

# Systematic reviews vs. rapid reviews: What's the difference?

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CADTH Rapid Review Summit

# Objectives

- To discuss the difference between rapid reviews and systematic reviews
- To present results from 3 methods projects on rapid reviews
- To select a rapid review approach that will be tested in a diagnostic study

# What is a Systematic Review?

# Definition of Systematic Review

- Cochrane Collaboration definition:

A systematic review uses systematic and explicit methods to identify, select, critically appraise, and extract and analyze data from relevant research [Higgins & Green 2011]

# Systematic review example

CMAJ

RESEARCH

## **Efficacy and safety of cognitive enhancers for patients with mild cognitive impairment: a systematic review and meta-analysis**

Andrea C. Tricco PhD MSc, Charlene Soobiah BSc, Shirra Berliner RN MSc, Joanne M. Ho MD, Carmen H. Ng MSc BSc, Huda M. Ashoor BSc, Maggie H. Chen PhD MSc, Brenda Hemmelgarn MD PhD, Sharon E. Straus MD MSc

CMAJ, November 5, 2013, 185(16)

Conducted for the Drug Safety and Effectiveness Network

St. Michael's  
Inspired Care. Inspiring Science.



# A systematic review usually has...

- ✓ Protocol registered with PROSPERO and published in Sys Rev journal
- ✓ Comprehensive and systematic literature search (6 databases)
- ✓ Pre-defined inclusion and exclusion criteria (i.e., study eligibility criteria)
- ✓ Risk of bias appraisal (Cochrane for trials, McHarm for reporting harms)
- ✓ Pre-defined data abstraction form
- ✓ Synthesis based on the totality of evidence
- ✓ Discussion, providing limitations of included studies and review process
- ✓ Each step conducted by 2 reviewers, independently

# Limitations of systematic reviews

- Systematic reviews take an average 1,139 hours (range 216 to 2,518 hours) to complete
- Usually require a budget of at least \$100,000 [Petticrew, 2006]
- Very resource-intensive

**Example:** 1 year to conduct, 6 months to publish, 11 randomized trials included

# What is a Rapid Review?

# Definition of Rapid Review

- Formal definition does not exist

Rapid reviews are a form of knowledge synthesis in which components of the systematic review process are simplified or omitted to produce information in a timely manner [Khangura 2012]

# Rapid review example



**Comparative safety and effectiveness of inhaled long-acting agents (corticosteroids, beta agonists) for chronic obstructive pulmonary disease (COPD): A rapid review and network meta-analysis**

Andrea C. Tricco, Lisa Strifler, Fatemeh Yazdi, Paul Khan,  
Carmen Ng, Jesmin Antony, Kelly Mrklas, Alistair Scott, Jennifer D'Souza, Roberta Cardoso, Sharon E. Straus.

Conducted for the Ontario Drug Policy Research Network

# A rapid review usually has...

- ✓ Protocol registered with PROSPERO and published in ~~Sys Rev journal~~
- ✓ Comprehensive and systematic literature search (~~X~~ 3 databases)
- ✓ Pre-defined inclusion and exclusion criteria (i.e., study eligibility criteria)
- ✓ Risk of bias appraisal (Cochrane for trials, ~~McHarm for reporting harms~~)
- ✓ Pre-defined data abstraction form
- ✓ ~~Synthesis based on the totality of evidence~~
- ✓ Discussion, providing limitations of included studies and review process
- ✓ Each step conducted by ~~X~~ 1 reviewers, ~~independently~~

# Limitations of rapid reviews

- Might be susceptible to bias as a consequence of streamlining the systematic review process
  - Sampling bias, choosing studies bias, obtaining accurate data bias [Tricco, 2008]
- We currently don't know the extent of this bias

**Example:** 4 months to conduct and submit report, 183 randomized trials included

# What are other similarities and differences between systematic reviews and rapid reviews?

# Systematic reviews vs rapid reviews

**Table 1 General comparison of rapid review versus systematic review approaches <sup>a</sup>**

	<b>Rapid review</b>	<b>Systematic review</b>
<b>Timeframe<sup>b</sup></b>	≤ 5 weeks	6 months to 2 years
<b>Question</b>	Question specified <i>a priori</i> (may include broad PICOS)	Often a focused clinical question (focused PICOS)
<b>Sources and searches</b>	Sources may be limited but sources/strategies made explicit	Comprehensive sources searched and explicit strategies
<b>Selection</b>	Criterion-based; uniformly applied	Criterion-based
<b>Appraisal</b>	Rigorous; critical appraisal (SRs only)	Rigorous; critical appraisal
<b>Synthesis</b>	Descriptive summary/categorization of the data	Qualitative summary +/- meta-analysis
<b>Inferences</b>	Limited/cautious interpretation of the findings	Evidence-based

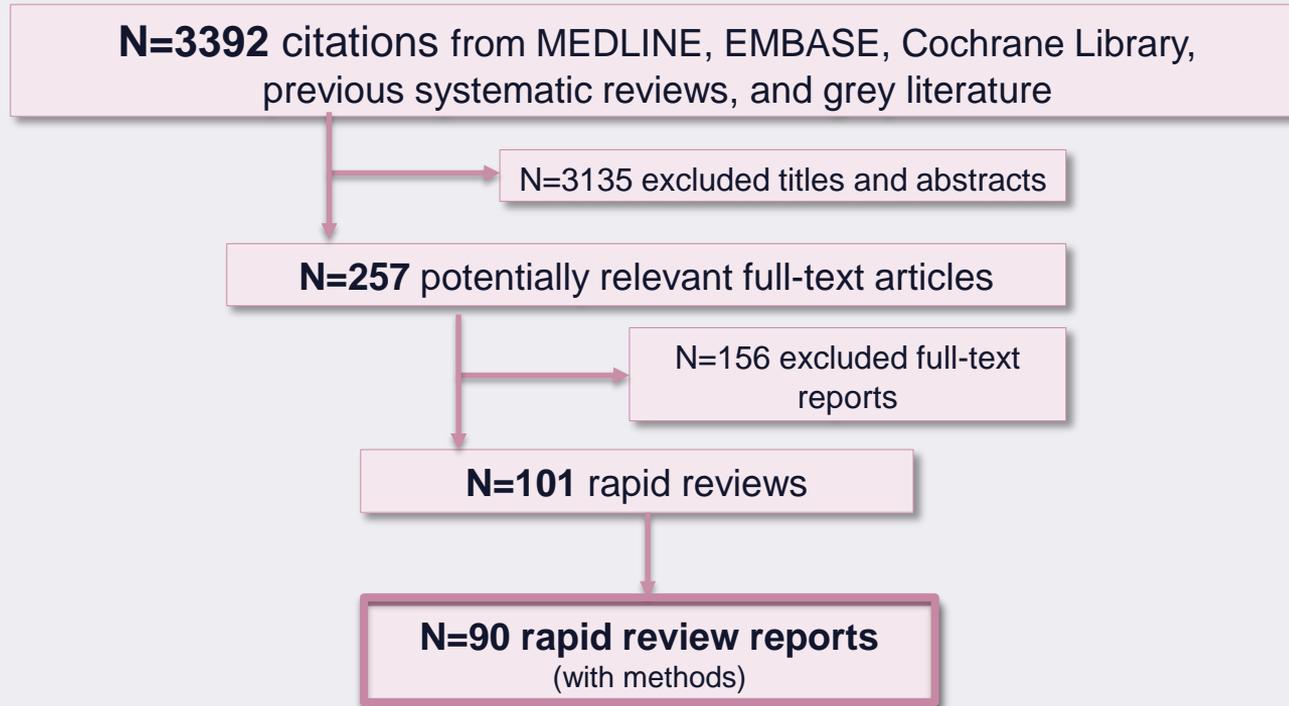
Khangura, 2012

# Methods project 1: Update of 2 systematic reviews on rapid reviews

# Objective and methods

- Objective:
  - To update 2 previous systematic reviews [Ganann 2010; Watt 2008] on rapid review methods
- Methods:
  - Searched multiple electronic databases and a sample of grey literature
  - 2 reviewers independently screened citations, full-text articles, and abstracted data

# Results



# Results (continued)

Study Characteristics		No. of Rapid Reviews (n=101)
Year of Publication	1997-2000	3
	2001-2005	13
	2006-2010	44
	2011	17
	2012	16
	2013	4
	Not Reported	4
	Country	Australia
Europe (including UK)		61
North America (Canada & USA)		20
Asia		1
South America		1
Africa		1

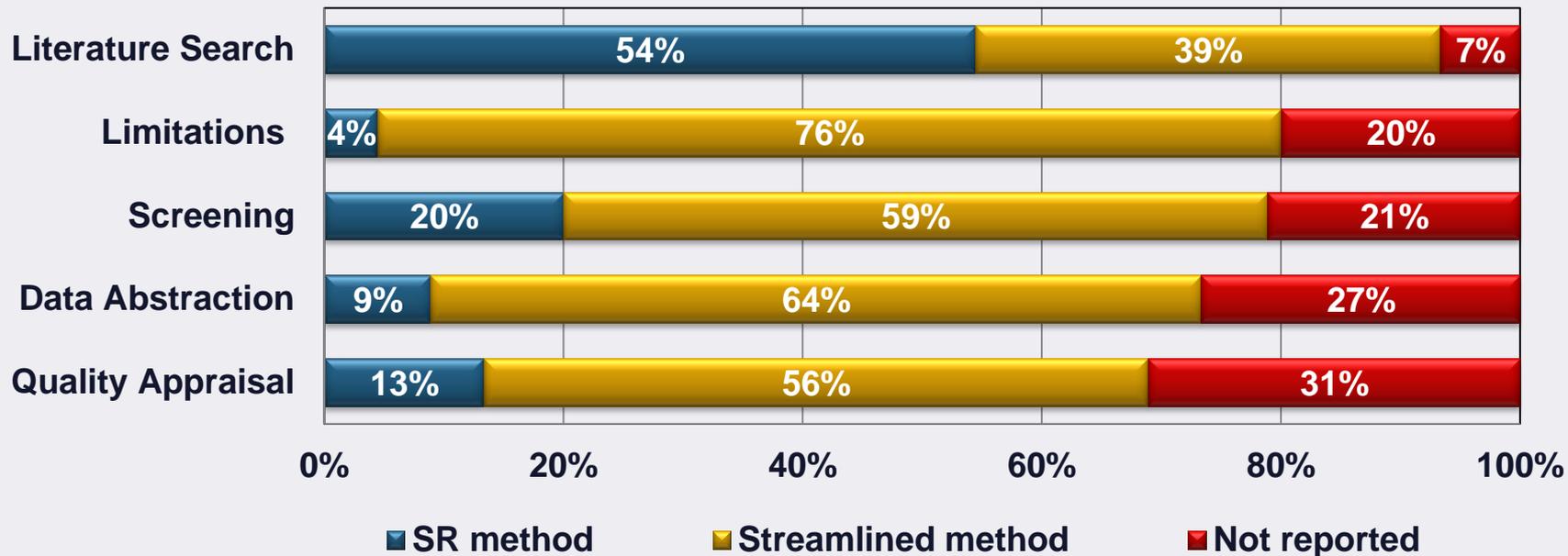
Study characteristics

# Results (continued)

Study Characteristics	No. of Rapid Reviews (n=101)
<b>Article Type</b>	Application 84
	Comparison 4
<b>Duration of Review</b>	< 1 month 3
	1-6 months 18
	7-12 months 3
	Not Reported 77
<b>Full Methods Reported</b>	Yes 90
	No 11
<b>Protocol</b>	Protocol published 2
	Protocol not mentioned 99

Study characteristics (continued)

# Results (continued)



Methods characteristics

# Conclusions

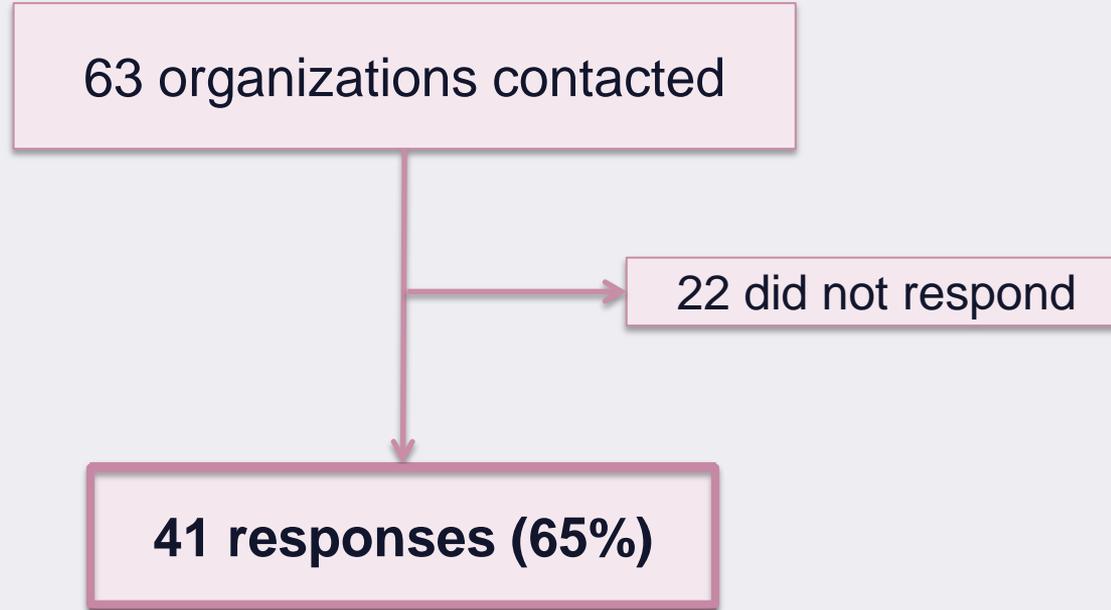
- Several rapid review reports identified
- Little consistency exists in the field
- Methods not well reported in the literature
- Prospective study that compares the results from a rapid review and a systematic review has never been conducted

# Methods project 2: Survey of organizations that conduct rapid reviews

# Objective and methods

- Objective:
  - To survey organizations conducting rapid reviews
- Methods:
  - International survey of 63 organizations administered via FluidSurvey
  - Survey pilot-tested prior to administration
  - Reminders to non-respondents sent every 2 weeks

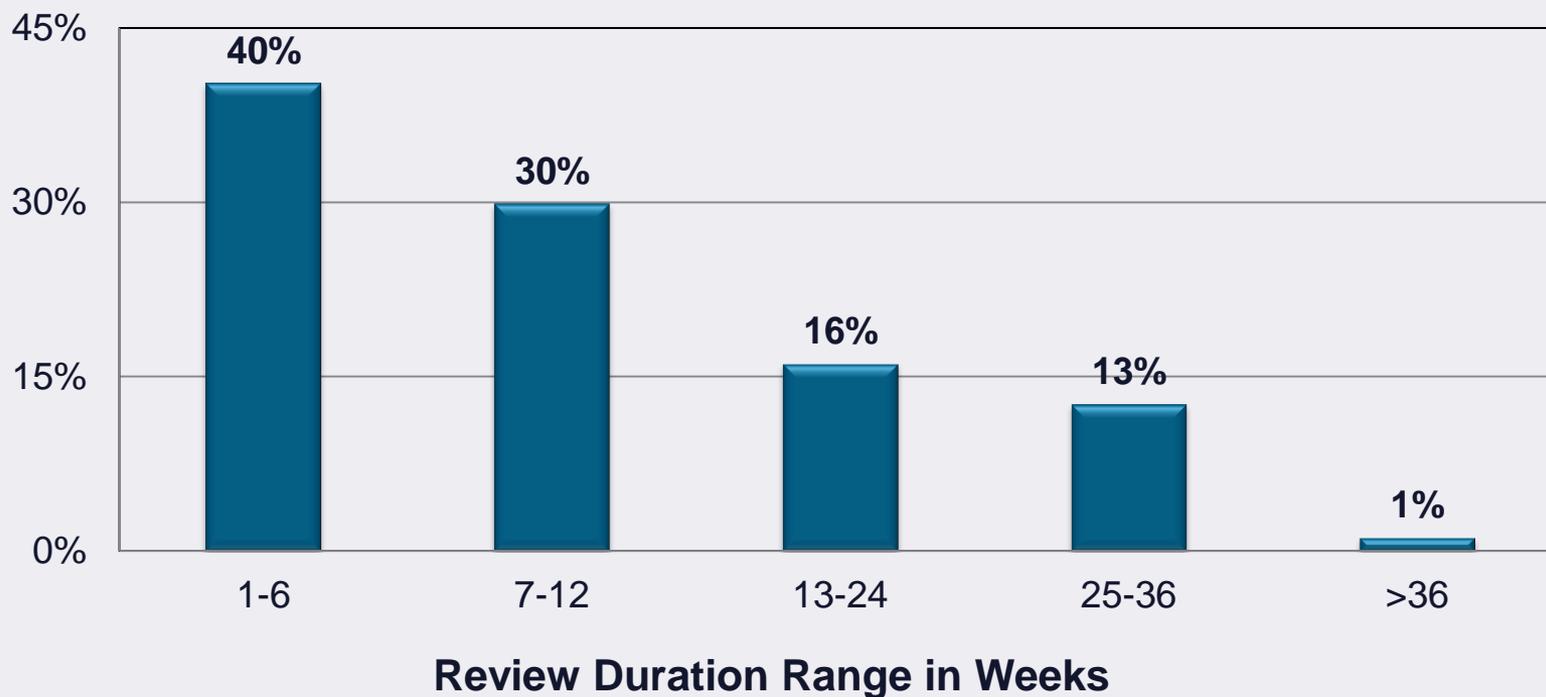
# Results



Study flow figure of participants

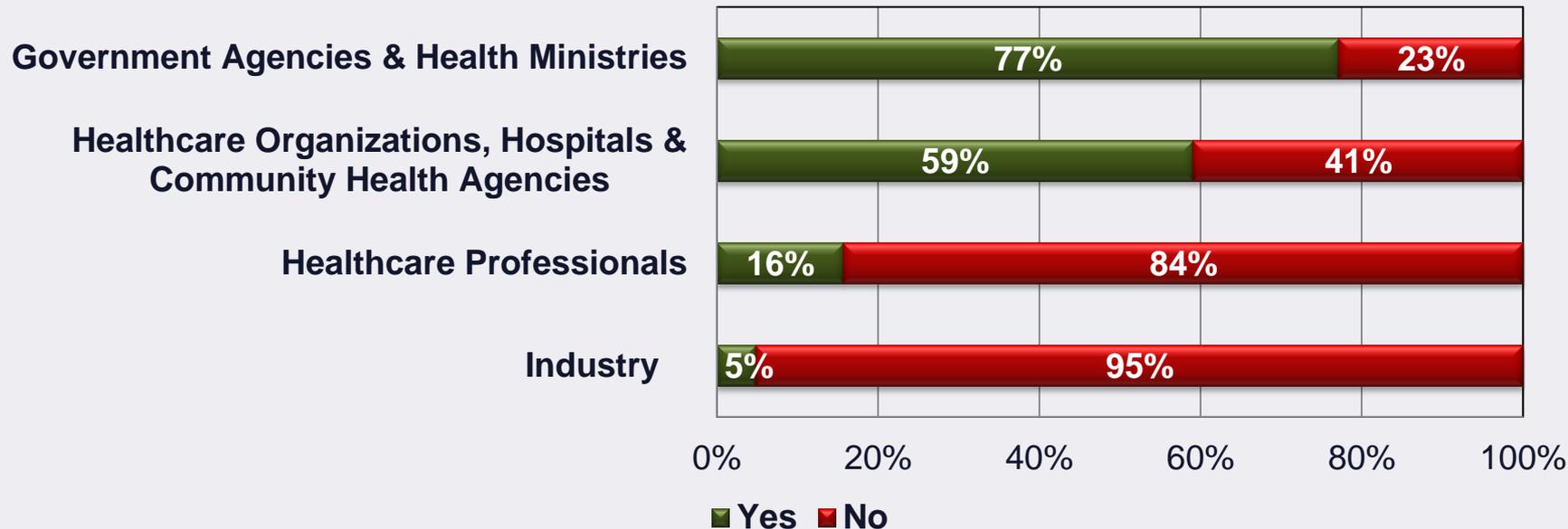


# Results (continued)



Duration of review

# Results (continued)



Commissioning agency

# Results (continued)

Review Stage	Most frequent streamlined approach	% Yes
Identifying relevant studies	Used previous review(s) as a starting point	94%
Limitations on search strategy	Limited review by date of publication	90%
Identifying relevant studies	Screening conducted by ONE reviewer only	85%
Data Abstraction	Data abstraction performed by ONE reviewer only	83%
Quality (risk of bias) appraisal process	Risk of bias assessed by ONE reviewer only	85%
Synthesis	Narrative summary	90%

Summary results of most frequent streamlined approach

# Conclusions

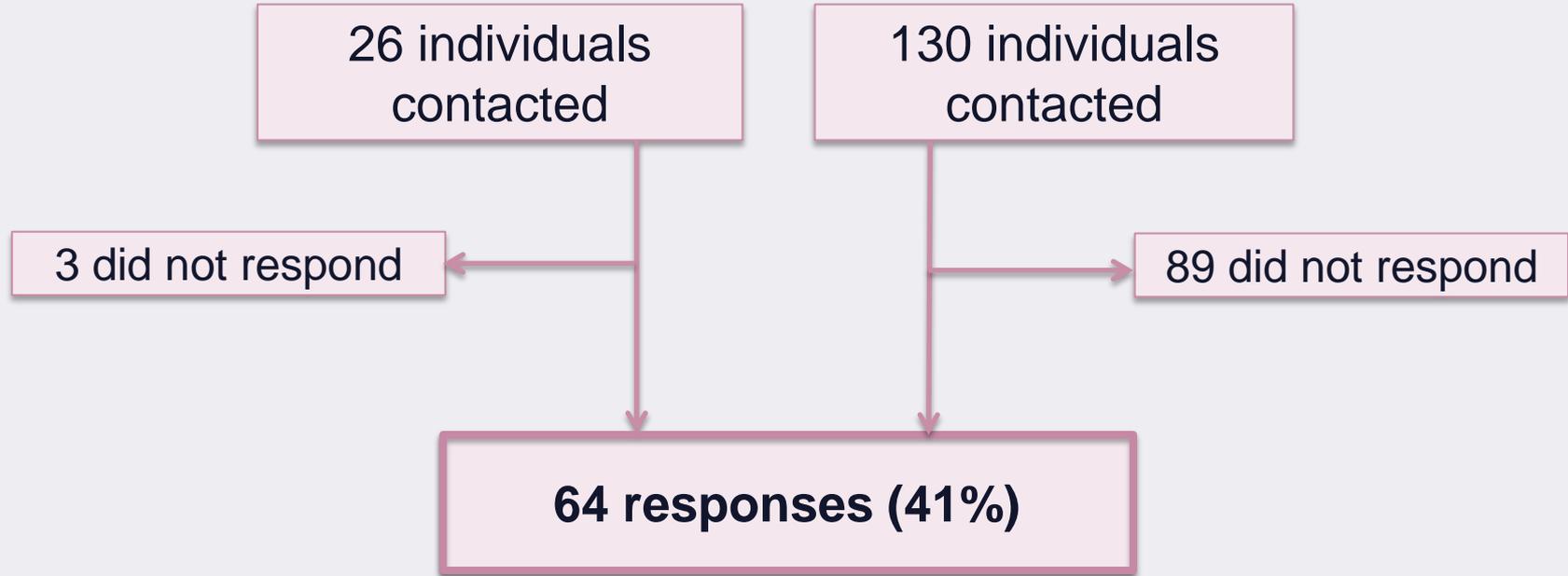
- Varied terminology used to describe a rapid review
- Rapid reviews usually conducted in 1-12 weeks
- Government agencies and health ministries are primary commissioners
- Many different streamlined methods being used

# Methods project 3: Delphi to select a candidate review method

# Objective and methods

- **Objective:**
  - To conduct a consensus-building exercise to select a rapid review approach that will be prospectively tested in a diagnostic study
- **Methods:**
  - Invited editors, healthcare providers, researchers, and policy-makers
  - Participants asked to rank the 6 most frequent rapid review approaches identified in our SR and survey (see handout)
  - Results presented to participants and discussion facilitated
  - Final re-ranking of the survey to follow

# Results



Study flow figure of participants

# Results (2)

<b>Rapid review Approach</b>	<b>Feasibility</b>	<b>Timeliness</b>	<b>Comprehensiveness</b>	<b>Risk of Bias</b>
Approach 1	<b>1st</b>	2nd	5th	<b>1st</b>
Approach 2	2nd	<b>1st</b>	6th	5th
Approach 3	5th	3rd	3rd	4th
Approach 4	3rd	4th	2nd	6th
Approach 5	4th	5th	<b>1st</b>	2nd
Approach 6	6th	6th	4th	3rd

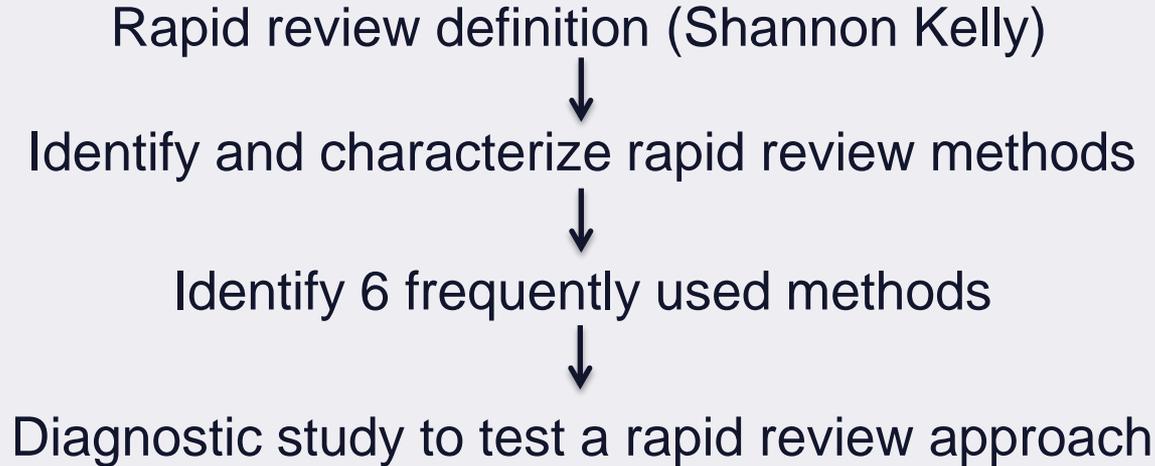
\*Ranked based on the distribution of "very" and "extremely" on the 7-point Likert scale, except Risk of Bias was ranked on distribution of "not at all" and "very"

## Summary of ranking results by approach

# Conclusion

- The highest ranked method was: Approach 1
  - 1<sup>st</sup> in feasibility and risk of bias,
  - 2<sup>nd</sup> in timeliness
- We will use the information from the e-delphi alongside the in-person delphi from today to select the rapid review approach for our study

# Ultimate goal of this research



“We can give you results within 4 months, but the meta-analysis estimates will be biased by 35%”.

# Proposed diagnostic study

- Will use these results to inform a diagnostic study:
- Index test: Rapid Review Approach
- Reference standard: Systematic Review
- 3 Canadian Knowledge Synthesis Centers
- Targeting CIHR and PCORI (need US partners)

Diagnostic Accuracy of Rapid reviews compared To  
Systematic reviews (DARTS)

# Summary

- Rapid reviews differ from systematic reviews because short cuts are taken to make the process more efficient
- Rapid reviews are particularly attractive to policy-makers
- Bias resulting from these short cuts is unclear
- Research is being conducted to address this gap

# Rapid Reviews Series in the Systematic Reviews Journal

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**Explore Systematic Reviews**

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# Acknowledgements

- Canadian Institutes of Health Research/Drug Safety and Effectiveness Network
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  - New investigator award
- Research team: Jesmin Antony, Wasifa Zarin
- Co-investigators: Drs. Straus, Moher, Hutton, Sherifali

# Questions?

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# In-person discussion: Ranking the most frequent rapid review methods

# Objective

To conduct an online survey and consensus-building exercise (Delphi) to select a rapid review approach that will be tested in a study called DARTS (Diagnostic Accuracy of Rapid reviews compared To Systematic reviews)

## Chatham House Rule:

Participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed

# Vote now!

- [www.slido.com](http://www.slido.com)
- [#RapidReview](https://twitter.com/RapidReview)

## Rapid Review Approach 1

**Literature search:** searched more than one database, limited to published sources only

**Search limit:** limited by **both** date and language

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** one person abstracted data, while another person verified

**Risk of bias assessment:** one person assessed for risk of bias, while another person verified

### Feasibility

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
1	2	3	2	5	<b>17</b>	11



## Rapid Review Approach 1

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### Timeliness

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	3	1	8	11	<b>12</b>	6



## Rapid Review Approach 1

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### Comprehensiveness

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
1	5	6	8	<b>11</b>	10	0

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**Data abstraction:** one person abstracted data, while another person verified

**Risk of bias assessment:** one person assessed for risk of bias, while another person verified

### Risk of Bias

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	<b>11</b>	9	5	10	5	1

## Rapid Review Approach 2

**Literature search:** used previous systematic review(s) as a starting point to identify relevant studies; no grey literature search was conducted

**Search Limit:** search *not* limited by language or date

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

### Feasibility

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
1	0	2	1	10	<b>18</b>	9



## Rapid Review Approach 2

**Literature search:** used previous systematic review(s) as a starting point to identify relevant studies; no grey literature search was conducted

**Search Limit:** search *not* limited by language or date

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

### Timeliness

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	1	1	6	8	<b>16</b>	9



## Rapid Review Approach 2

**Literature search:** used previous systematic review(s) as a starting point to identify relevant studies; no grey literature search was conducted

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**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

## Comprehensiveness

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
1	6	11	6	<b>15</b>	2	0

## Rapid Review Approach 2

**Literature search:** used previous systematic review(s) as a starting point to identify relevant studies; no grey literature search was conducted

**Search Limit:** search *not* limited by language or date

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

### Risk of Bias

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	1	4	2	13	<b>14</b>	7



## Rapid Review Approach 3

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by both date and language

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

### Feasibility

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
1	1	3	4	9	<b>17</b>	6



## Rapid Review Approach 3

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by both date and language

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

## Timeliness

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	2	2	6	13	<b>14</b>	4



## Rapid Review Approach 3

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by both date and language

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

## Comprehensiveness

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	1	7	3	<b>14</b>	<b>14</b>	2

## Rapid Review Approach 3

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by both date and language

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

## Risk of Bias

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	2	6	2	<b>13</b>	<b>13</b>	5

## Rapid Review Approach 4

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by either date or language

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

### Feasibility

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	0	3	4	11	<b>18</b>	5



## Rapid Review Approach 4

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by either date or language

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

## Timeliness

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	2	2	5	<b>20</b>	10	2



## Rapid Review Approach 4

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by either date or language

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

## Comprehensiveness

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	1	6	7	10	<b>16</b>	1

## Rapid Review Approach 4

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by either date or language

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

### Risk of Bias

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	1	7	1	<b>15</b>	14	2



## Rapid Review Approach 5

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by date only; no language limit

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** risk of bias assessed by one reviewer only

### Feasibility

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	1	4	5	7	<b>20</b>	4



## Rapid Review Approach 5

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by date only; no language limit

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** risk of bias assessed by one reviewer only

## Timeliness

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
1	2	3	11	<b>14</b>	8	2



## Rapid Review Approach 5

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by date only; no language limit

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** risk of bias assessed by one reviewer only

## Comprehensiveness

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	1	5	3	14	<b>16</b>	2

## Rapid Review Approach 5

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by date only; no language limit

**Screening:** title/abstract and full-text screening performed by one reviewer only

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** risk of bias assessed by one reviewer only

### Risk of Bias

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	8	9	8	<b>11</b>	5	0

## Rapid Review Approach 6

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by both date and language

**Screening:** title/abstract and full-text screening performed by two independent reviewers

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

### Feasibility

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	3	2	5	10	<b>18</b>	3

## Rapid Review Approach 6

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by both date and language

**Screening:** title/abstract and full-text screening performed by two independent reviewers

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

### Timeliness

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	3	6	8	<b>15</b>	7	1

## Rapid Review Approach 6

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by both date and language

**Screening:** title/abstract and full-text screening performed by two independent reviewers

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

## Comprehensiveness

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	2	2	3	<b>23</b>	9	1

## Rapid Review Approach 6

**Literature search:** searched more than one database, searched both published and grey literature

**Search limit:** limited by both date and language

**Screening:** title/abstract and full-text screening performed by two independent reviewers

**Data abstraction:** data abstraction performed by one reviewer only

**Risk of bias assessment:** not performed

### Risk of Bias

1 Not at all	2 Low	3 Somewhat	4 Neutral	5 Moderately	6 Very	7 Extremely
0	3	<b>11</b>	5	<b>11</b>	10	1

**Thank you for participating!**