



Practical issues in identifying evidence for complex problems: public health searching at NICE

10 March 2015

Guidance Information Services, NICE

Outline

Part 1: how?

- The classic and the iterative models

Part 2: where?

- How useful is Medline?
 - Can we find grey literature to fill the evidence gaps?
 - What is the role of citation searching?
 - Does text mining have a part to play?
-
- Addressing the challenges

Core principles of NICE's work

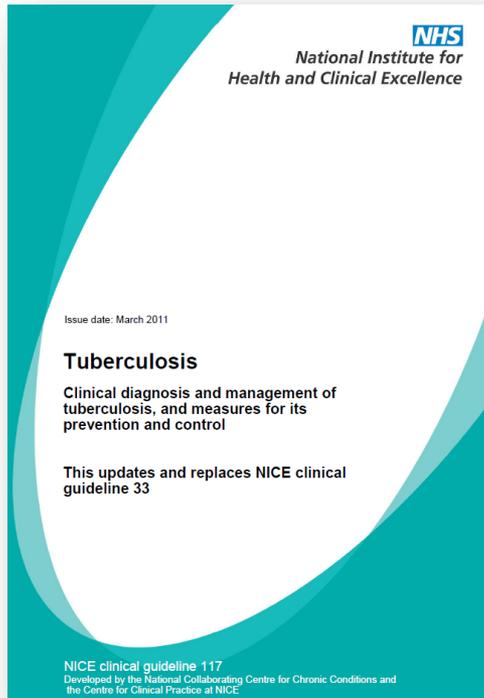
- Based on the best evidence available
- Expert input
- Patient and carer involvement
- Independent advisory committees
- Genuine consultation
- Regular review
- Open and transparent process
- Social values and equity considerations

Principles for guidance development



Part 1: how?

Searching for tuberculosis

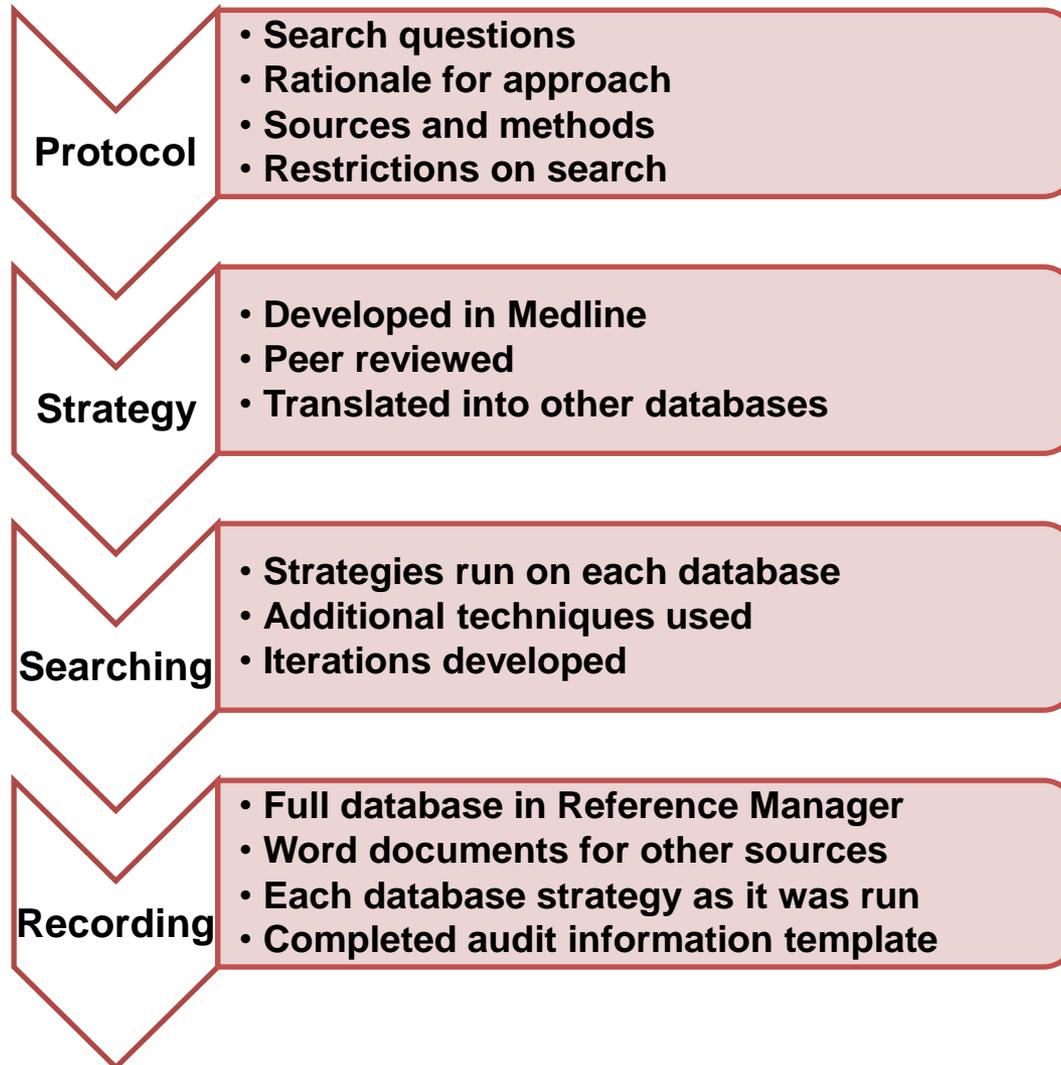


- Clinical Guideline CG117
- Published: March 2011
- Searches: December 2009

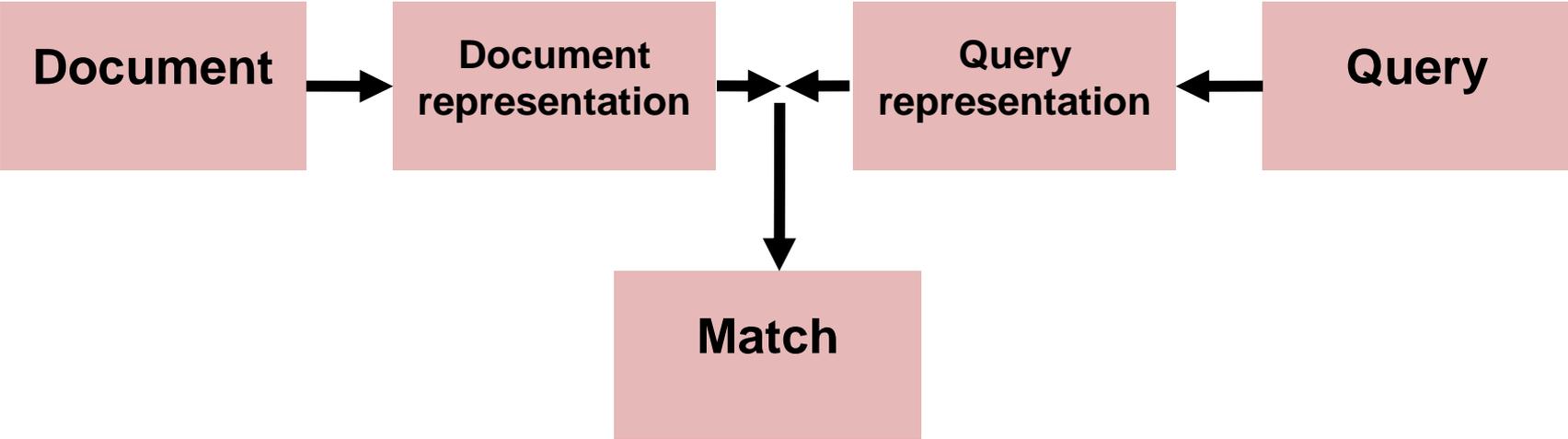


- Public Health Guidance PH37
- Published: March 2012
- Searches: June 2010

The search process



Classic information retrieval model

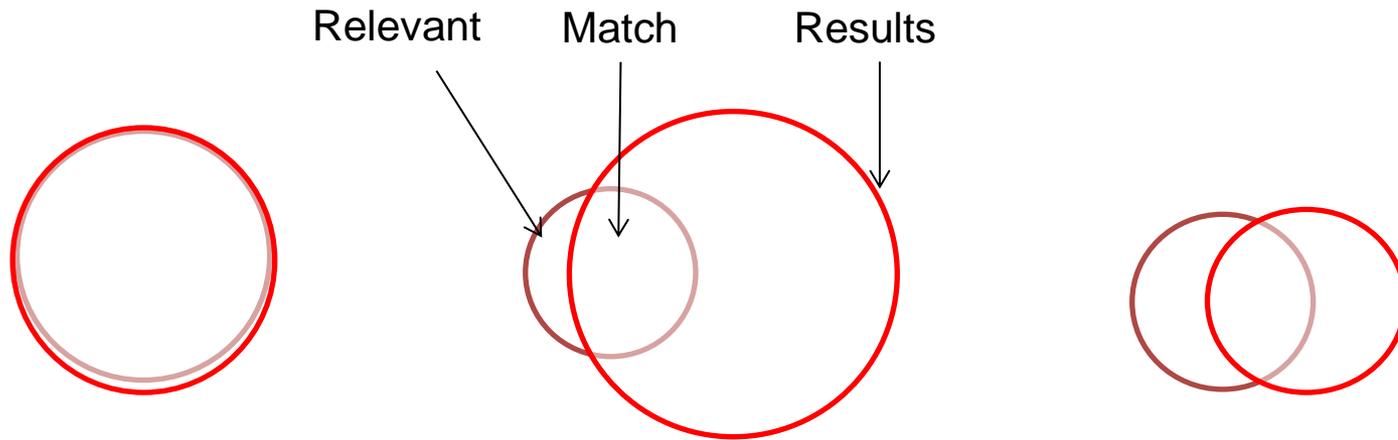


The classic search structure

Which diagnostic strategy is most accurate in diagnosing latent TB in immunocompromised patients?

Population	Adults and children who are immunocompromised due to list of defined criteria	Immunocompromised host/ (Immuno adj3 compromis*).tw
Intervention	IGRA alone or IGRA and Mantoux	IGRA.tw (Interferon adj3 gamma adj3 (releas* or test* and assay*)).tw
Comparator	Mantoux alone	Mantoux.tw Tuberculin Test/
Outcome	Diagnosis of latent TB	Tuberculosis/ (laten* adj3 (tb* or tubercul*)).tw

Search results in the classic model



The impossible ideal

- Find everything
- And little else

Sensitive search

- Find a lot
- Have to sift a lot

Specific search

- Find enough
- Sift a reasonable amount

Searching for Public Health Guidance

What factors help or hinder the uptake of TB diagnosis and treatment services by people from hard-to-reach groups?

P opulation	Hard-to-reach groups	?
I ntervention	Any interventions	?
C omparator	Any comparators	?
O utcome	Uptake of TB testing Attitudes to TB testing	?

Retrieving volume: not evidence

Which interventions are effective at identifying TB and/or raising awareness about screening for TB among hard-to-reach groups?

- References screened: 15,354 (31,469 prior to de-duplication)
- Full text obtained: 136
- Included studies: 32 (0.2% of references screened)
- Quality rating: 11 High (++), 12 medium (+), 9 low (-)

	Migrants	Homeless	Drug users	Prisoners	Mixed
UK	4	3	-	1	1
US/Canada	7	2	7	3	-
Europe	4	-	-	-	-
Other	1	-	-	-	-
Total	16	5	7	4	1

A classical stab...

What factors **[help or hinder]** the **[uptake]** of TB **[diagnosis and treatment]** services by people from hard-to-reach groups?

((surveillance or screen* or test* or diagnos* or prevent* or detect* or treat* or refer* or (case adj3 find*) or (case adj3 manage*) or (contact adj3 trac*)) adj3 (barrier* or facilitat* or hinder* or block* or obstacle* or restrict* or restrain* or obstruct* or inhibit* or impede* or delay* or constrain* or hindrance)).ti,ab.	148,601
((surveillance or screen* or test* or diagnos* or prevent* or detect* or treat* or refer* or (case adj3 find*) or (case adj3 manage*) or (contact adj3 trac*)) adj3 (campaign* or interven* or program* or activit* or project* or counsel* or advice or advise or advising or engage* or curriculum or curricula or initiative*)).ti,ab.	191,257
((surveillance or screen* or test* or diagnos* or prevent* or detect* or treat* or refer* or (case adj3 find*) or (case adj3 manage*) or (contact adj3 trac*)) adj3 (uptake or take up or increas* or decreas* or reduc* or impact* or effect* or improve* or enhance* or encourag* or support* or promot* or optimiz* or optimis* or adher* or access* or motivat* or accept* or satisfaction or compliance or comply or complie* or refus* or availabl* or provision or provid* or offer or incentive*)).ti,ab.	688,113
((surveillance or screen* or test* or diagnos* or prevent* or detect* or treat* or refer* or (case adj3 find*) or (case adj3 manage*) or (contact adj3 trac*)) adj3 (educat* or inform* or knowledg* or attitude* or intent* or aware* or opportunit* or opportunist* or behavio?r* or risk*)).ti,ab.	131,199
or/93-96	1,042,572

A classical solution: TB population filter

Hard to reach	Specific populations	Risk factors
<ul style="list-style-type: none">• Difficult to locate• Unengaged communities	<ul style="list-style-type: none">• Prisoners• Migrants• Homeless	<ul style="list-style-type: none">• Poverty• Stigma• Discrimination

- Impact of the population cluster:
 - Time consuming to construct
 - Reduced the number of Medline records to be screened by 64% (5500 records)
 - Follow up methodological research has screened the 5500 and confirmed no relevant population groups were missed

Search issues

Language

- Multi-disciplinary
- Search tools
- Difficult to turn into a search
- Context from the source
- Inappropriate for the UK

Volume

- Range of sources
- Appropriateness of limits
- Study filters
- PICO
- Always one more place to try

Evidence

- Multi-disciplinary
- Lack of RCTs
- Transferability of evidence
- Text books

Defensive searching

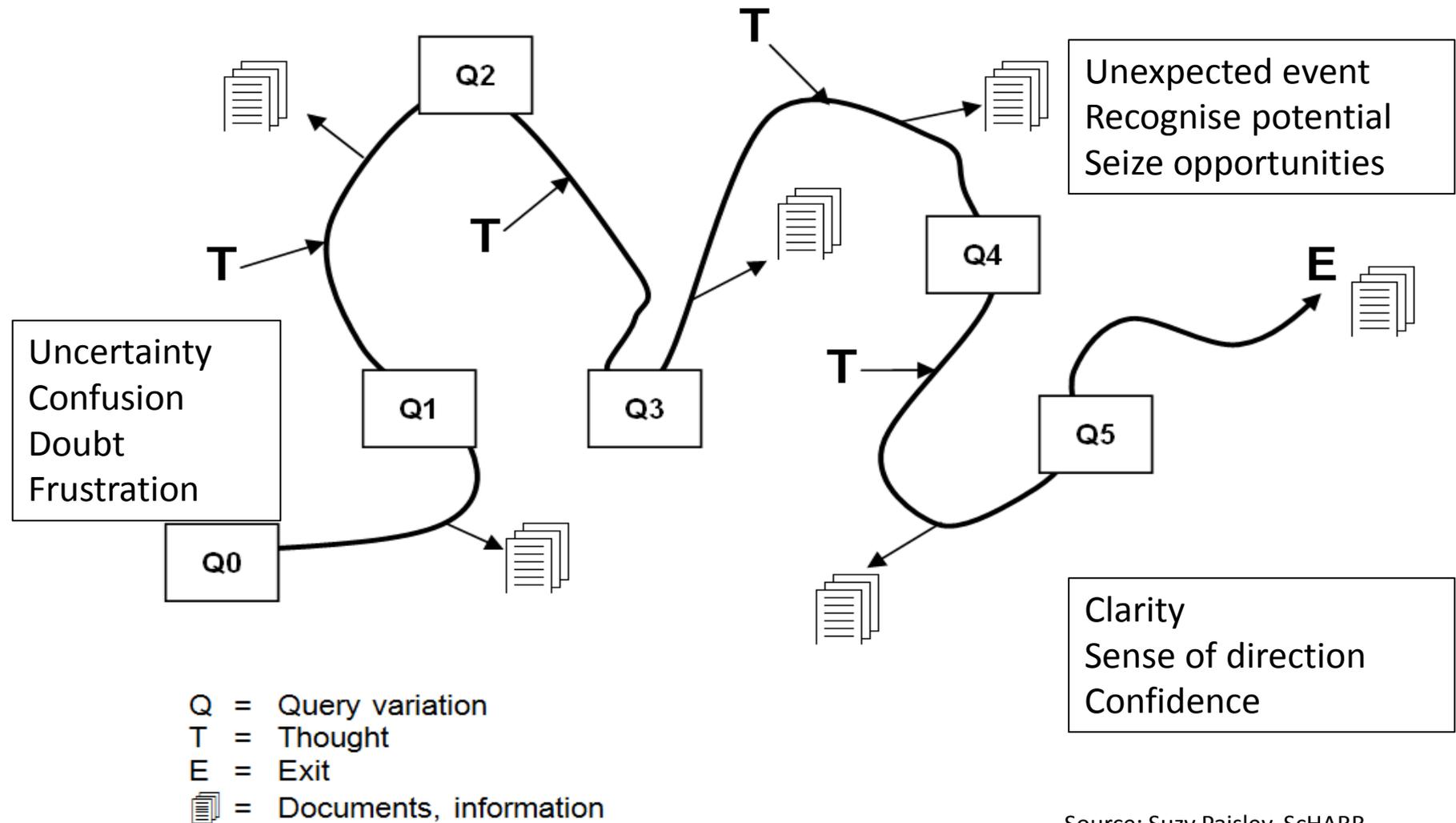
The[re is] tension between efficiency and making reports immune from criticism.

It is possible that unnecessary searches may be carried out in the same way as unnecessary X-rays may be taken in casualty departments – not for the good that they do, but as a form of ‘defensive medicine’.

This is wasteful of scarce resources.

Royle & Waugh, 2003

Another approach – iterative searching



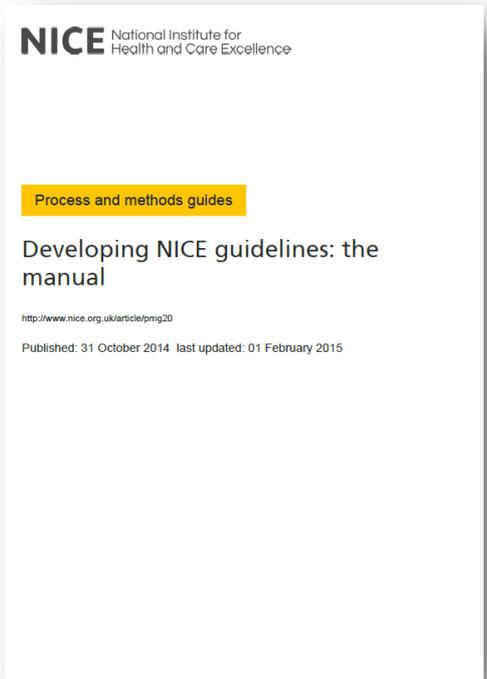
Source: Suzy Paisley, SCHARR

Classical vs. iterative searching

Classic model	Iterative
Pre-defined queries to set the search terms and inclusion criteria	New questions emerge from the evidence
Enforces a static definition of what can be considered “all the relevant evidence”	Queries are dynamic
Capture everything in one go	Search a bit at a time
Does not allow understanding of the topic to evolve	Answers emerge from the evidence
Suggests there is a binary “right” or “wrong” answer	Respond to the dynamic queries
Difficult to capture other types of evidence	Moves away from doing “defensive” searches
Non-database sources become supplementary	Focuses resources on the most useful activities
Auditable and replicable	A justifiable, acceptable, systematically derived evidence base?

NICE guidelines

- The aim is to identify the best available evidence to address a particular question without producing an unmanageable volume of results
- A flexible approach to the search for evidence should be adopted, guided by the subject of the question and type of evidence sought



Part 2: where?

Sources for NICE guidance

Search method	Obesity	Spatial planning	Tuberculosis
Call for evidence	5 (15.2%)	1 (5.0%)	0 (0)
Contact with experts	0 (0)	0 (0)	4 (16.0%)
Database (NICE 2009 Core list)	11 (33.3%)	-	19 (76.0%)
Database (Topic specific)	0 (0)	4 (20.0%)	0 (0)
National Research Register	0 (0)	-	2 (8.0%)
Reference list harvesting	8 (24.2%)	-	0 (0)
Website	1 (3.0%)	-	0 (0)
Unknown – non-database*	8 (24.2%)	15 (75.0%)	0 (0)
Total	33 (100%)	20 (100%)	25 (100%)

Filling the gaps: grey literature

- Not produced or distributed by commercial publishers
- No single source to search & overlapping sources
- Poorly indexed, if at all
- Can be difficult to locate the full text
- No obligation for organisations to archive documents
- Time consuming to locate
- Not peer reviewed
- Up-to-date evidence
- Explain *how* or *why* interventions work

Grey literature sources

Databases (UK)

- HMIC
- Social Policy & Practice

Theses

- British Library ETHOS
- ProQuest Dissertations & Theses

Websites

- Identify organisations
- NICE Evidence Search
- TRIP
- Open Grey

Hand searching

- Identify journals from searches
- Worth doing even if jnls indexed on databases

Backwards citation searching

- Check the references in the studies identified

Forward citation searching

- Find later items citing the studies
- Google Scholar
- SSCI, Web of Science

Contacting experts

- Committee members
- Identified through searches

Call for evidence

- Stakeholders asked to respond
- State the questions and types of evidence
- Be careful of copyright!

Citation searching

- Identified a base set from:
 - Scoping searches
 - Contact with experts
 - Call for evidence
- Citation searching with Google Scholar
- Screened 2407 unique hits
- Produced 39 included papers
- Medline required 23358 hits to find the same included papers
- Repeated with Web of Science – 2342 hits found 4 more includes

NICE National Institute for
Health and Care Excellence

Assessing body mass index and waist circumference thresholds for intervening to prevent ill health and premature death among adults from black, Asian and other minority ethnic groups in the UK

Issued: July 2013

NICE public health guidance 46
guidance.nice.org.uk/ph46

NICE has accredited the process used by the Centre for Public Health Excellence at NICE to produce guidance. Accreditation is valid for 5 years from January 2010 and applies to guidance produced since April 2009 using the processes described in NICE's 'Methods for the development of NICE public health guidance' (2009). More information on accreditation can be viewed at www.nice.org.uk/accreditation



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Finding the highly important articles

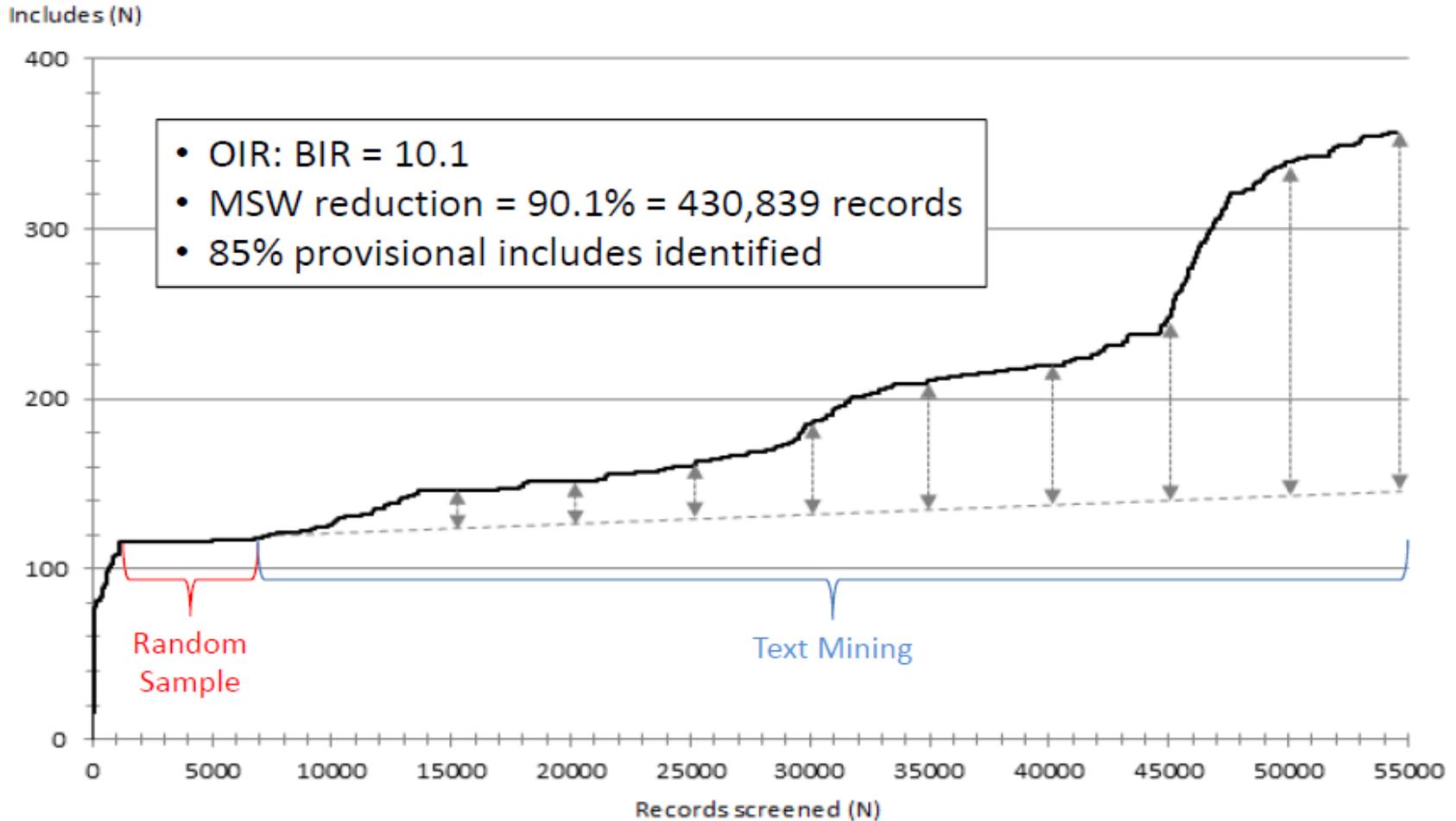
Reference	GS	WOS	Medline 3818	Medline 13157
Cameron, 2010	✓	✓	✓	✓
Chiu, 2011	✓	✓	✓	✓
Jenum, 2012	✗	✓	✓	✓
Nyamdorj, 2009	✓	✓	✗	✓
Pan, 2004	✓	✓	✓	✓
Stevens, 2002	✓	✓	✓	✓
Stevens, 2008	✓	✓	✗	✓
Stommel, 2010	✓	✓	✓	✓
Taylor, 2010	✓	✓	✗	✓

Estimates of sifting and admin time

Search	Hits	Hours	Includes	Cost range to NICE
Medline most specific	3818	64 sift 4 admin	26	£1944-£2630
Medline most sensitive	23,358	390 sift 4 admin	39	£11398-£15346
Google Scholar	2407	40 sift 135 admin	39	£4130-£6150
Web of Science	2342	39 sift 4 admin	37	£1219-£1657

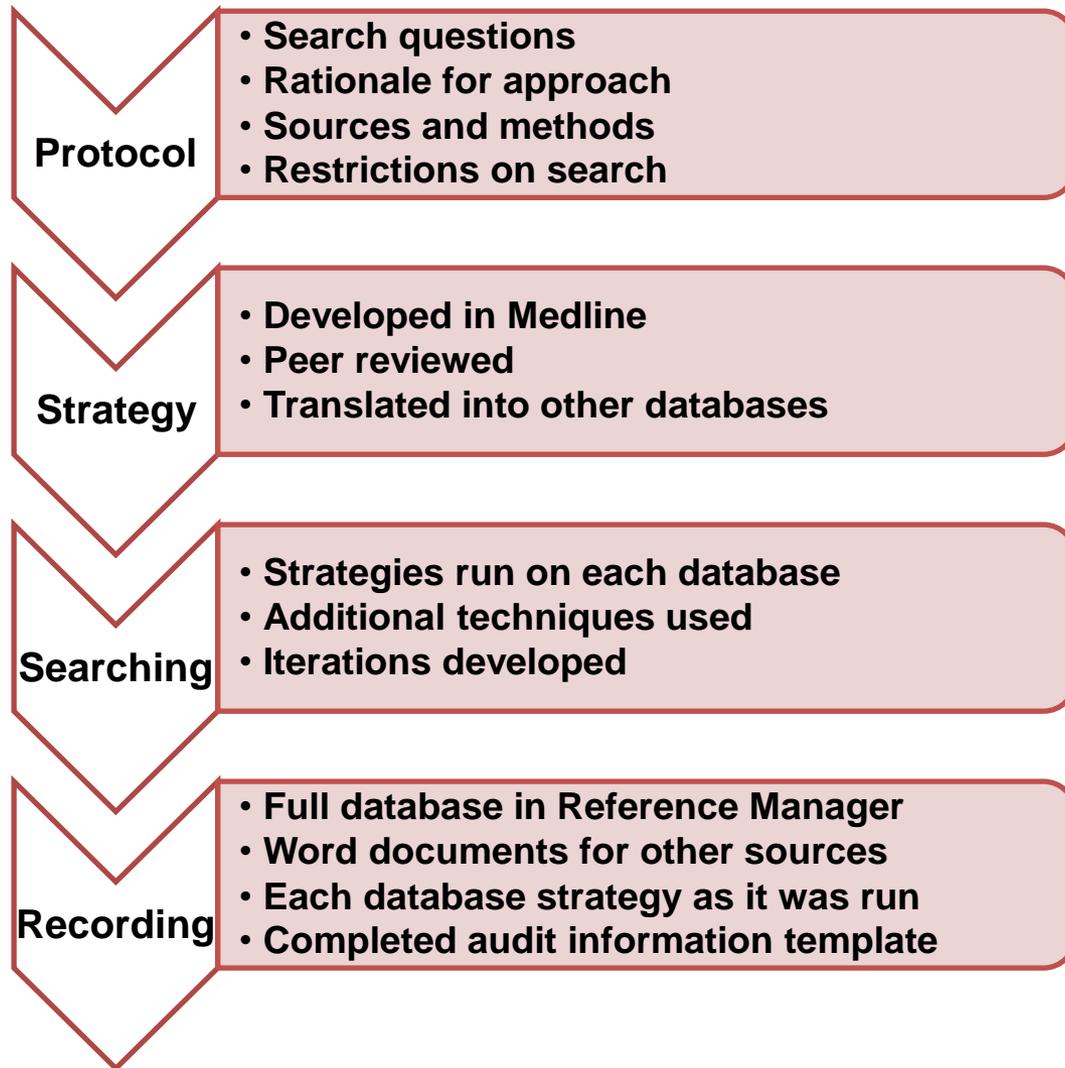
Note: no account of subscription costs, searching time or other ongoing costs

Does text mining have a role?

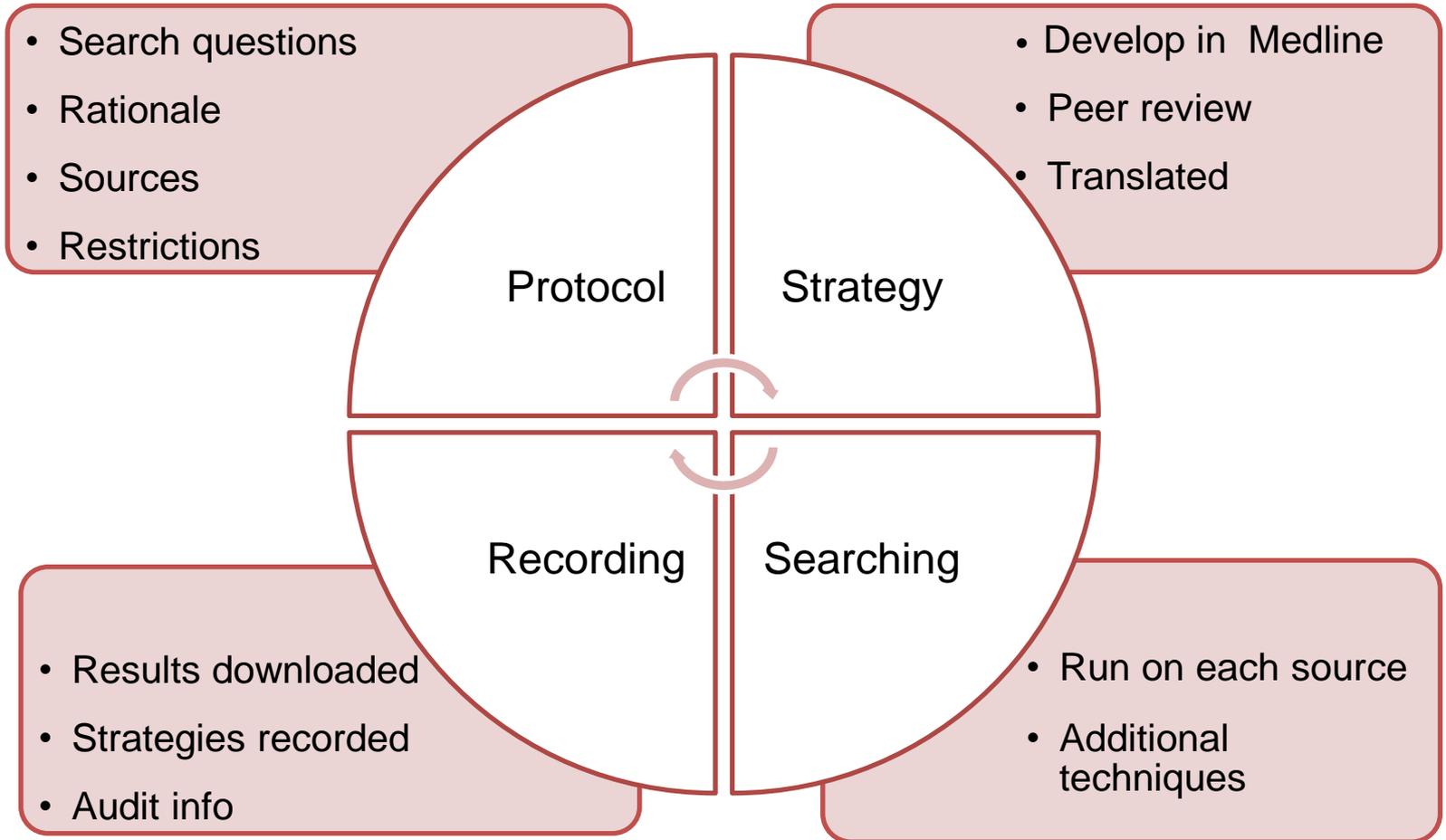


From: Shemilt I, et al. Cochrane Colloquium 2012

Is this really the search process?



The new search process



Addressing the challenges

- Do not feel constrained by what works for clinical topics
- Be flexible and adopt your methods to each topic
- Embrace the iterative approach
- Shift the burden to the scoping stage to map the evidence
- Work closely with the reviewers and the analysts
- Match the sources to the question being asked
- Switch the time from searching one more database to something more productive
- Volume and no. of excluded studies do not prove quality
- Record a narrative of *why* decisions were taken
- NO excuses for chaotic, late, partial or unreliable searches
- Be pragmatic in order to be more systematic

Further reading

- Alpi K (2005) Expert searching in public health. *Journal of the Medical Library Association*, 93(1), 97.
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Any questions?

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