⊘○○	**98 more** 110 fewer - 374 more ⊘○○○	**19 more** 39 fewer - 84 more ⊘○○○	**43 fewer** 201 fewer - 280 more ⊘○○○	**117 fewer** 214 fewer - 99 more ⊘○○○
Cardiovascular death 5 years	175 per 1000	**21 fewer** 30 fewer - 9 fewer ⊘⊘⊘⊘	**19 fewer** 28 fewer - 9 fewer ⊘⊘⊘⊘	**18 fewer** 38 fewer - 3 more ⊘⊘⊘○	**No difference** 106 fewer - 202 more ⊘○○○	**7 fewer** 83 fewer - 110 more ⊘○○○	**1 fewer** 132 fewer - 324 more ⊘○○○	**10 fewer** 35 fewer - 17 more ⊘○○○	**No difference** 12 fewer - 13 more ⊘○○○	**1 more** 25 fewer - 32 more ⊘○○○	**55 fewer** 152 fewer - 264 more ⊘○○○	**39 more** 25 fewer - 122 more ⊘○○○	**146 more** 128 fewer - 648 more ⊘○○○	**7 more** 152 fewer - 510 more ⊘○○○
Non-fatal myocardial infarction 5 years	190 per 1000	**16 fewer** 29 fewer - 3 fewer ⊘⊘⊘⊘	**14 fewer** 24 fewer - 3 fewer ⊘⊘⊘⊘	**14 fewer** 42 fewer - 18 more ⊘⊘○○	**51 fewer** 172 fewer - 399 more ⊘○○○	**22 fewer** 52 fewer - 14 more ⊘○○○	**118 fewer** 176 fewer - 121 more ⊘○○○	**5 fewer** 30 fewer - 22 more ⊘○○○	**2 more** 13 fewer - 17 more ⊘○○○	**No difference** 27 fewer - 32 more ⊘○○○	**128 fewer** 178 fewer - 83 more ⊘○○○	**3 fewer** 91 fewer - 136 more ⊘○○○	**118 fewer** 183 fewer - 244 more ⊘○○○	**27 more** 104 fewer - 261 more ⊘○○○
Non-fatal stroke 5 years	190 per 1000	**2 fewer** 19 fewer - 17 more ⊘⊘○○	**24 fewer** 37 fewer - 9 fewer ⊘⊘⊘⊘	**No difference** 29 fewer - 32 more ⊘⊘○○	No data	**5 fewer** 47 fewer - 48 more ⊘○○○	**499 more** 39 fewer - 775 more ⊘○○○	**24 fewer** 49 fewer - 5 more ⊘○○○	**14 fewer** 32 fewer - 5 more ⊘⊘○○	**8 more** 25 fewer - 46 more ⊘○○○	**96 more** 133 fewer - 538 more ⊘○○○	**39 fewer** 118 fewer - 103 more ⊘○○○	**70 fewer** 167 fewer - 250 more ⊘○○○	**22 fewer** 154 fewer - 322 more ⊘○○○
Hospitalisation for heart failure 5 years	235 per 1000	**66 fewer** 79 fewer - 52 fewer ⊘⊘⊘⊘	**17 fewer** 32 fewer - 2 fewer ⊘⊘⊘○	**42 fewer** 66 fewer - 15 fewer ⊘⊘⊘⊘	**73 fewer** 188 fewer - 188 more ⊘○○○	**73 more** 156 fewer - 458 more ⊘○○○	**265 more** 197 fewer - 727 more ⊘○○○	**86 more** 46 more - 131 more ⊘⊘⊘○	**9 more** 9 fewer - 28 more ⊘⊘○○	**2 fewer** 40 fewer - 39 more ⊘○○○	No data	**11 fewer** 75 fewer - 70 more ⊘○○○	No data	**71 fewer** 214 fewer - 421 more ⊘○○○
End-stage kidney disease 5 years	148 per 1000	**52 fewer** 61 fewer - 44 fewer ⊘⊘⊘○	**22 fewer** 33 fewer - 10 fewer ⊘⊘⊘○	**22 fewer** 33 fewer - 10 fewer ⊘⊘⊘○	**42 fewer** 133 fewer - 309 more ⊘○○○	**71 more** 89 fewer - 409 more ⊘○○○	No data	**41 fewer** 88 fewer - 34 more ⊘⊘○○	**5 more** 9 fewer - 20 more ⊘⊘○○	**42 fewer** 88 fewer - 29 more ⊘⊘○○	No data	**24 more** 51 fewer - 137 more ⊘○○○	No data	**159 more** 131 fewer - 768 more ⊘○○○
Quality of life score (SF-36) 5 years	50 points	**3 better** 1 better - 4.9 better ⊘⊘⊘○	**1.7 better** 0.7 better - 2.7 better ⊘⊘⊘⊘	No data	**3.9 better** 1.3 better - 6.5 better ⊘⊘⊘○	**0.4 better** 2.5 worse - 3.3 better ⊘⊘⊘○	**0.3 better** 3.4 worse - 3.9 better ⊘⊘⊘○	**2 better** 1.3 worse - 5.2 better ⊘⊘⊘○	**0.3 better** 1.2 worse - 1.7 better ⊘⊘⊘○	**2.3 better** 1.9 worse - 6.4 better ⊘⊘⊘○	**1.7 better** 2.9 worse - 6.3 better ⊘⊘⊘○	**No difference** 2.5 worse - 2.4 better ⊘⊘⊘○	No data	**1.1 worse** 2.9 worse - 0.7 better ⊘⊘⊘○
Bodyweight change 5 years	90 kg	**1.98 less** 2.18 less - 1.78 less ⊘⊘⊘⊘	View all drugs	No data	**8.57 less** 9.4 less - 7.75 less ⊘⊘⊘○	**0.83 less** 1.16 less - 0.51 less ⊘⊘⊘○	**0.38 less** 0.8 less - 0.04 more ⊘⊘○○	**2.81 more** 2.55 more - 3.07 more ⊘⊘⊘○	**0.28 more** 0.11 more - 0.46 more ⊘⊘⊘○	**1.78 more** 1.5 more - 2.06 more ⊘⊘⊘○	**1.26 more** 0.58 more - 1.94 more ⊘⊘○○	**2.15 more** 1.74 more - 2.56 more ⊘⊘⊘○	**3.26 more** 2.1 more - 4.41 more ⊘⊘○○	**1.01 more** 0.24 more - 1.79 more ⊘⊘⊘○
Retinopathy 5 years	28 per 1000	**1 fewer** 5 fewer - 3 more ⊘⊘⊘○	**1 fewer** 3 fewer - 2 more ⊘⊘○○	**No difference** 9 fewer - 14 more ⊘⊘○○	**56 more** 17 fewer - 393 more ⊘○○○	**No difference** 12 fewer - 19 more ⊘○○○	**61 more** 22 fewer - 576 more ⊘○○○	**2 fewer** 7 fewer - 4 more ⊘⊘○○	**No difference** 4 fewer - 4 more ⊘⊘○○	**1 fewer** 5 fewer - 3 more ⊘○○○	**9 fewer** 25 fewer - 109 more ⊘○○○	**4 fewer** 9 fewer - 1 more ⊘○○○	No data	**2 more** 10 fewer - 21 more ⊘○○○
Neuropathy 5 years	5 per 1000	**No difference** 1 fewer - 1 more ⊘⊘⊘⊘	**No difference** 1 fewer - 1 more ⊘⊘⊘○	**3 more** 1 fewer - 13 more ⊘⊘⊘○	No data	**No difference** 2 fewer - 5 more ⊘⊘○○	No data	**1 more** 0 - 3 more ⊘⊘⊘⊘	**No difference** 0 - 1 more ⊘⊘⊘⊘	**1 more** 0 - 2 more ⊘⊘⊘○	No data	**No difference** 1 fewer - 1 more ⊘⊘⊘○	**3 fewer** 4 fewer - 6 more ⊘⊘○○	**8 more** 1 fewer - 44 more ⊘⊘○○
Dementia 5 years	1 per 1000	**1 more** 0 - 7 more ⊘⊘⊘⊘	**No difference** 0 - 0 ⊘⊘⊘⊘	**No difference** 1 fewer - 9 more ⊘⊘⊘⊘	No data	No data	No data	**1 fewer** 1 fewer - 3 more ⊘⊘⊘⊘	**No difference** 1 fewer - 0 ⊘⊘⊘○	**No difference** 1 fewer - 1 more ⊘⊘⊘○	No data	No data	No data	No data
Severe hypoglycaemia 5 years	30 per 1000	**3 fewer** 6 fewer - 1 more ⊘⊘⊘⊘	**1 fewer** 3 fewer - 2 more ⊘⊘⊘⊘	**11 fewer** 17 fewer - 1 fewer ⊘⊘⊘⊘	**4 more** 17 fewer - 55 more ⊘○○○	**21 more** 3 fewer - 64 more ⊘⊘○○	**9 more** 21 fewer - 114 more ⊘⊘○○	**12 more** 1 fewer - 31 more ⊘⊘⊘○	**3 more** 0 - 7 more ⊘⊘⊘○	**109 more** 77 more - 148 more ⊘⊘⊘○	**60 more** 1 fewer - 220 more ⊘⊘○○	**39 more** 23 more - 58 more ⊘⊘⊘○	**103 more** 2 more - 385 more ⊘⊘⊘○	**41 more** 9 more - 95 more ⊘⊘⊘○
Severe gastrointestinal events 5 years	45 per 1000	No data	**40 more** 16 more - 72 more ⊘⊘⊘○	No data	**133 more** 37 more - 299 more ⊘⊘⊘○	**50 more** 16 fewer - 221 more ⊘⊘○○	**93 more** 31 fewer - 598 more ⊘⊘○○	**18 more** 14 fewer - 80 more ⊘⊘○○	**6 more** 21 fewer - 62 more ⊘⊘○○	**No difference** 32 fewer - 103 more ⊘⊘○○	No data	**27 fewer** 40 fewer - 15 more ⊘⊘○○	No data	**90 more** 19 fewer - 432 more ⊘⊘○○
Genital infection 5 years	73 per 1000	**133 more** 112 more - 156 more ⊘⊘⊘⊘	**21 fewer** 45 fewer - 22 more ⊘⊘○○	No data	No data	**20 more** 21 fewer - 89 more ⊘⊘○○	No data	**388 more** 41 fewer - 883 more ⊘⊘○○	**20 fewer** 38 fewer - 7 more ⊘⊘⊘○	**34 fewer** 45 fewer - 17 fewer ⊘⊘⊘○	No data	No data	No data	No data
Amputation 5 years	10 per 1000	**3 more** 0 - 6 more ⊘⊘⊘○	**3 fewer** 9 fewer - 56 more ⊘⊘⊘○	**1 fewer** 6 fewer - 10 more ⊘⊘⊘⊘	No data	No data	No data	**3 fewer** 6 fewer - 3 more ⊘⊘⊘○	**1 fewer** 5 fewer - 6 more ⊘⊘⊘⊘	No data	No data	No data	No data	No data
Ketoacidosis due to diabetes 5 years	2 per 1000	**2 more** 1 more - 4 more ⊘⊘⊘⊘	**No difference** 1 fewer - 2 more ⊘⊘⊘⊘	**1 fewer** 1 fewer - 1 more ⊘⊘⊘⊘	No data	**1 more** 2 fewer - 63 more ⊘⊘○○	**1 fewer** 2 fewer - 30 more ⊘○○○	No data	**No difference** 1 fewer - 1 more ⊘⊘⊘○	**1 fewer** 2 fewer - 6 more ⊘⊘⊘○	**1 fewer** 2 fewer - 30 more ⊘○○○	No data	No data	No data
Major osteoporotic fractures 5 years	6 per 1000	**No difference** 1 fewer - 1 more ⊘⊘⊘⊘	**No difference** 2 fewer - 1 more ⊘⊘⊘⊘	**1 fewer** 3 fewer - 3 more ⊘⊘⊘⊘	**1 fewer** 5 fewer - 16 more ⊘⊘○○	**2 fewer** 4 fewer - 3 more ⊘⊘⊘○	No data	**4 more** 0 - 9 more ⊘⊘⊘⊘	**1 fewer** 2 fewer - 0 ⊘⊘⊘⊘	**1 more** 1 fewer - 6 more ⊘⊘⊘○	No data	**2 fewer** 5 fewer - 7 more ⊘⊘⊘○	**4 fewer** 6 fewer - 42 more ⊘⊘○○	**2 fewer** 5 fewer - 15 more ⊘⊘○○
Fall 5 years	5 per 1000	**1 more** 1 fewer - 2 more ⊘⊘⊘⊘	**No difference** 1 fewer - 1 more ⊘⊘⊘⊘	**2 fewer** 4 fewer - 3 more ⊘⊘⊘⊘	**2 fewer** 5 fewer - 24 more ⊘⊘○○	**7 more** 1 fewer - 28 more ⊘⊘○○	**4 more** 5 fewer - 306 more ⊘○○○	**4 more** 2 fewer - 22 more ⊘⊘⊘○	**1 fewer** 2 fewer - 0 ⊘⊘⊘⊘	**1 fewer** 2 fewer - 2 more ⊘⊘⊘○	**21 more** 4 fewer - 397 more ⊘○○○	**No difference** 3 fewer - 9 more ⊘⊘⊘○	**4 fewer** 5 fewer - 7 more ⊘⊘○○	**No difference** 4 fewer - 29 more ⊘○○○
Hyperkalaemia leading to admission to hospital 5 years	2 per 1000	No data	No data	**10 more** 4 more - 21 more ⊘⊘⊘⊘	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data

MATCH-IT

	Standard treatments	SGLT2 inhibitors	GLP-1 receptor agonists	Non-steroidal MRAs	Tirzepatide	Metformin	Alpha-glucosidase inhibitors	Thiazolidinediones	DPP-4 inhibitors	Sulfonylureas	Meglitinides	Basal insulin	Basal-Bolus insulin	Bolus insulin
All-cause death 5 years	265 per 1000	**24 fewer** 35 fewer - 12 fewer ⊘⊘⊘⊘	**24 fewer** 37 fewer - 14 fewer ⊘⊘⊘⊘	**22 fewer** 43 fewer - 0 ⊘⊘⊘⊘	**35 fewer** 117 fewer - 77 more ⊘⊘⊘○	**33 fewer** 70 fewer - 8 more ⊘⊘⊘○	**22 fewer** 167 fewer - 220 more ⊘⊘⊘○	**10 fewer** 35 fewer - 17 more ⊘⊘⊘○	**2 more** 10 fewer - 15 more ⊘⊘⊘○	**19 more** 6 fewer - 47 more ⊘⊘⊘○	**98 more** 110 fewer - 374 more ⊘⊘⊘○	**19 more** 39 fewer - 84 more ⊘⊘⊘○	**43 fewer** 201 fewer - 280 more ⊘⊘⊘○	**117 fewer** 214 fewer - 99 more ⊘⊘⊘○
Cardiovascular death 5 years	175 per 1000	**21 fewer** 30 fewer - 9 fewer ⊘⊘⊘⊘	**19 fewer** 28 fewer - 9 fewer ⊘⊘⊘⊘	**18 fewer** 38 fewer - 3 more ⊘⊘⊘○	**No difference** 106 fewer - 202 more ⊘⊘⊘○	**7 fewer** 83 fewer - 110 more ⊘⊘⊘○	**1 fewer** 132 fewer - 324 more ⊘⊘⊘○	**10 fewer** 35 fewer - 17 more ⊘⊘⊘○	**No difference** 12 fewer - 13 more ⊘⊘⊘○	**1 more** 25 fewer - 32 more ⊘⊘⊘○	**55 fewer** 152 fewer - 264 more ⊘⊘⊘○	**39 more** 25 fewer - 122 more ⊘⊘⊘○	**146 more** 128 fewer - 648 more ⊘⊘⊘○	**7 more** 152 fewer - 510 more ⊘⊘⊘○
Non-fatal myocardial infarction 5 years	190 per 1000	**16 fewer** 29 fewer - 3 fewer ⊘⊘⊘⊘	**14 fewer** 24 fewer - 3 fewer ⊘⊘⊘⊘	**14 fewer** 42 fewer - 18 more ⊘⊘⊘○	**51 fewer** 172 fewer - 399 more ⊘⊘⊘○	**22 fewer** 52 fewer - 14 more ⊘⊘⊘○	**118 fewer** 176 fewer - 121 more ⊘⊘⊘○	**5 fewer** 30 fewer - 22 more ⊘⊘⊘○	**2 more** 13 fewer - 17 more ⊘⊘⊘○	**No difference** 27 fewer - 32 more ⊘⊘⊘○	**128 fewer** 178 fewer - 83 more ⊘⊘⊘○	**3 fewer** 91 fewer - 136 more ⊘⊘⊘○	**118 fewer** 183 fewer - 244 more ⊘⊘⊘○	**27 more** 104 fewer - 261 more ⊘⊘⊘○
Non-fatal stroke 5 years	190 per 1000	**2 fewer** 19 fewer - 17 more ⊘⊘⊘○	**24 fewer** 37 fewer - 9 fewer ⊘⊘⊘⊘	**No difference** 29 fewer - 32 more ⊘⊘⊘○	No data	**5 fewer** 47 fewer - 48 more ⊘⊘⊘○	**499 more** 39 fewer - 775 more ⊘⊘⊘○	**24 fewer** 49 fewer - 5 more ⊘⊘⊘○	**14 fewer** 32 fewer - 5 more ⊘⊘⊘○	**8 more** 25 fewer - 46 more ⊘⊘⊘○	**96 more** 133 fewer - 538 more ⊘⊘⊘○	**39 fewer** 118 fewer - 103 more ⊘⊘⊘○	**70 fewer** 167 fewer - 250 more ⊘⊘⊘○	**22 fewer** 154 fewer - 322 more ⊘⊘⊘○
Hospitalisation for heart failure 5 years	235 per 1000	**66 fewer** 79 fewer - 52 fewer ⊘⊘⊘⊘	**17 fewer** 32 fewer - 2 fewer ⊘⊘⊘○	**42 fewer** 66 fewer - 15 fewer ⊘⊘⊘⊘	**73 fewer** 188 fewer - 188 more ⊘⊘⊘○	**73 more** 156 fewer - 458 more ⊘⊘⊘○	**265 more** 197 fewer - 727 more ⊘⊘⊘○	**86 more** 46 more - 131 more ⊘⊘⊘○	**9 more** 9 fewer - 28 more ⊘⊘⊘○	**2 fewer** 40 fewer - 39 more ⊘⊘⊘○	No data	**11 fewer** 75 fewer - 70 more ⊘⊘⊘○	No data	**71 fewer** 214 fewer - 421 more ⊘⊘⊘○
End-stage kidney disease 5 years	148 per 1000	**52 fewer** 61 fewer - 44 fewer ⊘⊘⊘○	**22 fewer** 33 fewer - 10 fewer ⊘⊘⊘○	**22 fewer** 33 fewer - 10 fewer ⊘⊘⊘⊘	**42 fewer** 133 fewer - 309 more ⊘⊘⊘○	**71 more** 89 fewer - 409 more ⊘⊘⊘○	No data	**41 fewer** 88 fewer - 34 more ⊘⊘⊘○	**5 more** 9 fewer - 20 more ⊘⊘⊘○	**42 fewer** 88 fewer - 29 more ⊘⊘⊘○	No data	**24 more** 51 fewer - 137 more ⊘⊘⊘○	No data	**159 more** 131 fewer - 768 more ⊘⊘⊘○
Quality of life score (SF-36) 5 years	50 points	**3 better** 1 better - 4.9 better ⊘⊘⊘○	**1.7 better** 0.7 better - 2.7 better ⊘⊘⊘⊘	No data	**3.9 better** 1.3 better - 6.5 better ⊘⊘⊘⊘	**0.4 better** 2.5 worse - 3.3 better ⊘⊘⊘⊘	**0.3 better** 3.4 worse - 3.9 better ⊘⊘⊘⊘	**2 better** 1.3 worse - 5.2 better ⊘⊘⊘⊘	**0.3 better** 1.2 worse - 1.7 better ⊘⊘⊘⊘	**2.3 better** 1.9 worse - 6.4 better ⊘⊘⊘⊘	**1.7 better** 2.9 worse - 6.3 better ⊘⊘⊘⊘	**No difference** 2.5 worse - 2.4 better ⊘⊘⊘⊘	No data	**1.1 worse** 2.9 worse - 0.7 better ⊘⊘⊘⊘
Bodyweight change 5 years	90 kg	**1.98 less** 2.18 less - 1.78 less ⊘⊘⊘⊘	View all drugs	No data	**8.57 less** 9.4 less - 7.75 less ⊘⊘⊘⊘	**0.83 less** 1.16 less - 0.51 less ⊘⊘⊘⊘	**0.38 less** 0.8 less - 0.04 more ⊘⊘⊘⊘	**2.81 more** 2.55 more - 3.07 more ⊘⊘⊘⊘	**0.28 more** 0.11 more - 0.46 more ⊘⊘⊘⊘	**1.78 more** 1.5 more - 2.06 more ⊘⊘⊘⊘	**1.26 more** 0.58 more - 1.94 more ⊘⊘⊘⊘	**2.15 more** 1.74 more - 2.56 more ⊘⊘⊘⊘	**3.26 more** 2.1 more - 4.41 more ⊘⊘⊘⊘	**1.01 more** 0.24 more - 1.79 more ⊘⊘⊘⊘
Retinopathy 5 years	28 per 1000	**1 fewer** 5 fewer - 3 more ⊘⊘⊘○	**1 fewer** 3 fewer - 2 more ⊘⊘⊘○	**No difference** 9 fewer - 14 more ⊘⊘⊘○	**56 more** 17 fewer - 393 more ⊘⊘⊘○	**No difference** 12 fewer - 19 more ⊘⊘⊘○	**61 more** 22 fewer - 576 more ⊘⊘⊘○	**2 fewer** 7 fewer - 4 more ⊘⊘⊘○	**No difference** 4 fewer - 4 more ⊘⊘⊘○	**1 fewer** 5 fewer - 3 more ⊘⊘⊘○	**9 fewer** 25 fewer - 109 more ⊘⊘⊘○	**4 fewer** 9 fewer - 1 more ⊘⊘⊘○	No data	**2 more** 10 fewer - 21 more ⊘⊘⊘○
Neuropathy 5 years	5 per 1000	**No difference** 1 fewer - 1 more ⊘⊘⊘⊘	**No difference** 1 fewer - 1 more ⊘⊘⊘○	**3 more** 1 fewer - 13 more ⊘⊘⊘○	No data	**No difference** 2 fewer - 5 more ⊘⊘⊘○	No data	**1 more** 0 - 3 more ⊘⊘⊘⊘	**No difference** 0 - 1 more ⊘⊘⊘⊘	**1 more** 0 - 2 more ⊘⊘⊘⊘	No data	**No difference** 1 fewer - 1 more ⊘⊘⊘○	**3 fewer** 4 fewer - 6 more ⊘⊘⊘○	**8 more** 1 fewer - 44 more ⊘⊘⊘○
Dementia 5 years	1 per 1000	**1 more** 0 - 7 more ⊘⊘⊘⊘	**No difference** 0 - 0 ⊘⊘⊘⊘	**No difference** 1 fewer - 9 more ⊘⊘⊘⊘	No data	No data	No data	**1 fewer** 1 fewer - 3 more ⊘⊘⊘⊘	**No difference** 1 fewer - 0 ⊘⊘⊘○	**No difference** 1 fewer - 1 more ⊘⊘⊘○	No data	No data	No data	No data
Severe hypoglycaemia 5 years	30 per 1000	**3 fewer** 6 fewer - 1 more ⊘⊘⊘⊘	**1 fewer** 3 fewer - 2 more ⊘⊘⊘⊘	**11 fewer** 17 fewer - 1 fewer ⊘⊘⊘⊘	**4 more** 17 fewer - 55 more ⊘⊘⊘○	**21 more** 3 fewer - 64 more ⊘⊘⊘○	**9 more** 21 fewer - 114 more ⊘⊘⊘○	**12 more** 1 fewer - 31 more ⊘⊘⊘○	**3 more** 0 - 7 more ⊘⊘⊘○	**109 more** 77 more - 148 more ⊘⊘⊘○	**60 more** 1 fewer - 220 more ⊘⊘⊘○	**39 more** 23 more - 58 more ⊘⊘⊘○	**103 more** 2 more - 385 more ⊘⊘⊘○	**41 more** 9 more - 95 more ⊘⊘⊘○
Severe gastrointestinal events 5 years	45 per 1000	No data	**40 more** 16 more - 72 more ⊘⊘⊘⊘	No data	**133 more** 37 more - 299 more ⊘⊘⊘○	**50 more** 16 fewer - 221 more ⊘⊘⊘○	**93 more** 31 fewer - 598 more ⊘⊘⊘○	**18 more** 14 fewer - 80 more ⊘⊘⊘○	**6 more** 21 fewer - 62 more ⊘⊘⊘○	**No difference** 32 fewer - 103 more ⊘⊘⊘○	No data	**27 fewer** 40 fewer - 15 more ⊘⊘⊘○	No data	**90 more** 19 fewer - 432 more ⊘⊘⊘○
Genital infection 5 years	73 per 1000	**133 more** 112 more - 156 more ⊘⊘⊘⊘	**21 fewer** 45 fewer - 22 more ⊘⊘⊘○	No data	No data	**20 more** 21 fewer - 89 more ⊘⊘⊘○	No data	**388 more** 41 fewer - 883 more ⊘⊘⊘○	**20 fewer** 38 fewer - 7 more ⊘⊘⊘○	**34 fewer** 45 fewer - 17 fewer ⊘⊘⊘○	No data	No data	No data	No data
Amputation 5 years	10 per 1000	**3 more** 0 - 6 more ⊘⊘⊘○	**3 fewer** 9 fewer - 56 more ⊘⊘⊘○	**1 fewer** 6 fewer - 10 more ⊘⊘⊘⊘	No data	No data	No data	**3 fewer** 6 fewer - 3 more ⊘⊘⊘○	**1 fewer** 5 fewer - 6 more ⊘⊘⊘⊘	No data	No data	No data	No data	No data
Ketoacidosis due to diabetes 5 years	2 per 1000	**2 more** 1 more - 4 more ⊘⊘⊘⊘	**No difference** 1 fewer - 2 more ⊘⊘⊘⊘	**1 fewer** 1 fewer - 1 more ⊘⊘⊘⊘	No data	**1 more** 2 fewer - 63 more ⊘⊘⊘○	**1 fewer** 2 fewer - 30 more ⊘⊘⊘○	No data	**No difference** 1 fewer - 1 more ⊘⊘⊘○	**1 fewer** 2 fewer - 6 more ⊘⊘⊘○	**1 fewer** 2 fewer - 30 more ⊘⊘⊘○	No data	No data	No data
Major osteoporotic fractures 5 years	6 per 1000	**No difference** 1 fewer - 1 more ⊘⊘⊘⊘	**No difference** 2 fewer - 1 more ⊘⊘⊘⊘	**1 fewer** 3 fewer - 3 more ⊘⊘⊘⊘	**1 fewer** 5 fewer - 16 more ⊘⊘⊘○	**2 fewer** 4 fewer - 3 more ⊘⊘⊘⊘	No data	**4 more** 0 - 9 more ⊘⊘⊘⊘	**1 fewer** 2 fewer - 0 ⊘⊘⊘⊘	**1 more** 1 fewer - 6 more ⊘⊘⊘⊘	No data	**2 fewer** 5 fewer - 7 more ⊘⊘⊘○	**4 fewer** 6 fewer - 42 more ⊘⊘⊘○	**2 fewer** 5 fewer - 15 more ⊘⊘⊘○
Fall 5 years	5 per 1000	**1 more** 1 fewer - 2 more ⊘⊘⊘⊘	**No difference** 1 fewer - 1 more ⊘⊘⊘⊘	**2 fewer** 4 fewer - 3 more ⊘⊘⊘⊘	**2 fewer** 5 fewer - 24 more ⊘⊘⊘○	**7 more** 1 fewer - 28 more ⊘⊘⊘○	**4 more** 5 fewer - 306 more ⊘⊘⊘○	**4 more** 2 fewer - 22 more ⊘⊘⊘○	**1 fewer** 2 fewer - 0 ⊘⊘⊘⊘	**1 fewer** 2 fewer - 2 more ⊘⊘⊘⊘	**21 more** 4 fewer - 397 more ⊘⊘⊘○	**No difference** 3 fewer - 9 more ⊘⊘⊘○	**4 fewer** 5 fewer - 7 more ⊘⊘⊘○	**No difference** 4 fewer - 29 more ⊘⊘⊘○
Hyperkalaemia leading to admission to hospital 5 years	2 per 1000	No data	No data	**10 more** 4 more - 21 more ⊘⊘⊘⊘	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data

Filtering / ranking



Selecting outcomes & interventions

- For a panel discussion
- For didactic purpose
- To browse the evidence

…

Among a 1000 people

Change risk strata ▾ | Filter by ▾ | Rank by ▾

	Standard treatments	SGLT2 inhibitors	GLP-1 receptor agonists	Non-steroidal MRAs	Tirzepatide
All-cause death 5 years	265 per 1000	**24 fewer** 35 fewer - 12 fewer ⊘⊘⊘⊘	**24 fewer** 37 fewer - 14 fewer ⊘⊘⊘⊘	**22 fewer** 43 fewer - 0 ⊘⊘⊘⊘	**35 fewer** 117 fewer - 77 more ⊘○○○
Non-fatal myocardial infarction 5 years	190 per 1000	**16 fewer** 29 fewer - 3 fewer ⊘⊘⊘⊘	**14 fewer** 24 fewer - 3 fewer ⊘⊘⊘⊘	**14 fewer** 42 fewer - 18 more ⊘⊘○○	**51 fewer** 172 fewer - 399 more ⊘○○○
Non-fatal stroke 5 years	190 per 1000	**2 fewer** 19 fewer - 17 more ⊘⊘○○	**24 fewer** 37 fewer - 9 fewer ⊘⊘⊘⊘	**No difference** 29 fewer - 32 more ⊘⊘○○	No data
Bodyweight change 5 years	90 kg	**1.98 less** 2.18 less - 1.78 less ⊘⊘⊘⊘	View all drugs	No data	**8.57 less** 9.4 less - 7.75 less ⊘⊘⊘○
Quality of life score (SF-36) 5 years	50 points	**3 better** 1 better - 4.9 better ⊘⊘⊘○	**1.7 better** 0.7 better - 2.7 better ⊘⊘⊘⊘	No data	**3.9 better** 1.3 better - 6.5 better ⊘⊘⊘○
Severe hypoglycaemia 5 years	30 per 1000	**3 fewer** 6 fewer - 1 more ⊘⊘⊘⊘	**1 fewer** 3 fewer - 2 more ⊘⊘⊘⊘	**11 fewer** 17 fewer - 1 fewer ⊘⊘⊘⊘	**4 more** 17 fewer - 55 more ⊘○○○
Severe gastrointestinal events 5 years	45 per 1000	No data	**40 more** 16 more - 72 more ⊘⊘⊘○	No data	**133 more** 37 more - 299 more ⊘⊘⊘○

Cardiovascular death | Hospitalisation for heart failure | End-stage kidney disease | Retinopathy

Neuropathy | Dementia | Genital infection | Amputation

Ketoacidosis due to diabetes | Major osteoporotic fractures | Fall | Hyperkalaemia leading to admission to hospital

Among a 1000 people

Change risk strata ▾ | Filter by ▾ | Rank by ▾

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Bodyweight change 5 years	90 kg	**1.98 less** 2.18 less - 1.78 less ⊘⊘⊘⊘	View all drugs	No data	**8.57 less** 9.4 less - 7.75 less ⊘⊘⊘○
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Severe hypoglycaemia 5 years	30 per 1000	**3 fewer** 6 fewer - 1 more ⊘⊘⊘⊘	**1 fewer** 3 fewer - 2 more ⊘⊘⊘⊘	**11 fewer** 17 fewer - 1 fewer ⊘⊘⊘⊘	**4 more** 17 fewer - 55 more ⊘○○○
Severe gastrointestinal events 5 years	45 per 1000	No data	**40 more** 16 more - 72 more ⊘⊘⊘○	No data	**133 more** 37 more - 299 more ⊘⊘⊘○

Cardiovascular death | Hospitalisation for heart failure | End-stage kidney disease | Retinopathy

Neuropathy | Dementia | Genital infection | Amputation

Ketoacidosis due to diabetes | Major osteoporotic fractures | Fall | Hyperkalaemia leading to admission to hospital

Among a 1000 people

Non-steroidal MRAs

Tirzepatide

Change risk strata ▾ | Filter by ▾ | Rank by ▾

	Standard treatments	SGLT2 inhibitors	GLP-1 receptor agonists
All-cause death 5 years	265 per 1000	**24 fewer** 35 fewer - 12 fewer ⊘⊘⊘⊘	**24 fewer** 37 fewer - 14 fewer ⊘⊘⊘⊘
Non-fatal myocardial infarction 5 years	190 per 1000	**16 fewer** 29 fewer - 3 fewer ⊘⊘⊘⊘	**14 fewer** 24 fewer - 3 fewer ⊘⊘⊘⊘
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Severe hypoglycaemia 5 years	30 per 1000	**3 fewer** 6 fewer - 1 more ⊘⊘⊘⊘	**1 fewer** 3 fewer - 2 more ⊘⊘⊘⊘
Severe gastrointestinal events 5 years	45 per 1000	No data	**40 more** 16 more - 72 more ⊘⊘⊘○

Among a 1000 people

Non-steroidal MRAs

Tirzepatide

Change risk strata ▾ | Filter by ▾ | Rank by ▾

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Changing comparator

Among a 1000 people

Standard treatments

Change risk strata ▾ | Filter by ▾ | Rank by ▾

	GLP-1 receptor agonists	SGLT2 inhibitors	Tirzepatide	Non-steroidal MRAs
All-cause death 5 years	241 per 1000	**No difference** 14 fewer - 18 more ⊘○○○	**11 fewer** 92 fewer - 101 more ⊘○○○	**2 more** 22 fewer - 29 more ⊘○○○
Non-fatal myocardial infarction 5 years	176 per 1000	**2 fewer** 18 fewer - 14 more ⊘○○○	**37 fewer** 158 fewer - 411 more ⊘⊘○○	**No difference** 30 fewer - 35 more ⊘○○○
Non-fatal stroke 5 years	166 per 1000	**22 more** 0 - 46 more ⊘⊘⊘○	No data	**24 more** 9 fewer - 60 more ⊘⊘○○
Bodyweight change 5 years	No data	No data	No data	No data
Quality of life score (SF-36) 5 years	51.7 points	**1.3 better** 0.6 worse - 3.2 better ⊘⊘⊘○	**2.2 better** 0.2 worse - 4.6 better ⊘⊘⊘○	No data
Severe hypoglycaemia 5 years	29 per 1000	**2 fewer** 6 fewer - 2 more ⊘⊘⊘○	**5 more** 16 fewer - 56 more ⊘○○○	**10 fewer** 16 fewer - 0 ⊘⊘⊘○
Severe gastrointestinal events 5 years	85 per 1000	No data	**93 more** 1 fewer - 255 more ⊘⊘⊘○	No data

Among a 1000 people

Standard treatments

Change risk strata ▾ | Filter by ▾ | Rank by ▾

	GLP-1 receptor agonists	SGLT2 inhibitors	Tirzepatide	Non-steroidal MRAs
All-cause death 5 years	241 per 1000	**No difference** 14 fewer - 18 more ⊘○○○	**11 fewer** 92 fewer - 101 more ⊘○○○	**2 more** 22 fewer - 29 more ⊘○○○
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Severe gastrointestinal events 5 years	85 per 1000	No data	**93 more** 1 fewer - 255 more ⊘⊘⊘○	No data

Focusing on outcome data

All-cause death

24 fewer

5 years

35 fewer - 12 fewer

Standard treatments	SGLT2 inhibitors
265	241
per 1000	per 1000

Odds ratio

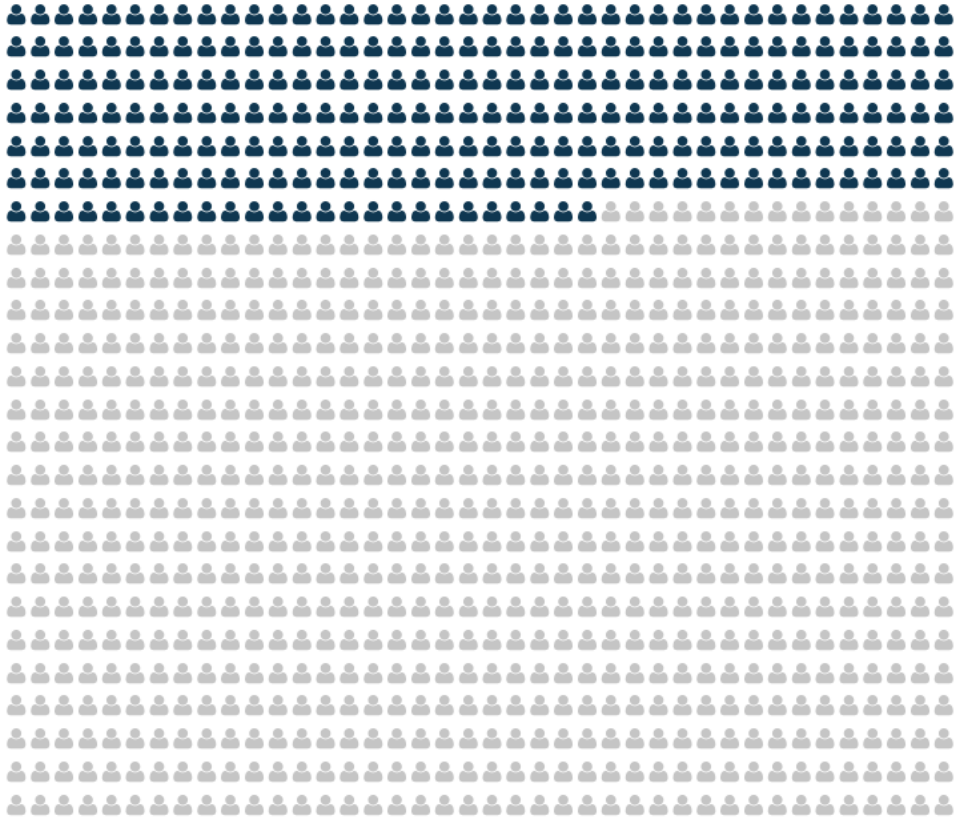
0.88 (0.83, 0.94)

Certainty

High

Network Estimate involving 39 randomized trials in direct comparisons

SGLT2 inhibitors reduce all-cause death compared to standard treatments.



Among a 1000 people

Close

All-cause death

24 fewer

5 years

35 fewer - 12 fewer

Standard treatments	SGLT2 inhibitors
265	241
per 1000	per 1000

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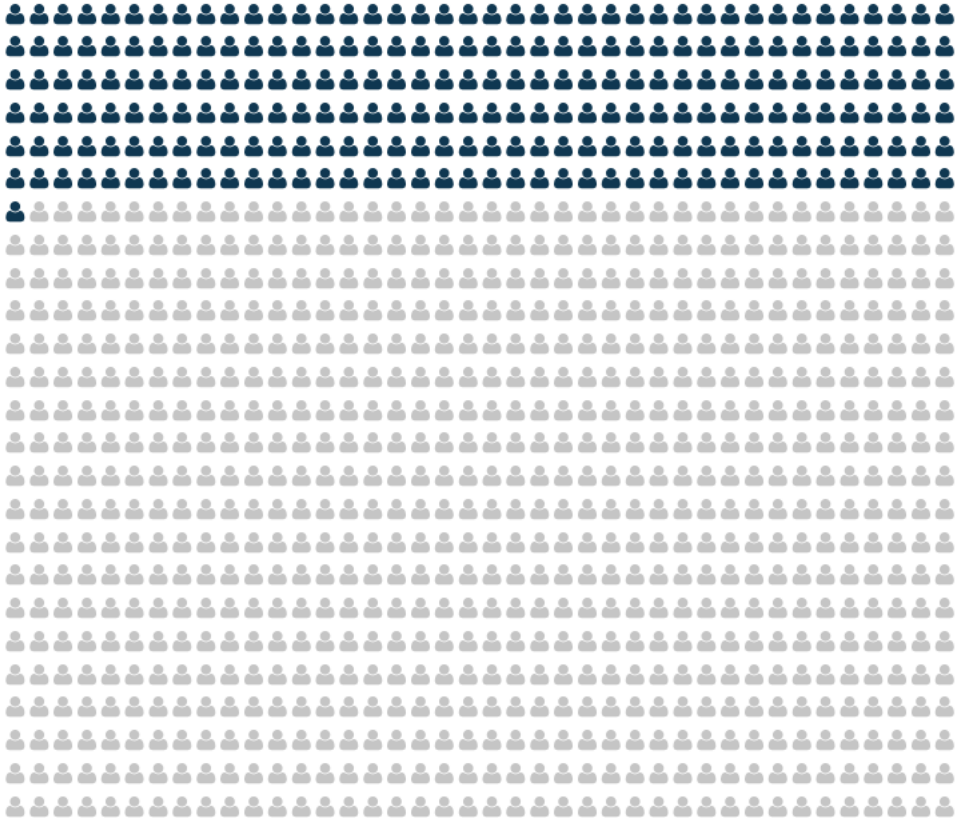

Among a 1000 people

Close

All-cause death

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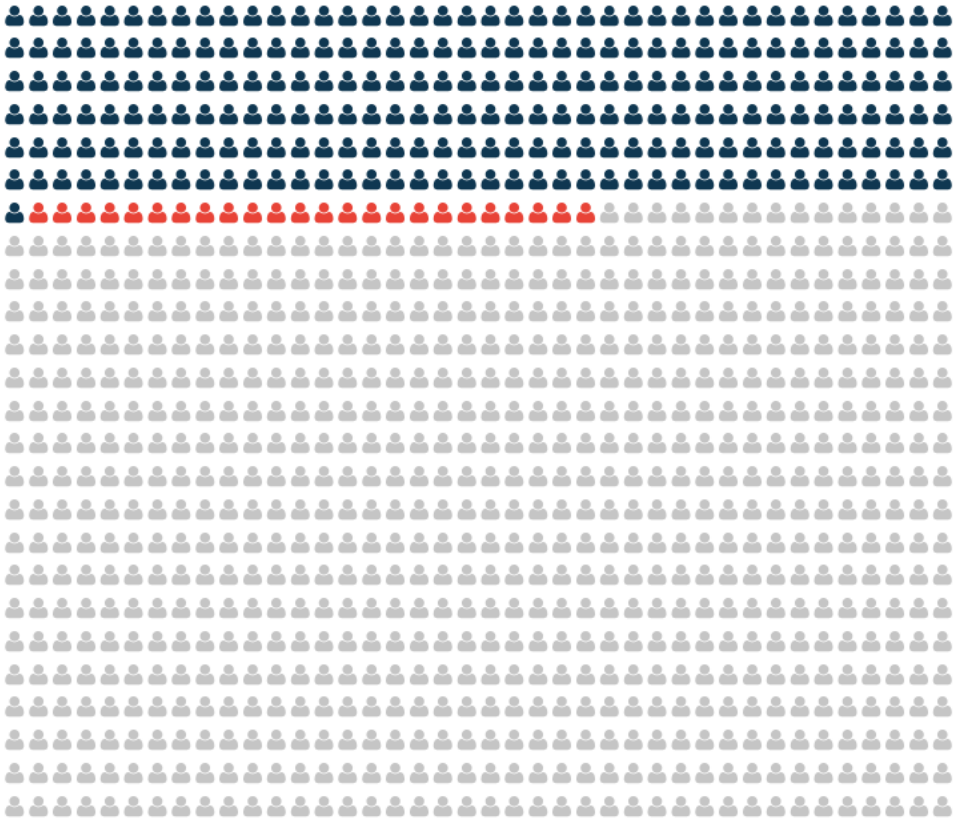


Among a 1000 people

Close

Bodyweight change

1.98 less

5 years

2.18 less - 1.78 less

Standard treatments	SGLT2 inhibitors
90 kg	88.02 kg

Mean difference

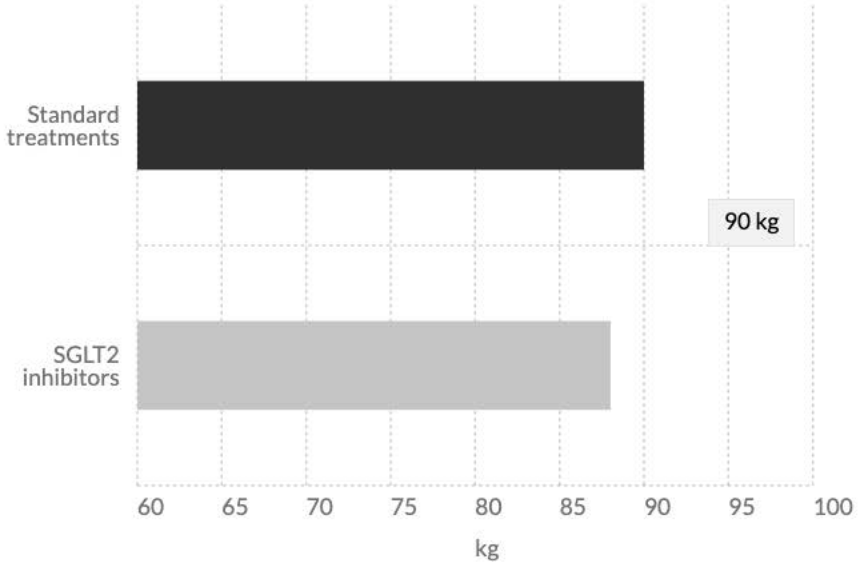
-1.98 (-2.18, -1.78)

Certainty

High

Network Estimate involving 70 randomized trials in direct comparisons

SGLT2 inhibitors have little or no difference on bodyweight compared to standard treatments.



Close

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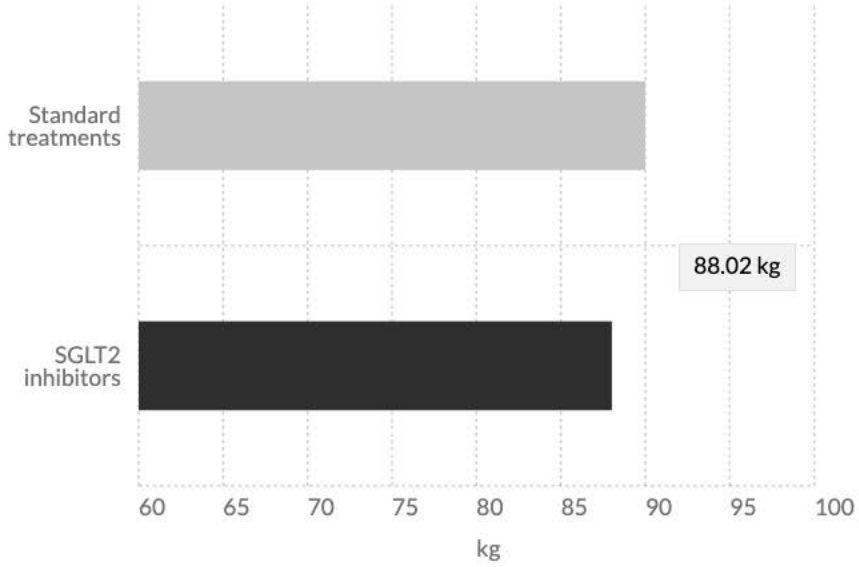

Close

Bodyweight change

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90 kg	88.02 kg

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Network Estimate involving 70 randomized trials in direct comparisons

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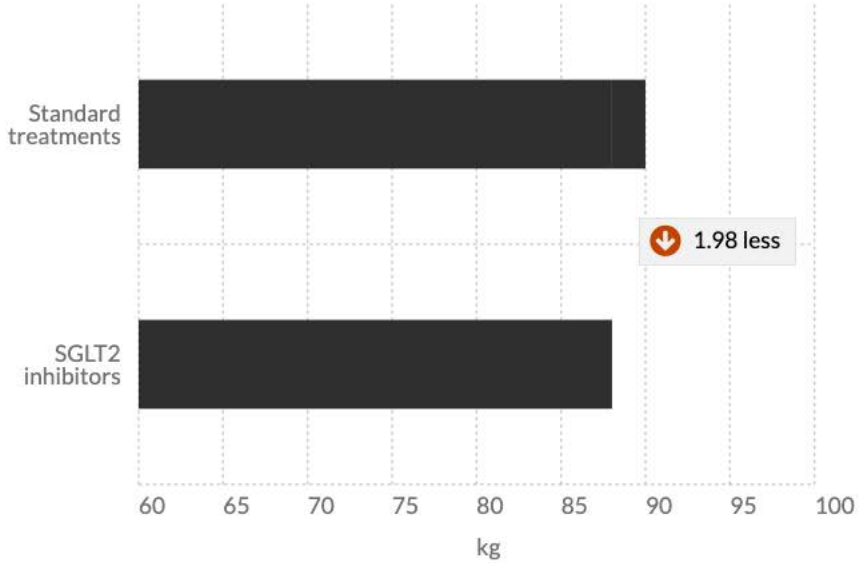
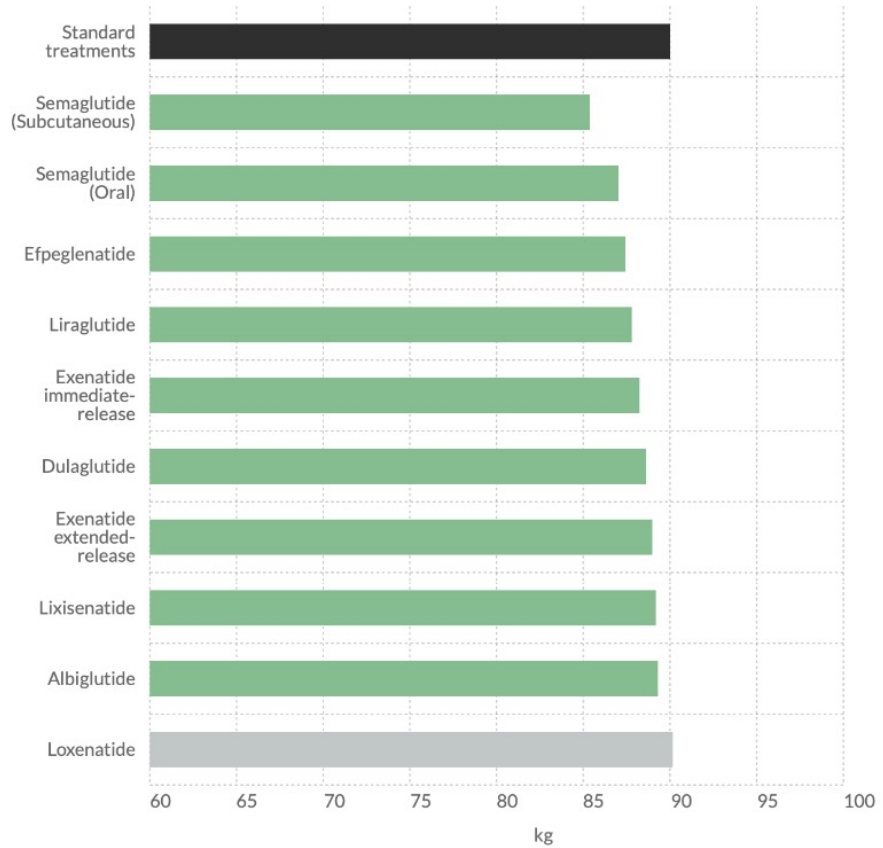


Close

Bodyweight change for GLP-1 receptor agonists



	Weight	Difference	Confidence interval	Certainty
Standard treatments	90 kg			
Semaglutide (Subcutaneous)	85.38 kg	4.62 less	(5.22 less - 4.03 less)	⊘⊘○○
Semaglutide (Oral)	87.02 kg	2.98 less	(3.66 less - 2.29 less)	⊘⊘⊘⊘
Efpeglenatide	87.41 kg	2.59 less	(4.41 less - 0.78 less)	⊘⊘⊘⊘
Liraglutide	87.79 kg	2.21 less	(2.58 less - 1.85 less)	⊘⊘⊘○
Exenatide immediate-release	88.23 kg	1.77 less	(2.47 less - 1.07 less)	⊘⊘⊘○
Dulaglutide	88.60 kg	1.4 less	(1.93 less - 0.88 less)	⊘⊘⊘⊘
Exenatide extended-release	88.95 kg	1.05 less	(1.67 less - 0.42 less)	⊘⊘⊘○
Lixisenatide	89.17 kg	0.83 less	(1.40 less - 0.26 less)	⊘⊘⊘⊘
Albiglutide	89.28 kg	0.72 less	(1.35 less - 0.08 less)	⊘⊘⊘○
Loxenatide	90.16 kg	0.16 more	(1.72 less - 2.04 more)	⊘⊘○○

Close

Focusing on certainty

	Standard treatments	SGLT2 inhibitors	GLP-1 receptor agonists	Non-steroidal MRAs	Tirzepatide
All-cause death 5 years	265 per 1000	**24 fewer** 35 fewer - 12 fewer ⊘⊘⊘⊘	**24 fewer** 37 fewer - 14 fewer ⊘⊘⊘⊘	**22 fewer** 43 fewer - 0 ⊘⊘⊘⊘	**35 fewer** 117 fewer - 77 more ⊘○○○
Non-fatal myocardial infarction 5 years	190 per 1000	**16 fewer** 29 fewer - 3 fewer ⊘⊘⊘⊘	**14 fewer** 24 fewer - 3 fewer ⊘⊘⊘⊘	**14 fewer** 42 fewer - 18 more ⊘⊘○○	**51 fewer** 172 fewer - 399 more ⊘○○○
Non-fatal stroke 5 years	190 per 1000	**2 fewer** 19 fewer - 17 more ⊘⊘○○	**24 fewer** 37 fewer - 9 fewer ⊘⊘⊘⊘	**No difference** 29 fewer - 32 more ⊘⊘○○	No data

	Standard treatments	SGLT2 inhibitors	GLP-1 receptor agonists	Non-steroidal MRAs	Tirzepatide
All-cause death 5 years	265 per 1000	**24 fewer** 35 fewer - 12 fewer High certainty	**24 fewer** 37 fewer - 14 fewer High certainty	**22 fewer** 43 fewer - 0 High certainty	**35 fewer** 117 fewer - 77 more Very low certainty
Non-fatal myocardial infarction 5 years	190 per 1000	**16 fewer** 29 fewer - 3 fewer High certainty			
Non-fatal stroke 5 years	190 per 1000	**2 fewer** 19 fewer - 17 more Low certainty	37 fewer - 9 fewer High certainty	Low certainty	
Bodyweight change 5 years	90 kg	**1.98 less** 2.18 less - 1.78 less High certainty	View all drugs	No data	**8.57 less** 9.4 less - 7.75 less Moderate certainty

Certainty: the certainty of the evidence for interventions is the certainty or confidence that the true effect is within a particular range or relative to a threshold.

MAGIC Evidence Ecosystem Foundation

MAGIC Authoring & Publication Platform

Cochrane

Practical Issues

Practical issues

Medical routine

Tests and visits

Procedure and device

Recovery and adaptation

Coordination of care

Adverse effects, interactions and antidote

Physical well-being

Emotional well-well-being

Pregnancy and nursing

Costs and access

Food and drinks

Social life and relationships

Storage and transportation before use

Exercise and activities

Travel and driving

What aspect of treatment would you like to explore next?

All Cause Mortalit

End stage kidney dise

Severe gastrointesti event

Non fatal stroke

Genital infection

Practical issues

Medical routine

With usual care

- Most anti-diabetic medications are tablets except insulin, an injection. Insulin can be used while a person is sick and needs glucose lowering medication.

With SGLT2 inhibitors

- Tablets swallowed once daily at the same time. Some need to be taken in the morning.

With GLP-1 RAs

- Injection once or twice daily or once weekly. Also available as tablets, but are not yet widely available. Formulas that combination of GLP-1 RAs and insulin are available and can be injected once.

With SGLT2 inhibitors and GLP-1 RAs

- Should not be taken while a person is sick, especially if there is vomiting, diarrhea, or the person isn't eating and drinking very much.

Close

Practical issues

Medical routine

Test

daptation

Coordination of care

Adverse effects, interactions and antidote

Physical well-being

Emotional well-being

Pregnancy and nursing

Costs and access

Food and drinks

Social life and relationships

Storage and transportation before use

Exercise and activities

Travel and driving

Agenda

1. MAGIC Evidence Ecosystem Foundation
2. How to enhance our evidence ecosystem
   - Focus #1 Methods
   - Focus #2 Digitally structured data
3. Introducing the MAGICapp
4. Key developing areas
   - Personalized medicine
   - Living evidence & guidelines
   - Multiple comparisons: from NMAs to decisions
5. Introducing MATCH-IT
6. **Bridging the gap with implementation projects**

Implementation projects in the Evidence Ecosystem

GATEWAY (WHO funded)
- Supporting enhanced dissemination, adaptation and translation in member states (Kazakhstan, Chili, Malawi)

GELA (EU European and Countries Clinical Trials 2022-2025)
- Global evidence, local **ada**Developing**ptation**: adapting WHO recommendations for new-born and young child health in three countries in **sub-Saharan Africa (Malawi, Nigeria and South Africa)**.

BE-SAFE (EU HORIZON-HLTH-2021_CARE_05-01)
- Improving patient safety and quality of care through patient-centred and evidence-based interventions to **reduce benzodiazepine and sedative hypnotic use**
- 9 partners

OperA (EU HORIZON-HLTH-2021_DISEASE-04-04)
- Optimising **colorectal cancer prevention** through personalised treatment with **artificial intelligence (AI)**

Enhancing the Evidence Ecosystem E3 (Norwegian Research Council)
- Digital and trustworthy to increase value and reduce waste in the current health care ec**personalised eHealth solutions** osystem.

ReMeDy (Norwegian Research Council)
- Improve the evidence ecosystem for **rheumatic and musculoskeletal diseases**

Conclusion

- ✓ We can enhance the Ecosystem together
- ✓ AI can help on many aspects
  - ✓ Process
  - ✓ Content
  - ✓ …but requires same rigour

- ✓ Key avenues include
  - ✓ Living Evidence & Living Guidelines
  - ✓ Multiple comparisons
  - ✓ Personalized medicine
  - ✓ Implementation

Thank you!

MAGIC Evidence Ecosystem Foundation

McMaster University

HUG Hôpitaux Universitaires Genève

UNIVERSITÉ DE GENÈVE

@ThomasAgoritsas @lyubovlytvyn @magicevidence