A methodology for conducting repaid evidence reviews
Learning objectives

• To develop an understanding of the need for, and utility of, rapid reviews as a useful knowledge synthesis product
• To explore the Ottawa Hospital Research Institute (OHRI) methodology
• To discuss practical issues in providing a rapid review knowledge synthesis service
Financial support

• Canadian Institutes of Health Research
  • KS Canada grant [200906CSN-212307-ESN-AYDP-35581]
  • Knowledge to Action grant [KAL-86796]
• Development of rapid reviews in the context of the Knowledge to Action (KTA) program
Context

- Champlain Local Health Integration Network (LHIN)
  - 1 of 14 regional health care systems in Ontario, Canada
  - Population: 1.1 million
  - Responsibility to plan, coordinate and fund health systems to facilitate appropriate care

- Ottawa Hospital Research Institute (OHRI)
  - Concentration of expertise in knowledge synthesis and translation
The problem

• While the LHIN is committed to the development of knowledge-based care, one of its major challenges is the development of knowledge capacity and infrastructure to achieve this.

• Knowledge syntheses and relationship-building between researchers and policymakers have been indicated as possible strategies for helping decision makers access and make use of research evidence.

• How can researchers and health services decision makers work together to build knowledge capacity and infrastructure that supports evidence informed policy and decision making in a regional context?
OHRI’s approach

‘Knowledge to Action’ (KTA)

- **Timeline:** Sept 2009- Oct 2011
- **Objective:** To develop and assess the impact of a regional knowledge infrastructure that supported evidence-informed decision making by managers, decision makers, stakeholders and policymakers in the Champlain LHIN

- **Project team**
  - 3 Co-investigators
    - 2 Researchers (OHRI)
    - 1 Decision maker (CEO Champlain LHIN)
  - 1 Research Coordinator
OHRI’s approach-2

Development of intervention
What is a “knowledge infrastructure”?
- Three key components proposed:
  1. “Push” activities – Knowledge intelligence services (e.g. rapid reviews, horizon scanning)
  2. “Pull” activities – Capacity building in evidence-informed decision making (e.g. capacity building training and workshops)
  3. “Linkage and exchange” activities – relationship building and involvement of decision makers in research process

Prioritization of activities directed through dialogue with LHIN participants
OHRI’s approach-3

• Early linkage and exchange between the OHRI and LHIN participants indicated that the proposed “push” activities would be most useful in addressing the identified needs of the LHIN at that time.

• “Evidence Summaries” – a form of rapid review – was developed and was iteratively refined.

• A series of evidence summaries (n=18) were produced (~4-6wks each) in response to clinical and health services questions developed with LHIN managers and stakeholders.
Ongoing work and future directions post KTA

Publications:

- 1 methods paper outlining our approach

- 1 rapid review

- 1 process paper of our experience, including end-user feedback (in progress)

Ongoing rapid reviews with national stakeholders (e.g. Alberta Bone and Joint group)

Development of a sustained hospital-based technology assessment program with rapid review methodology at its core (The Ottawa Hospital Technology Assessment Program - TOHTAP)

Continued refinement and validation of methods through engaging with stakeholders and seeking funding opportunities

- Cochrane Innovations
- Cochrane College for Policy at George Mason
Rapid reviews ‘defined’

- Policymakers and healthcare stakeholders increasingly seeking evidence to inform the policymaking process
- Often require rapid access to high-quality evidence to inform decisions on emergent issues or questions
- Seen an increase in use of rapid review-type products
- However, no universally accepted definition or methodological protocol of Rapid Review (RR)
- Closest we’ve come to a definition:
  - Rapid review (RR) ≈ Literature review produced using accelerated and streamlined systematic review (SR) methods
Sought to do a review of:

1. Articles related to methods or examples of how to conduct RRs or;
2. Studies that addressed comparisons (if any) of RRs vs. traditional SRs;
3. Hoped to find studies that looked at implications of taking methodological shortcuts

Findings:
- 45 methodological articles; 25 RR examples
- Despite expanding use of RRs
  - Very poor methodological transparency
  - Limited understanding of the impact of taking shortcuts
Ganann et al. (2010)
Methods of Rapid Reviews (RRs)

• Variable nomenclature
  • Rapid Review
  • Rapid HTA
  • Rapid Evidence Assessment
  • Ultra rapid review….etc.

• Variable timeframes
  • 1-9 months
  • No time reported

• Variable streamlining methods
  • Restricted searching*
  • Restricted screening
  • Restricted quality appraisal
  • Restricted data extraction

*Limit by accessibility; language; date; # of sources searched; geographical location and setting to increase applicability
Ganann’s take home message

• RRs employ a variety of methodologies

• Vary in depth of description of methods used to make the process rapid

• Very few discussed limitations (what was lost) or what bias was potentially introduced by using RR methods

• Currently, no minimum reporting standards for RRs

• Need for research comparing full SRs with RRs to enhance our understanding of the RR limits
Rapid reviews: From start to finish
OHRI’s 8-stage approach

1. Needs assessment
2. Question development and refinement
3. Proposal development and approval
4. Literature search
5. Screening and selection of studies
6. Narrative synthesis of included studies
7. Report production
8. Ongoing follow-up with end users

Objective: high rigor, transparency, and usability
1. Needs assessment

- Stage starts with a probing consultation with a knowledge user with a problem/question (1 hr of upfront time);
- Purpose is to ascertain the following:
  - Scope of the question
  - Purpose for which it will be used
  - Availability and commitment of the knowledge user over the course of the project
- This phase forms the cornerstone of the evidence report from the beginning
- Serves the dual role of 1) determining if scope fits our proposed methods, and 2) ensures final product is meaningful for intended audience (beneficial, dynamic approach)
Setting the stage

• The rapid reviewers might:
  • define the importance of the review question from different perspectives (e.g., public health, individual patient, or health policy)
  • briefly mention the current state of knowledge and its limitations
  • whet readers’ appetites by clearly stating what the review aims to add

• The rapid reviewers also could discuss the extent to which the limitations of the existing evidence base may be overcome by the review.
2. Question development and refinement

- Generally, formulating appropriate research questions not a strong suit of knowledge users
- Usually clear about broad strokes in terms of what they want to ask but less able to provide critical details that make a research question precise and answerable
- Routinely now require an additional 1-2 hrs upfront to flesh out question, and applicability of RR approach
- Work to operationalize questions collaboratively (vetting process):
  - Use the PICOT/S framework as reasonably as possible (effectiveness)
  - Modify accordingly (health systems and/or health services related questions)
  - Aim for a manageable questions within the condensed timeframe, but still able to provide a meaningful answer to the end user
Helping to develop the research question(s): the PICOT/S approach

• Mnemonic
  • Participants
  • Interventions
  • Comparator
  • Outcome

• Timing
• Study design
The symmetry of research

• PICOT/S
  • Framing the question
  • Defining the eligibility criteria
  • Implementing data extraction forms
  • Reporting generation
Remembering

- That the only difference between a knowledge synthesis and a primary research study is the unit of analysis
- Primary study
  - It is usually a participant
- Knowledge synthesis
  - It is usually a ‘paper’
Question construction

• To examine whether topical or intraluminal antibiotics reduce catheter-related bloodstream infection, we reviewed randomized, controlled trials that assessed the efficacy of these antibiotics for primary prophylaxis against catheter-related bloodstream infection and mortality compared with no antibiotic therapy in adults undergoing hemodialysis.
Types of participants

• “Participants of any age with chronic renal failure (CRF) or receiving dialysis (haemodialysis or peritoneal dialysis) were considered. CRF was defined as serum creatinine greater than 200 µmol/L for a period of more than six months or individuals receiving dialysis (haemodialysis or peritoneal dialysis)… Renal transplant patients were excluded from this review as these individuals are immunosuppressed and are receiving immunosuppressant agents to prevent rejection of their transplanted organs, and they have essentially normal renal function ...”
The interventions (exposures)

- If the rapid reviewers are interested in a question regarding the association between a woman’s prenatal exposure to folic acid and subsequent offspring’s neural tube defects, the question should consider:
  - the dose, frequency, and duration of folic acid used in different studies
- Is likely to be important for readers to interpret the review’s results and conclusions.
- Other interventions (exposures) might include diagnostic, preventative, or therapeutic treatments, arrangements of specific processes of care, lifestyle changes, psychosocial or educational interventions, or risk factors.
Comparator (control) group intervention(s)

- Such as usual care, drug, or placebo, is essential to fully develop the question
- The same precision used to describe the interventions is required for the comparator Sources heterogeneity investigators have to deal with.
The outcomes of the intervention

• What outcomes are the rapid reviewers interested in:
  • mortality
  • morbidity
  • symptoms
  • quality of life improvements

• The rapid reviewers should be clearly specified as they are required to interpret the validity and generalizability of the systematic review’s results
Study design(s)

- Some reviews only include reports of randomized trials whereas others have broader design criteria and include randomized trials and certain types of observational studies.
- Other reviews, such as those specifically answering questions related to harms, may include a wide variety of designs ranging from cohort studies to case reports.
PICOT/S

• Settings and locations where the data were collected

  • “Volunteers were recruited in London from four general practices and the ear, nose, and throat outpatient department of Northwick Park Hospital. The prescribers were familiar with homoeopathic principles but were not experienced in homoeopathic immunotherapy”
3. Proposal development and approval

• Need for a formal document to succinctly summarize the outcomes of the needs assessment and question refinement stages

• Formal summary of discussed question and methods

• Use template to maximize efficiency (2-4 pages)
  [Sections: background; finalized research question(s); proposed methods; deliverables; timelines; ‘knowledge user role’ section – few lines of text that emphasizes the importance of their involvement – what is required of them]

• Serves as a point of reference for the end users and research team (and allows early identification of possible misinterpretation)

• Informs extended members of the research team (e.g. information specialist, research assistants)
4. Literature search

- A comprehensive search is conducted by an information specialist;
- Depending on search outcomes, can be a possible point at which to revisit the eligibility criteria based on identified evidence base (e.g., magnitude, complexity, available study designs).

<table>
<thead>
<tr>
<th>COMMON ELIGIBILITY RESTRICTIONS</th>
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<tbody>
<tr>
<td><strong>Criteria</strong></td>
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<tr>
<td>LANGUAGE</td>
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<td>PUBLICATION STATUS</td>
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<td>PUBLICATION DATE</td>
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<tr>
<td>GEOGRAPHICAL LOCATION</td>
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</tbody>
</table>
5. Screening and selecting studies

• First, download searches to Reference Manager® - a bibliometric database management software
• Search strategies, dates, yields and duplicate counts recorded in a formal search log
• References then uploaded to an Internet-based systematic review software (DistillerSR®) to facilitate screening
• Screening undertaken by two independent reviewers
  • title/abstracts (level 1); full-texts (level 2)
• Another point at which the eligibility criteria may need to be refined. This will depend on:
  • Volume of evidence
  • Applicability of evidence to end users context and needs
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  - title/abstracts (level 1); full-texts (level 2).
- Another point at which the eligibility criteria may need to be refined. This will depend on:
  - Volume of evidence.
  - Applicability of evidence to end users context and needs.
5. Screening and selecting studies

• For questions of treatment effectiveness – emphasis placed on locating & summarizing evidence from relevant, high quality SRs

• Aims to:
  • Limit unnecessary duplication of also including primary studies
  • Minimize resources needed to screen and summarize primary studies quickly
  • Minimize potential for bias and/or error that could be incurred by reviewing primary studies rapidly

• In absence of SRs, our approach may cautiously include:
  • High quality RCTs
  • High quality quasi-experimental and/or observational studies
  • Landmark, recent, and/or oft-cited studies

• However, with refinement of our approach and emphasis on more narrow questions, recent summaries have almost exclusively drawn from evidence reported in SRs.
6. Narrative synthesis of included studies

• Designed to provide knowledge users with a sense of the volume and direction of the available evidence
• No formal quantitative synthesis (e.g., meta-analysis)
• Synthesis presents main components of included studies (e.g., SRs):
  • Primary objectives
  • Primary methods
  • Primary findings
  • Main conclusions
  • Limitations – when applicable
  • Risk of bias assessment (AMSTAR scores)
• Bottom line summaries provided – each section question
• Overall report – key messages
What is evidence of the effectiveness and safety of emergency department short stay units?

Evidence Summary No. 11
Developed as part of the OHRI-Champlain LHIN Knowledge to Action research program
February 2011
The information in this report is a summary of available material and is designed to give readers (health systems stakeholders, policy and decision makers) a starting point in considering currently available research evidence. Whilst appreciable care has been taken in the preparation of the materials included in this publication, the authors do not warrant the accuracy of this document and deny any representation, implied or expressed, concerning the efficacy, appropriateness or suitability of any treatment or product. In view of the possibility of human error and advances of medical knowledge, the authors cannot and do not warrant that the information contained in these pages is current, accurate or complete. Accordingly, they shall not be responsible or liable for any errors or omissions that may be found in this publication. You should consult other sources in order to confirm the currency, accuracy and completeness of the information contained in this publication and, in the event that medical treatment is required you should take professional expert advice from a legally qualified and appropriately experienced medical practitioner.

Disclosure upfront that this is not intended to be a gold standard SR, and therefore needs to be interpreted with caution and viewed within a specific context for a specific end user.
Informative sidebar outlines the intended audience and explains the nature of included content.

“Key messages” section aims to summarize overall findings.

Intended to capture the attention of the end user as it may be all they read.

Primary research question as the title.
Table of contents indicated each subsection pertaining to the question

Brief background information on the subject matter is presented

Systematic review evidence is highlighted per question (includes AMSTAR rating)

“Bottom line” subsections aim to summarize the evidence under each sub-section
Brief summary of the methods used:

- Searches; sources;
- Eligibility criteria;
- Screening/extraction methods;
- Study types included;
- Reference to ROB

### Additional Information

This summary was produced:
The Knowledge to Action research program, a project of the Ottawa Methods Centre at the Ottawa Hospital Research Institute, which is funded by the Canadian Institutes of Health Research [KAI-86796].

#### Conflict of Interest

None declared

#### Acknowledgements

Many thanks to Rebecca Skidmore, Information Scientist, for designing and executing the search strategies for this review and to Raymond Daniel, Information Technician, for acquiring the resources. Thanks also go to Chantelle Garrity, Senior Research Project Manager, for conceptual feedback.

The format of this report is based on that developed by the SUPPORT Collaboration Network. [www.support-collaboration.org](http://www.support-collaboration.org)

This summary should be cited as: Konnyu K, Kowk E, Grimshaw J, Mohr D. What is evidence of the effectiveness and safety of emergency department short stay units? Ottawa Hospital Research Institute; February 2011.

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**Methods**

Detailed search strategies were developed by an experienced Information Specialist (specific search terms available upon request). Searching was limited to the following databases:

- Web of Science
- Cochrane Database of Systematic Reviews (CDSR)
- Database of Abstracts of Reviews of Effects (DARE)
- National Health Service Economic Evaluation Databases (NHS EED)

Search concepts included Medical Subject Headings (MeSH) and non-MeSH terms (i.e. text words). A ‘grey literature’ search was also conducted for potentially relevant studies by reviewing the websites of relevant organizations and professional bodies (available upon request). Screening was conducted by two reviewers, and quality assessment and extraction was done by one reviewer.

Based on the complexity, heterogeneity, and magnitude of the records, we chose to only include synthesized studies published during or after 2000. In addition, included citations had to have been published in English and be available in full text electronically. Of note, relevant primary studies however were screened and categorized, and are available upon request.

**Risk of Bias Assessment of Systematic Reviews**

AMSTAR is an 11-item measurement tool created to assess the methodological quality of systematic reviews. Each question is scored according to 1 of 4 options (yes, no, cannot answer, not applicable) and the number of ‘yes’ answers tallied. A higher score indicates increased methodological quality (Shea et al. 2007)

The 11 assessment criteria are as follows:

1. Was an “a priori” design provided?
2. Was there duplicate study selection and data extraction?
3. Was a comprehensive literature search performed?
4. Was the status of publication (i.e. grey literature) used as an inclusion criterion?
5. Was a list of studies (included and excluded) provided?
6. Were the characteristics of the included studies provided?
7. Was the scientific quality of the included studies assessed and documented?
8. Was the scientific quality of the included studies used appropriately in formulating conclusions?
9. Were the methods used to combine the findings of studies appropriate?
10. Was the likelihood of publication bias assessed?
11. Was the conflict of interest stated?

The AMSTAR score (from 0 to 11) for each systematic review in this evidence summary is reported in the box that appears at the beginning of each finding.
8. Ongoing follow-up with end users

- Input on final edits of penultimate draft
- Confirmation no material missing/misinterpretation of the evidence
- Ascertian (informal) feedback on the quality and usability of the report (email, conversation)
- Post-hoc have sought formal feedback on summaries and the KTA program in general during 30min-1hr interviews with end users
Short circuiting the process

• Are decision makers getting the “truth”?
# Systematic vs. Rapid Reviews

<table>
<thead>
<tr>
<th></th>
<th><strong>SYSTEMATIC REVIEW</strong></th>
<th><strong>RAPID REVIEW</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TIMEFRAME</strong></td>
<td>6 months – 2 years</td>
<td><strong>≤5 weeks; 6-8 wks</strong></td>
</tr>
<tr>
<td><strong>QUESTION</strong></td>
<td>Focused clinical question, narrow parameters</td>
<td>Focused to broad, clinical or health services question; possibly broader parameters</td>
</tr>
<tr>
<td><strong>SOURCES AND SEARCHES</strong></td>
<td>Comprehensive sources searched and explicit strategies</td>
<td>Sources may be limited but sources/strategies made explicit;</td>
</tr>
<tr>
<td><strong>SELECTION</strong></td>
<td>Exclusion/inclusion defined <em>a priori</em></td>
<td>Exclusion/inclusion defined <em>a priori</em> and <em>post hoc</em></td>
</tr>
<tr>
<td><strong>APPRAISAL</strong></td>
<td>Rigorous; Critical appraisal</td>
<td>Rigorous; Critical appraisal (SRs only)</td>
</tr>
<tr>
<td><strong>SYNTHESIS</strong></td>
<td>Narrative synthesis +/- Quantitative synthesis</td>
<td>Narrative synthesis/ categorization of the data</td>
</tr>
<tr>
<td><strong>INFERENCES</strong></td>
<td>Evidence-based – generates a conclusion to answer the research question</td>
<td>Limited/cautious interpretation of the findings to answer the research question</td>
</tr>
</tbody>
</table>
Wire-framed topic refinement program:
A look at the logic and interface of our question builder
EXAMPLE: adapting computer assisted survey interview techniques
to individual and group PICO/TS refinement
Build Your Question

These modules are designed to help you think through the important components of an issue you want to know more about and offer recommendations where useful. (Recommendations will be based on user generated data) In essence, these modules are about a process of refining topics to closely reflect the interventions and conditions you are interested in learning more about. The questions you build help inform researchers what to look for when retrieving evidence, which in turn help you make informed decisions.

Select any module as a starting point.

Questions in this section will ask you the particular patient, population, or problem you are interested in. You can choose to specify all three—patient, population, or a problem or just one.

- Population
- Intervention
- Comparison
- Outcome
- Timing
- Setting

User can start building by selecting any module above.
Cochrane Response Option

- Cochrane innovations
  - Rapid review option
  - Developed/consolidated various approaches
  - Awaiting pilot
Overview of our reports:

• Conducted a total of 19 rapid evidence summaries to date
  • 13 – focused on clinical initiatives
    • 9 across the field of obstetrics/gynaecology
    • 6 – focused on health systems/ health services initiatives
  • Requests came from various stakeholders (n=9)
www.ohri.ca/kta
## Evidence summaries to date

<table>
<thead>
<tr>
<th>REVIEW</th>
<th>REQUESTED BY</th>
<th>USED FOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pre-diabetes</td>
<td>Champlain Diabetes Strategy Advisory Committee</td>
<td>Backgrounder for clinical initiatives</td>
</tr>
<tr>
<td>2. Health system reform/integration</td>
<td>LHIN CEO</td>
<td>Backgrounder for system changes</td>
</tr>
<tr>
<td>3. Electronic health records</td>
<td>LHIN CEO</td>
<td>Backgrounder for system changes</td>
</tr>
<tr>
<td>4. Post-partum care for GDM</td>
<td>Champlain Diabetes Strategy Advisory Committee</td>
<td>Backgrounder for clinical initiatives</td>
</tr>
<tr>
<td>5. Timing of Elective, repeat C-section &lt;39wks</td>
<td>BORN Ontario</td>
<td>Evidentiary support for quality indicator ‘dashboard’</td>
</tr>
<tr>
<td>6. Intrapartum management of GDM</td>
<td>Champlain Diabetes Strategy Advisory Committee</td>
<td>Backgrounder for clinical initiatives</td>
</tr>
<tr>
<td>7. Pedometers &amp; CD</td>
<td>LHIN CEO; Chronic disease collaborative</td>
<td>Backgrounder for clinical initiatives</td>
</tr>
<tr>
<td>8. Formula supplementation in-hospital</td>
<td>BORN Ontario</td>
<td>Evidentiary support for quality indicator ‘dashboard’</td>
</tr>
<tr>
<td>9. 3rd/4th degree lacerations</td>
<td>BORN Ontario</td>
<td>Evidentiary support for quality indicator ‘dashboard’</td>
</tr>
<tr>
<td>10. Elective induction of term pregnancies</td>
<td>BORN Ontario</td>
<td>Evidentiary support for quality indicator ‘dashboard’</td>
</tr>
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### Evidence summaries to date

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<tbody>
<tr>
<td>11. ED short stay units</td>
<td>The Ottawa Hospital</td>
<td>Backgrounder for system changes</td>
</tr>
<tr>
<td>12. Models of patient flow</td>
<td>The Ottawa Hospital</td>
<td>Backgrounder for system changes</td>
</tr>
<tr>
<td>13. Unsatisfactory blood spot samples for newborn screening of congenital diseases*</td>
<td>BORN Ontario</td>
<td>Evidentiary support for quality indicator ‘dashboard</td>
</tr>
<tr>
<td>14. Episiotomy</td>
<td>BORN Ontario</td>
<td>Evidentiary support for quality indicator ‘dashboard</td>
</tr>
<tr>
<td>15. Screening to prevent newborn group B streptococcal infection</td>
<td>BORN Ontario</td>
<td>Evidentiary support for quality indicator ‘dashboard</td>
</tr>
<tr>
<td>16. Models of elderly care†</td>
<td>Regional Geriatric Program of Eastern Ontario</td>
<td>Backgrounder for policy/program planning</td>
</tr>
<tr>
<td>17. Physical activity and chronic disease†</td>
<td>LHIN chronic disease collaborative</td>
<td>Backgrounder for policy/program planning</td>
</tr>
<tr>
<td>18. Pre-op rehabilitation interventions for total knee arthroplasty</td>
<td>Alberta Bone and Joint Group</td>
<td>Backgrounder for policy/program planning</td>
</tr>
<tr>
<td>19. Antimicrobial stewardship programs</td>
<td>The Ottawa Hospital – Patient Safety</td>
<td>Backgrounder for policy/program planning</td>
</tr>
</tbody>
</table>

*Evidence brief; † Evidence map
Thinking more deeply about Ottawa’s approach to rapid reviews

- Methodology
- Reporting

- Local context
  - Assessing generalizability to stakeholder setting

- Health equity
  - Whose going to be disadvantaged?

- Economic evidence
  - Possibly relevant - dependent of requester)
Things to consider…

1)  Existence of evidence to summarize
   • Evidence exists and *is* reported
   • Evidence exists, but *is not* reported (or is reported poorly)
   • Evidence *does not exist*

2)  Balance between breadth of evidence and depth of rapid review synthesis for particular question (tradeoff between going deeper if Q is more narrow vs. only touching the surface if Q is broader)

3)  Size of team conducting rapid review – what resources are available for short, intense period of time?
4) Important to anticipate the level of engagement/availability of end user – especially during protocol development and screening of records
   • Vital component to this process
   • Need to identify a go to person within your stakeholder group; someone willing to be on call to answer your questions; relay information back and forth from knowledge users

5) Access (internally or externally) to skilled resources
   • Information specialists
   • Data managers
   • Content experts
   • Other?

6) Access to library subscriptions for resources
   • If not, alternative sources/approaches? Limits on interpretation?