

NIHR CRSU

Complex Reviews Support Unit

Evidence Synthesis: Navigating an Evolving Landscape

CRSU reflections – four stars and a wish

Terry Quinn @DrTerryQuinn

The Complex Reviews Support Unit (CRSU) is funded by the National Institute for Health Research (project number 14/178/29)

The views and opinions expressed herein are those of the authors and do not necessarily reflect those of NIHR, NHS or the Department of Health

NIHR CRSU

Complex Reviews Support Unit

We helped review groups ask the
right questions

An aerial photograph of a winding asphalt road that snakes through rolling green hills. The road has white dashed lines and a wooden fence on its outer edge. The hills are covered in lush green grass, and the lighting suggests a bright, sunny day. The road starts in the upper right, curves left, then right, then left again, and finally curves right towards the bottom right of the frame.

Setting a question

Searching the literature

Extracting data

Assessing quality

Analysis of data

Writing the report

An aerial photograph of a winding asphalt road that curves through rolling green hills. The hills are covered in grass and some small trees. The road has white dashed lines and a wooden fence runs along its edge. The lighting is bright, suggesting a sunny day.

Setting a question

Searching the literature

Extracting data

Assessing quality

Analysis of data

Writing the report

An aerial photograph of a winding asphalt road that curves through rolling green hills. The hills are covered in grass and some yellow wildflowers. The road has white dashed lines and a wooden fence runs along its edge. The lighting is bright, suggesting a sunny day.

Setting a question

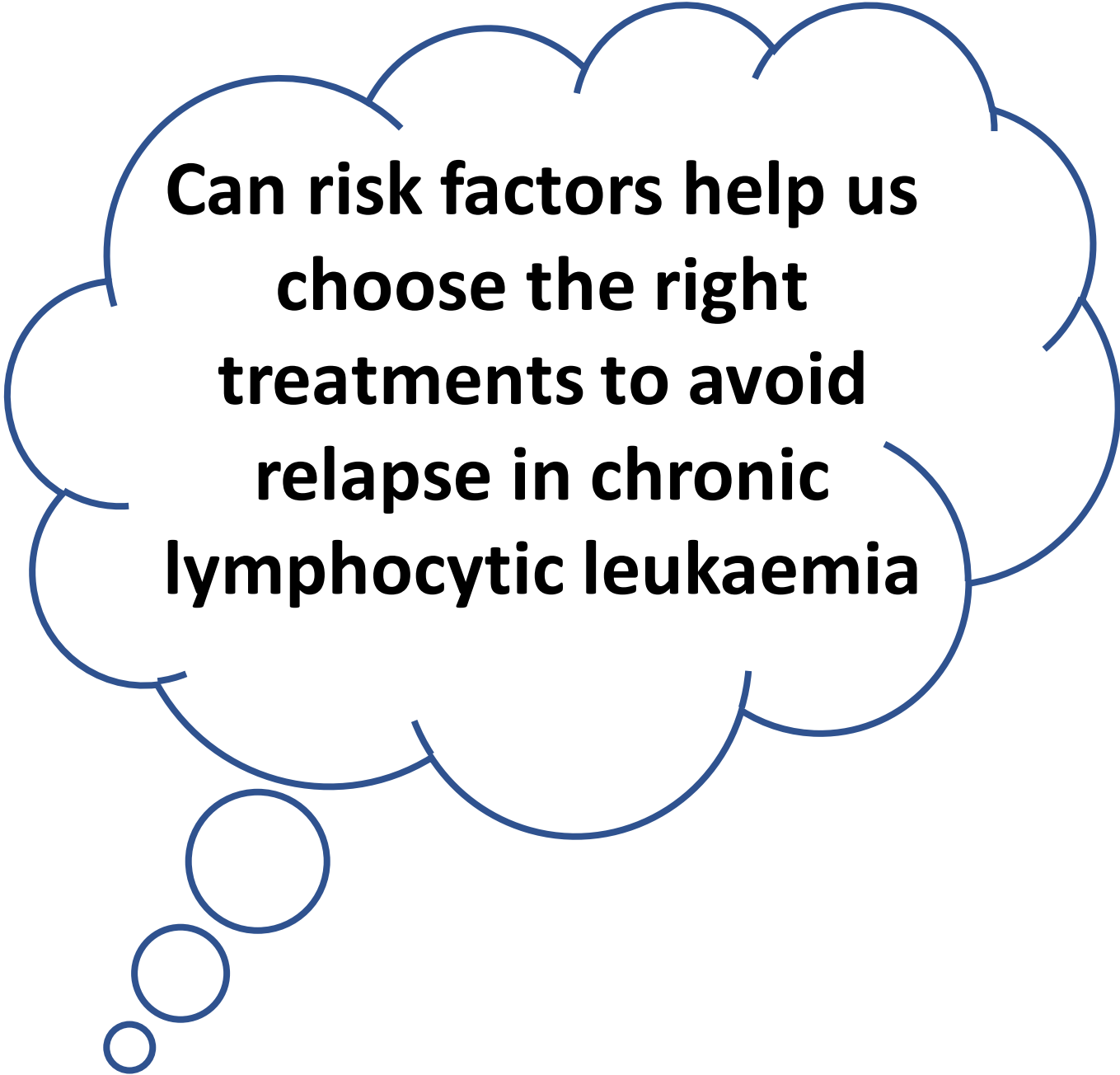
Searching the literature

Extracting data

Assessing quality

Analysis of data

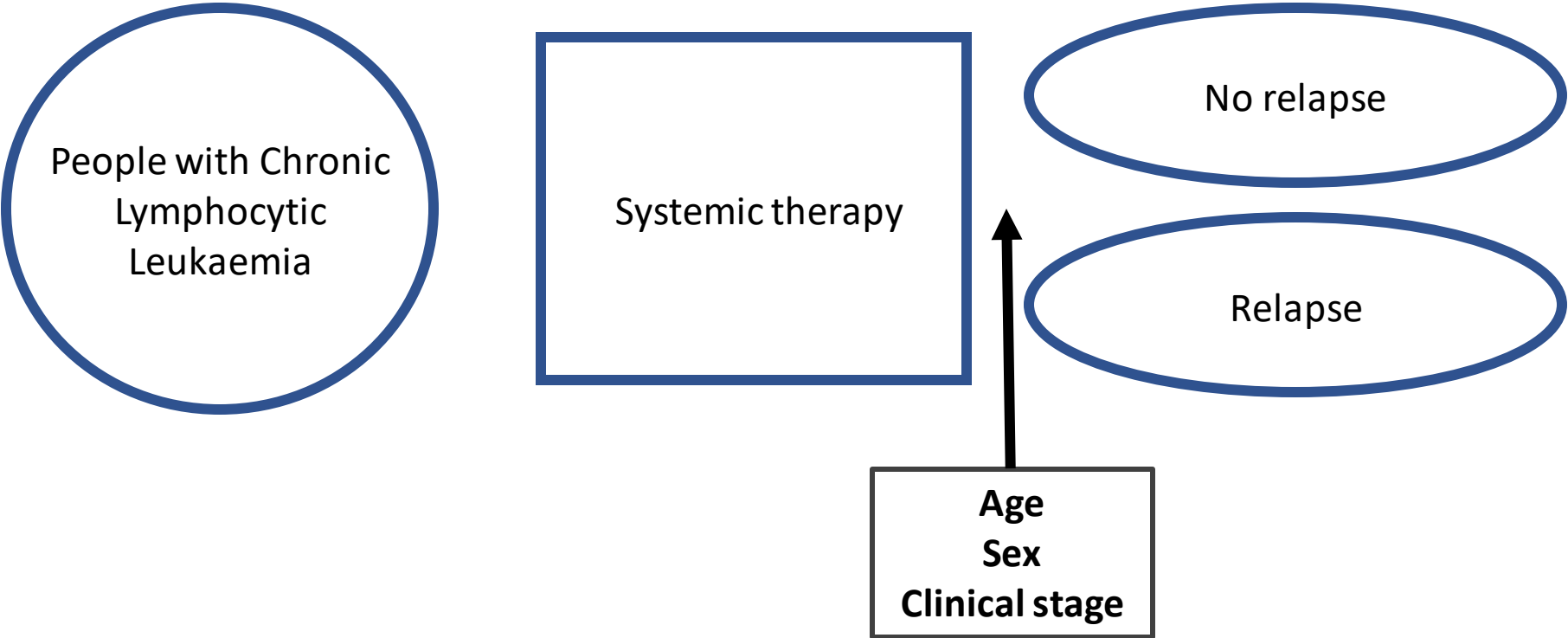
Writing the report

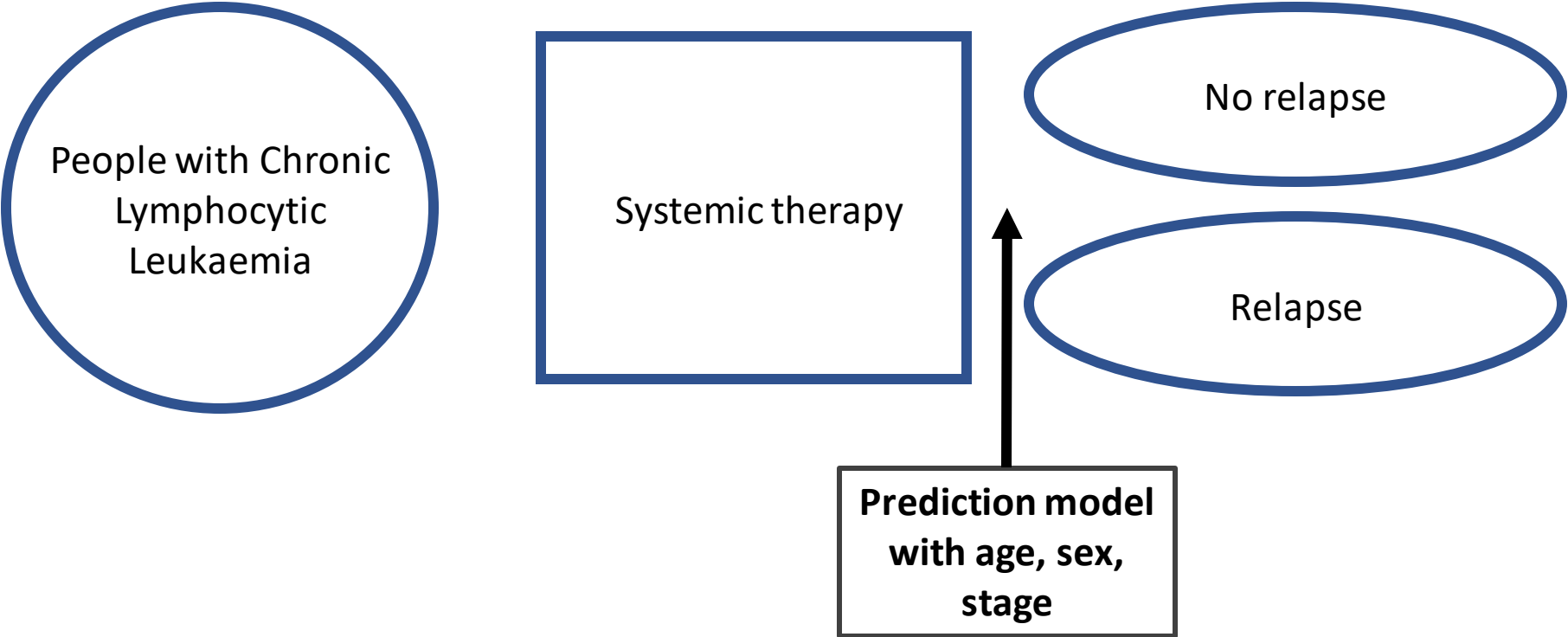


**Can risk factors help us
choose the right
treatments to avoid
relapse in chronic
lymphocytic leukaemia**

Method?

- A. Intervention review (pair-wise)**
- B. Interview review (network)**
- C. Test accuracy review**
- D. Prognosis review (prog model)**
- E. Prognosis review (prog factor)**





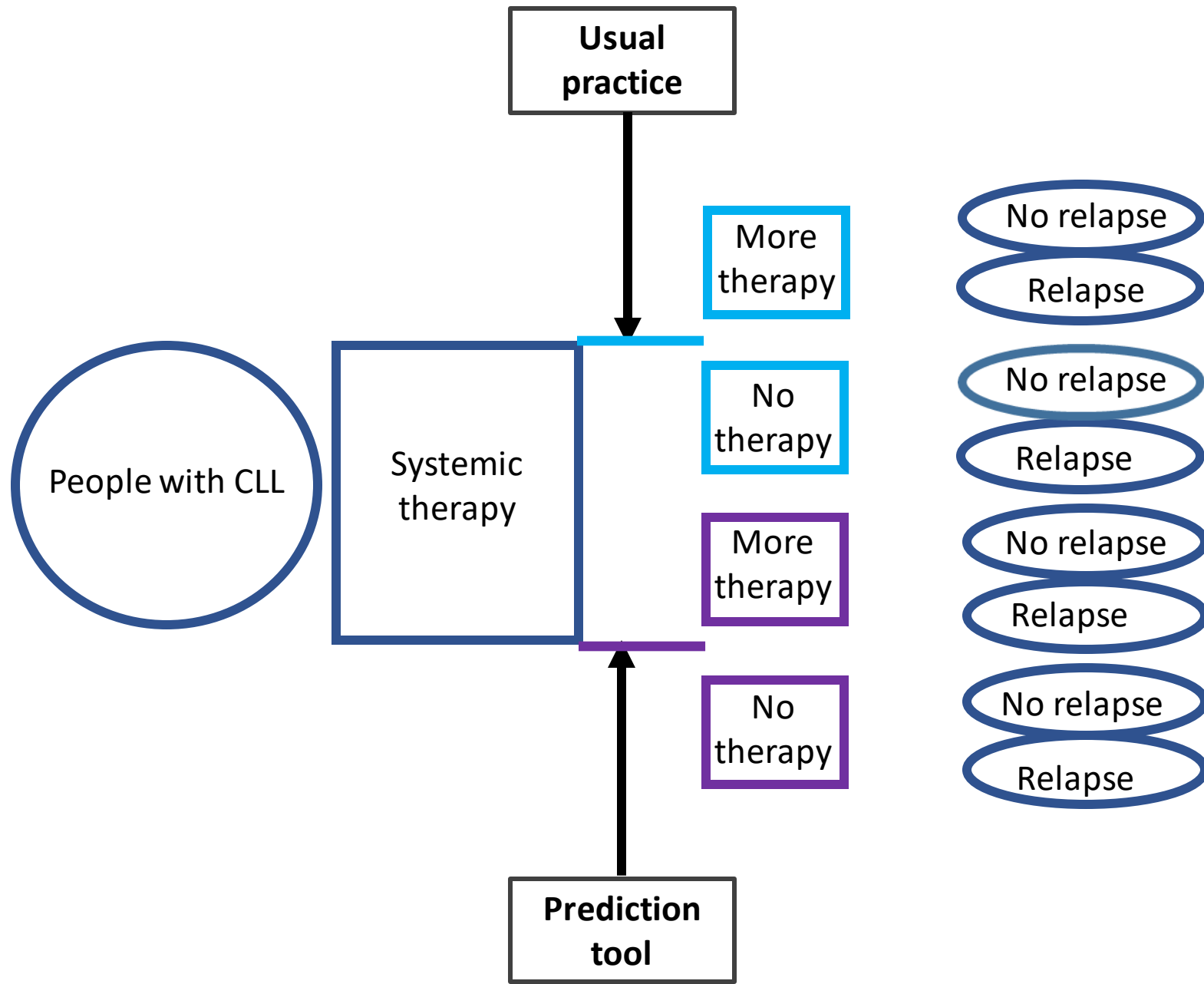
People with Chronic
Lymphocytic
Leukaemia

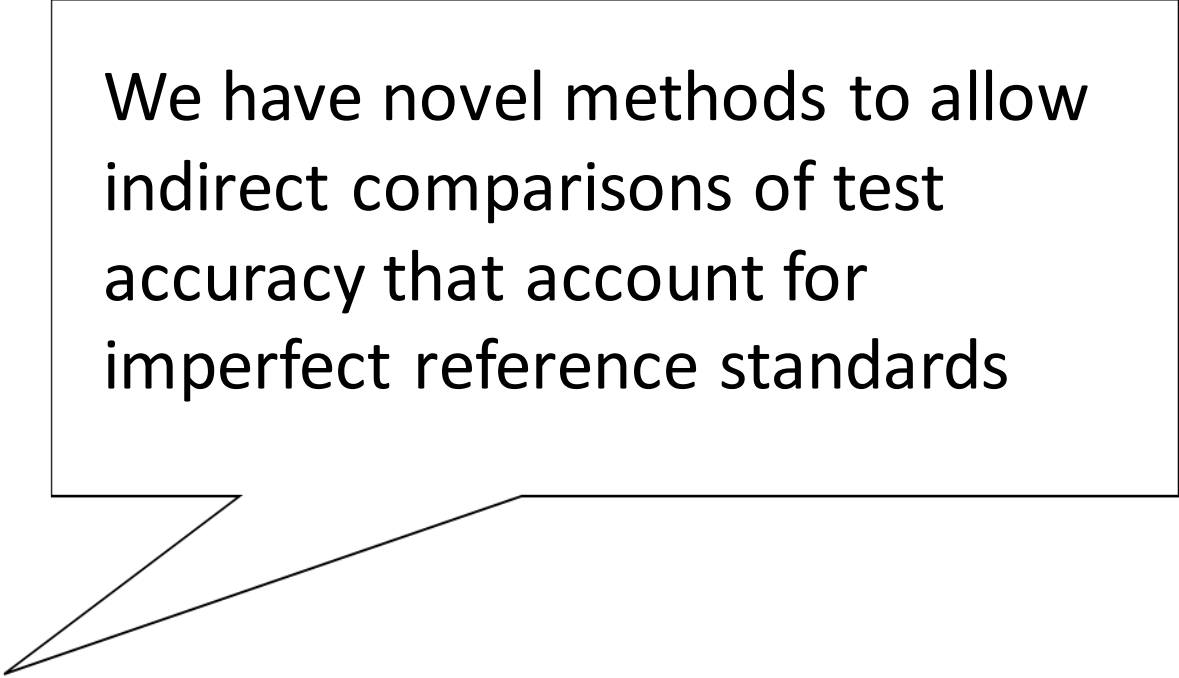
Systemic therapy

No relapse

Relapse

**Prediction model
with age, sex,
stage**



A speech bubble with a rectangular body and a tail pointing towards the bottom-left. The text inside is centered and reads: "We have novel methods to allow indirect comparisons of test accuracy that account for imperfect reference standards".

We have novel methods to allow indirect comparisons of test accuracy that account for imperfect reference standards

We have novel methods to allow indirect comparisons of test accuracy that account for imperfect reference standards

We want to know the best screening test for dementia



**Cochrane
Library**

Cochrane Database of Systematic Reviews

AD-8 for detection of dementia across a variety of healthcare settings (Review)

Hendry K, Green C, McShane R,



**Cochrane
Library**

Cochrane Database of Systematic Reviews

Structural magnetic resonance imaging for the early diagnosis of dementia due to Alzheimer's disease in people with mild cognitive impairment (Review)

Lombardi G, Crescioli G, Cavedo G, Frisoni G, Virgili G, Filippini G



**Cochrane
Library**

Cochrane Database of Systematic Reviews

CSF tau and the CSF tau/ABeta ratio for the diagnosis of Alzheimer's disease dementia and other dementias in people with mild cognitive impairment (MCI) (Review)

Ritchie C, Smailagic N, Noel-Storr AH, Ukoumunne O, Ladds EC, Martin S

ORIGINAL ARTICLE

Network meta-analysis of diagnostic test accuracy studies identifies and ranks the optimal diagnostic tests and thresholds for health care policy and decision-making

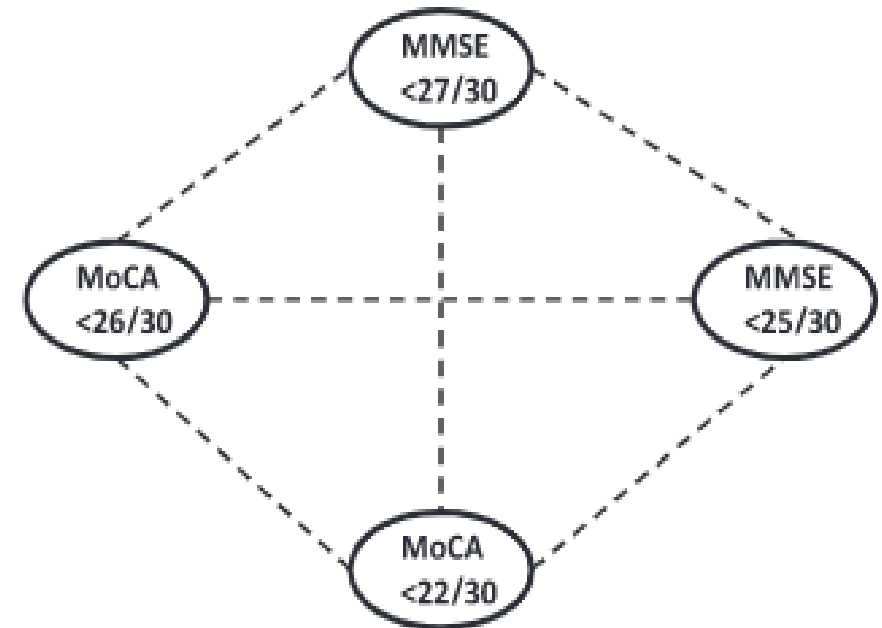
Rhiannon K. Owen^{a,*}, Nicola J. Cooper^a, Terence J. Quinn^b, Rosalind Lees^b, Alex J. Sutton^a

^aDepartment of Health Sciences, University of Leicester, Leicester, UK

^bInstitute of Cardiovascular and Medical Sciences, University of Glasgow, Glasgow, UK

Accepted 7 March 2018; Published online 13 March 2018

Test	Sensitivity (95% CrI)	Specificity (95% CrI)	Rank best sensitivity (95% CrI)	P (Best) sensitivity	Rank best specificity (95% CrI)	P (Best) specificity
Without threshold constraints						
MMSE <25	0.72 (0.61, 0.82)	0.84 (0.79, 0.89)	4 (3,4)	0	1 (1, 2)	0.97
MMSE <27	0.89 (0.81, 0.95)	0.58 (0.45, 0.70)	2 (2,3)	0.01	3 (3, 3)	0
MoCA <22	0.82 (0.70, 0.91)	0.77 (0.67, 0.85)	3 (2,4)	0	2 (1, 2)	0.03
MoCA <26	0.97 (0.94, 0.99)	0.35 (0.23, 0.48)	1 (1,1)	0.99	4 (4, 4)	0



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We formed a relationship with
review groups



**Cochrane
Library**

Cochrane Database of Systematic Reviews

Donepezil for vascular cognitive impairment (Review)

Malouf R, Birks J

Cochrane Database of Systematic Reviews | Review - Intervention

Galantamine for vascular cognitive impairment

✉ **Jacqueline Birks, David Craig** Authors' declarations of interest

Version published: 25 Jan 2011

<https://doi.org/10.1002/14719858.cd201000011>



**Cochrane
Library**

Cochrane Database of Systematic Reviews

Rivastigmine for vascular cognitive impairment (Review)

Birks J, McGuinness B, Craig D



Cochrane
Library

Cochrane Database of Systematic Reviews

Cholinesterase inhibitors for vascular dementia and other vascular cognitive impairments: a network meta-analysis (Review)

Battle CE, Abdul-Rahim AH, Shenkin SD, Hewitt J, Quinn TJ

Network plot: Cognition

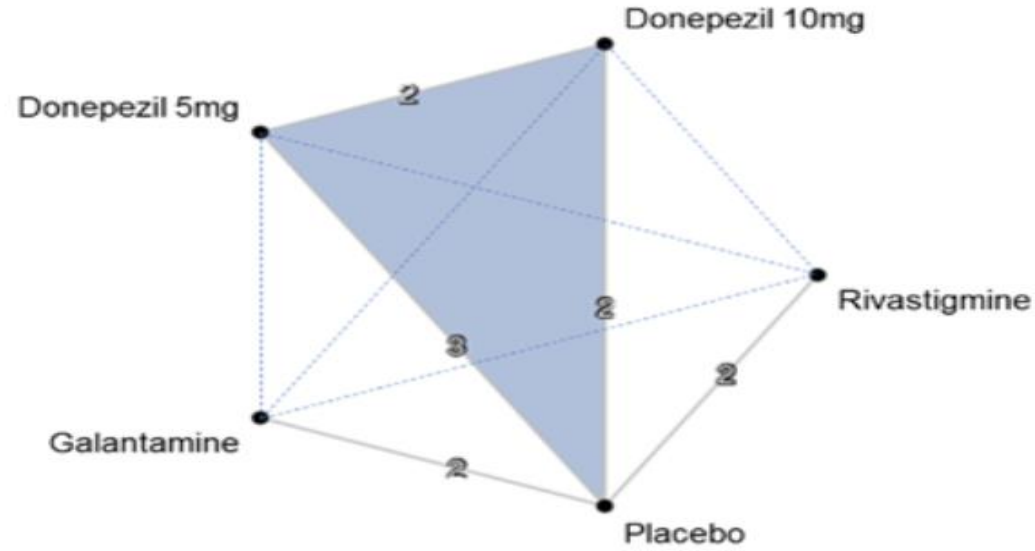
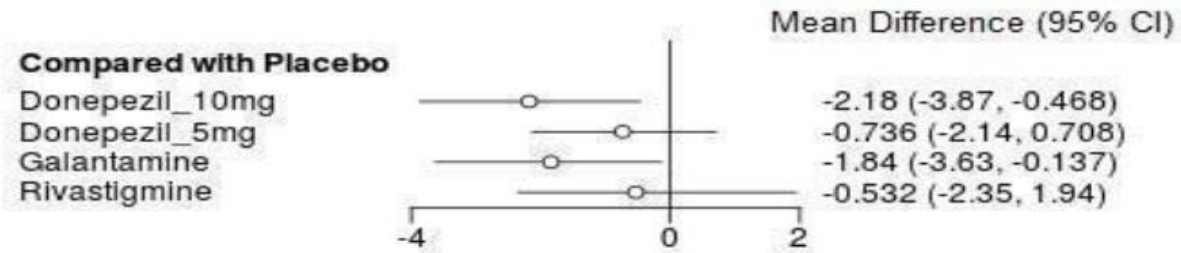


Figure 5. Forest plot (Bayesian model) network meta-analysis results: Cognition.





Cochrane
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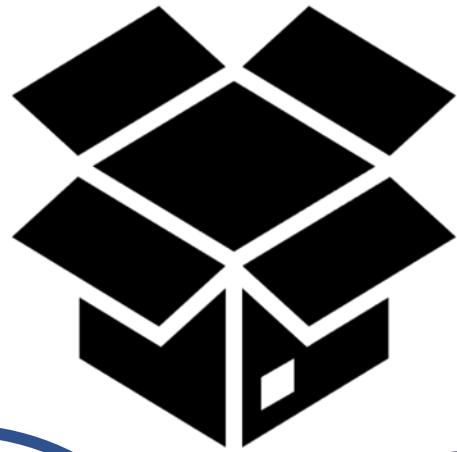
Cochrane Database of Systematic Reviews

Non-pharmacological interventions for preventing delirium in hospitalised non-ICU patients (Review)

Burton JK, Craig LE, Yong SQ, Siddiqi N, Teale EA, Woodhouse R, Barugh AJ, Shepherd AM, Brunton A, Freeman SC, Sutton AJ, Quinn TJ

Summary of findings 1. Non-pharmacological multicomponent interventions for preventing delirium in hospitalised non-ICU patients

Multicomponent delirium prevention intervention compared with usual care for hospitalised adults					
Patients: adults (aged 18 years and over) in hospital for any reason					
Settings: receiving care in general hospital settings (excluding those in intensive care or high dependency units; also known as level 3 and level 2 critical care settings)					
Intervention: multicomponent interventions designed to prevent delirium					
Comparison: usual hospital care					
Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	Certainty of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk			
No of participants (studies)	Risk with usual care	Risk with multicomponent inter- vention			
Incidence of delirium during hospital admission validated diagnostic instruments ¹ 3693 participants (14 studies)	184 per 1000 ²	105 per 1000 (85 to 216)	RR 0.57 (0.46 to 0.71)	⊕⊕⊕○ MODERATE ³	



Older adults
in hospital

Incident
delirium

No delirium

**Multicomponent
intervention**

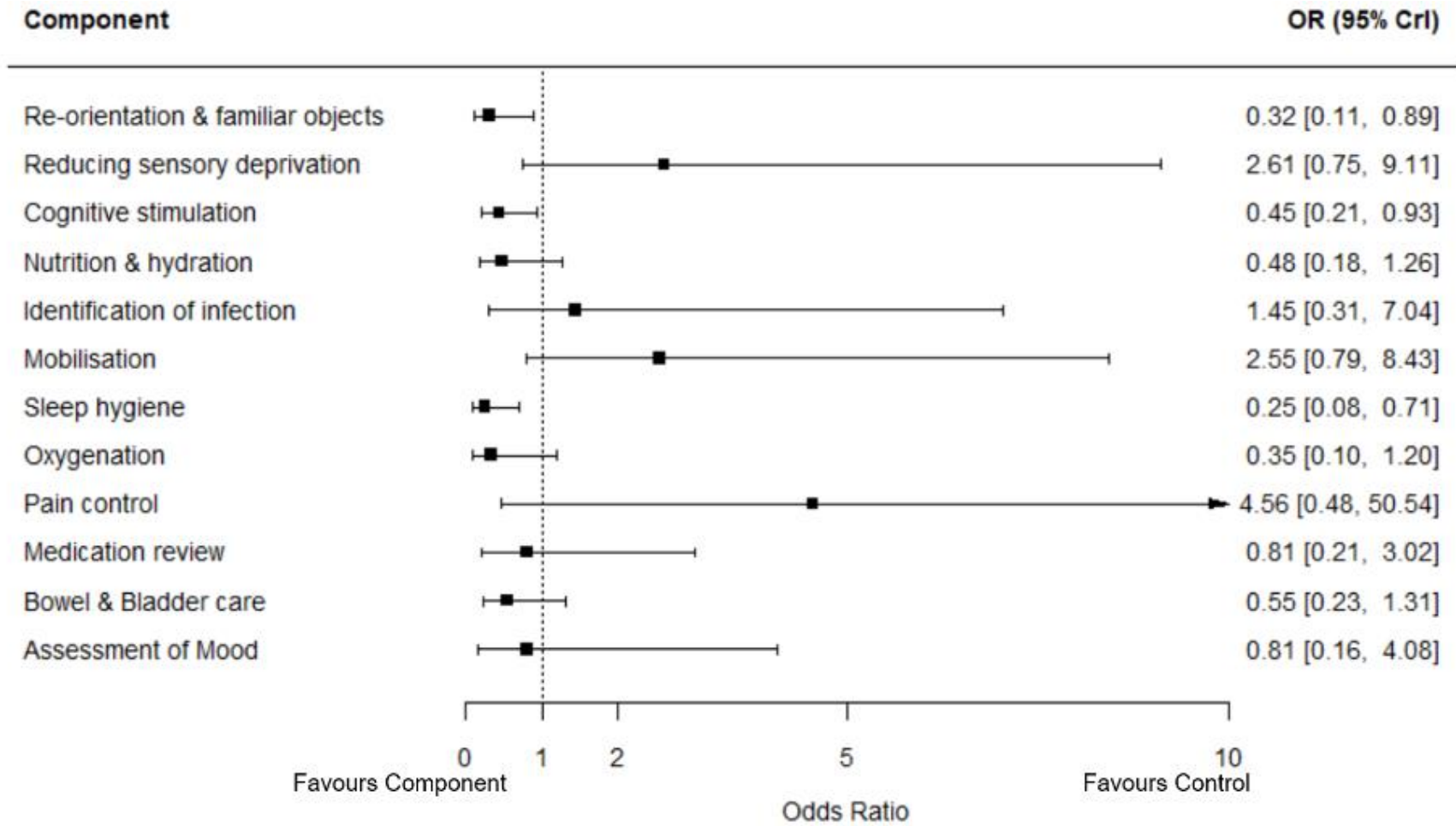


Table 1. Individual components of multi-component interventions

Study	Intervention Components																			
	In- di- vid- u- alised care	Check- lists/ pro- to- cols	Ed- u- ca- tion/ train- ing ¹	Re- ori- en- ta- tion	Atten- tion to senso- ry de- priva- tion	Fa- mil- iar ob- jects	Cog- ni- tive stim- u- la- tion	Nu- tri- tion/ hy- dra- tion	Iden- tifi- ca- tion of in- fec- tion	Mo- bil- isa- tion	Sleep hy- giene	MDT- care ²	CGA ³	Oxy- gena- tion	Elec- trolytes	Pain con- trol	Med- ica- tion re- view	Mood ⁴	Bow- el/ blad- der care	Post- oper- ative com- pli- ca- tions
Abizanda 2011	#		#				#			#										
Bonaventura 2007			#	#	#	#		#		#	#									
Jefferies 2013				#						#										
Martinez 2012			#	#	#	#														
Hempenius 2013	#	#		#	#			#	#	#	#		#			#	#	#	#	
Lundstrom 2006	#	#	#					#	#	#	#	#	#	#		#				#
Marcantonio 2001	#																			

¹Education/training: structured education/training of staff or carers; ²MDT Multidisciplinary Team; ³CGA Comprehensive Geriatric Assessment; ⁴Mood: assessment for depression/anxiety

20 ‘components’ in 7 trials
Updated search 14 trials (n=3693 participants)



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We worked hard on visibility



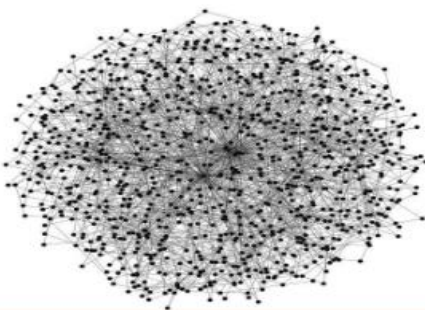
About us

→ NIHR CRSU: Supporting Successful Delivery of Complex Reviews



The Team

→ A collaboration between the University of Glasgow, University of Leicester and the London School of Hygiene and Tropical Medicine



Materials and Guidance

→ Including CRSU Apps; Metalnsight, DTA-MA and DTA Primer



CRSU Publications, Workshops and Presentations

→ Including Joint CRSU & Cochrane Workshop Slides



Apply for CRSU Support

→ For NIHR-funded researchers, including Cochrane Networks and Review Groups, and those applying for NIHR funding.



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nihrcrsu.org Joined February 2016

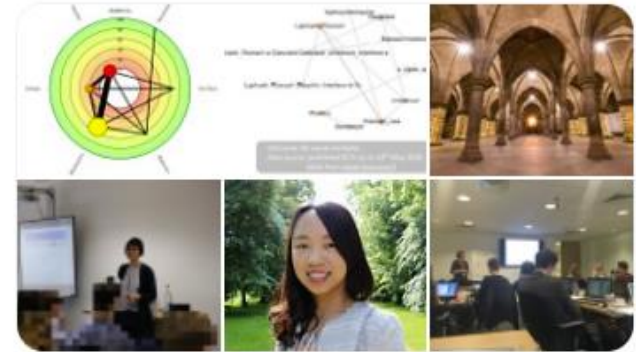
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NIHR CRSU @NIHRCRSU · May 19
There is still time to book a place for our event - Evidence Synthesis: Navigating an Evolving Landscape' in #London on 23rd May. Amazing speakers include Karla Soares-Weiser, Nichole Taske, Christine Fletcher,

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COMPLEX REVIEWS SUPPORT UNIT



CRSU & Cochrane Workshop

22nd November 2019

GCU London

The Complex Reviews Support Unit (CRSU) is funded by the National Institute for Health Research (project number 14/178/29)



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Complex Reviews Support Unit

What Can We Help With?

CRSU & Cochrane Workshop

26th April 2018

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Not a giant leap, but a small step
from pairwise to network meta-analysis

NIHR



Methodological Challenges in Complex Reviews

Cochrane UK & Ireland Symposium 2016



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COMPLEX REVIEWS SUPPORT UNIT



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Not a giant leap, but a small step
from pairwise to network meta-analysis



Methodological Challenges in Complex Reviews

Cochrane UK & Ireland Symposium



Department of Health Sciences

Comparison of modelling approaches for network meta-analysis of time-to-event outcomes to aid decision making

Suzanne Freeman^{1,2}, Nicola Cooper^{1,2}, Alex Sutton^{1,2}, Neil Hawkins^{2,3}

Cochrane Colloquium, 17th September 2018

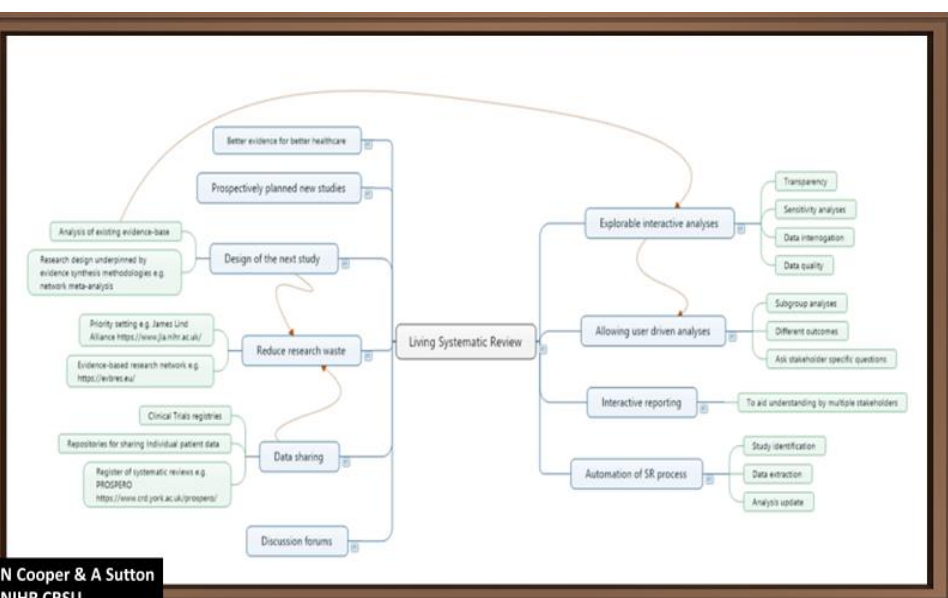
suzanne.freeman@leicester.ac.uk

¹ Biostatistics Research Group, Department of Health Sciences, University of Leicester, UK, ² NIHR Complex Reviews Support Unit ³ Health Economics & Health Technology Assessment, University of Glasgow

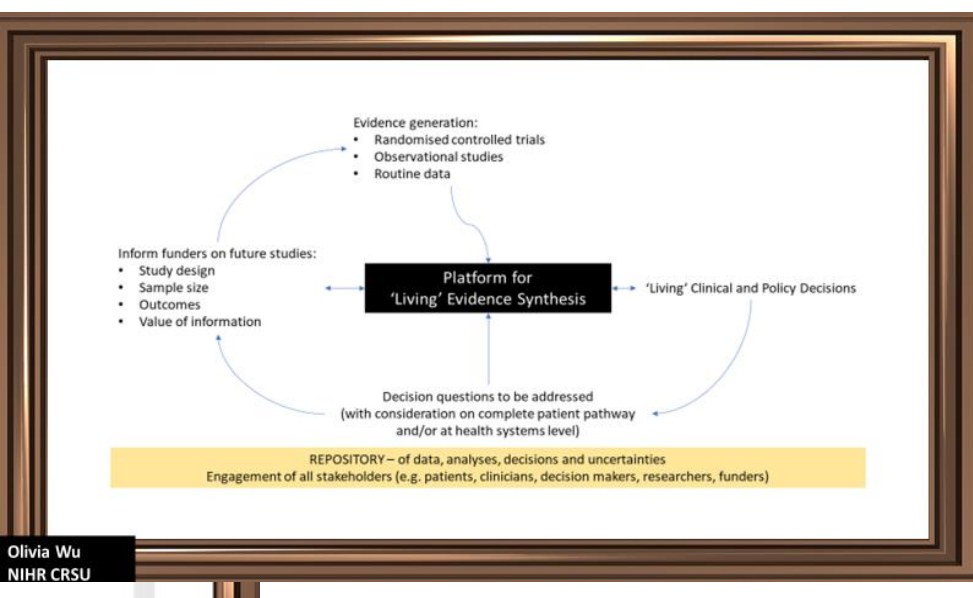
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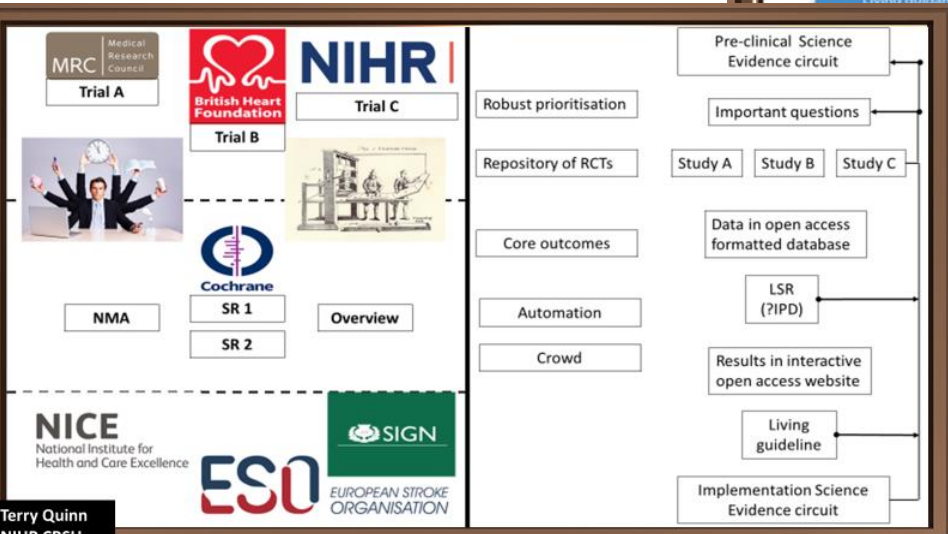




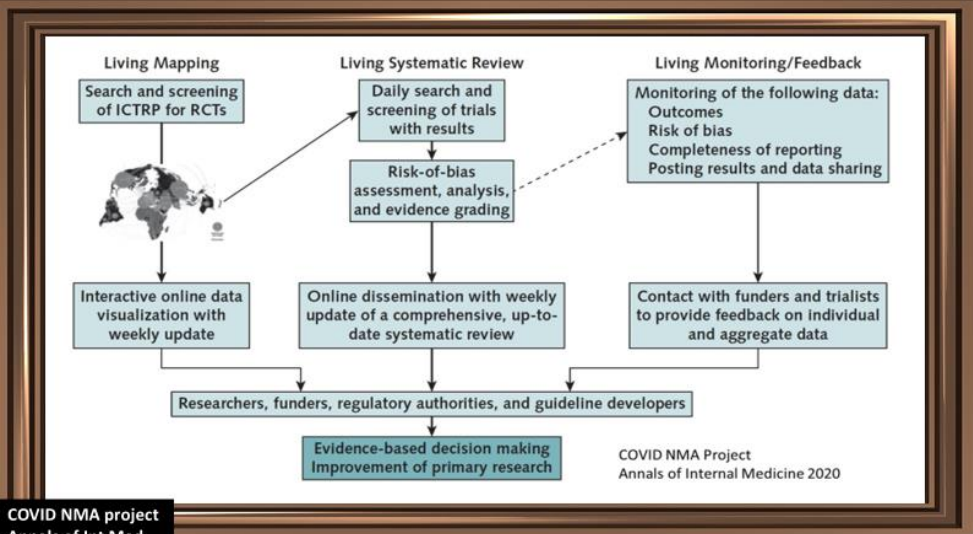
N Cooper & A Sutton
NIHR CRSU



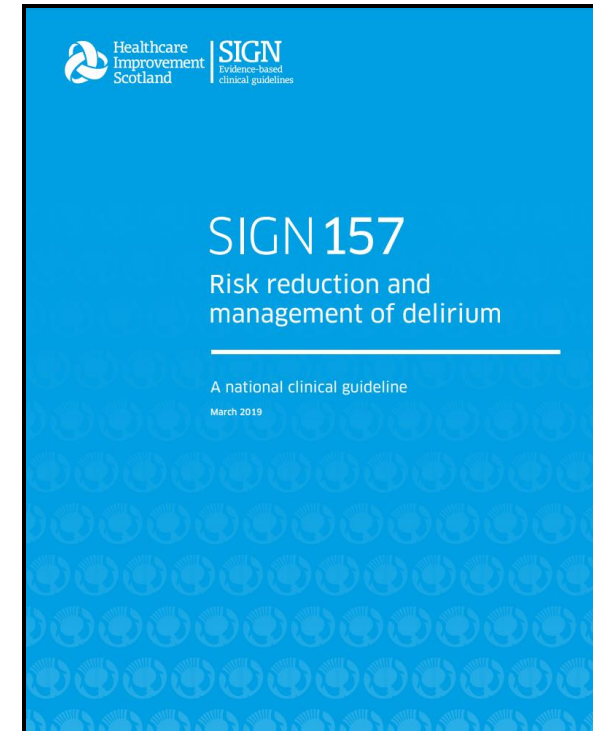
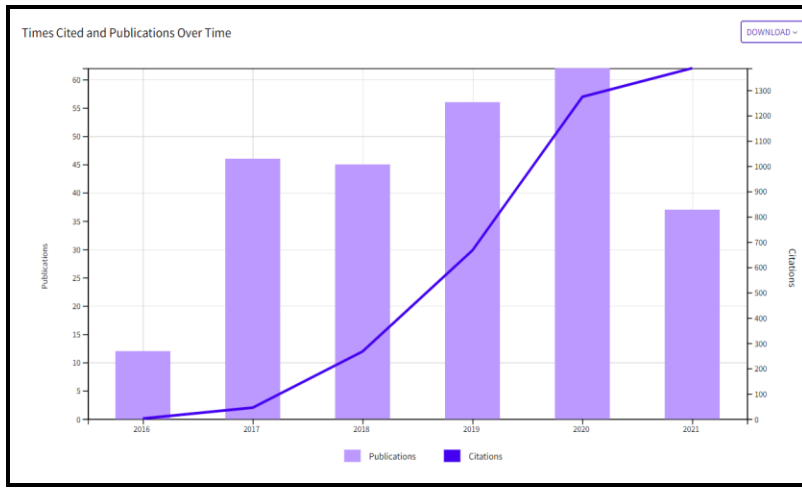
Olivia Wu
NIHR CRSU



Terry Quinn
NIHR CRSU



COVID NMA project
Annals of Int Med



NIHR CRSU

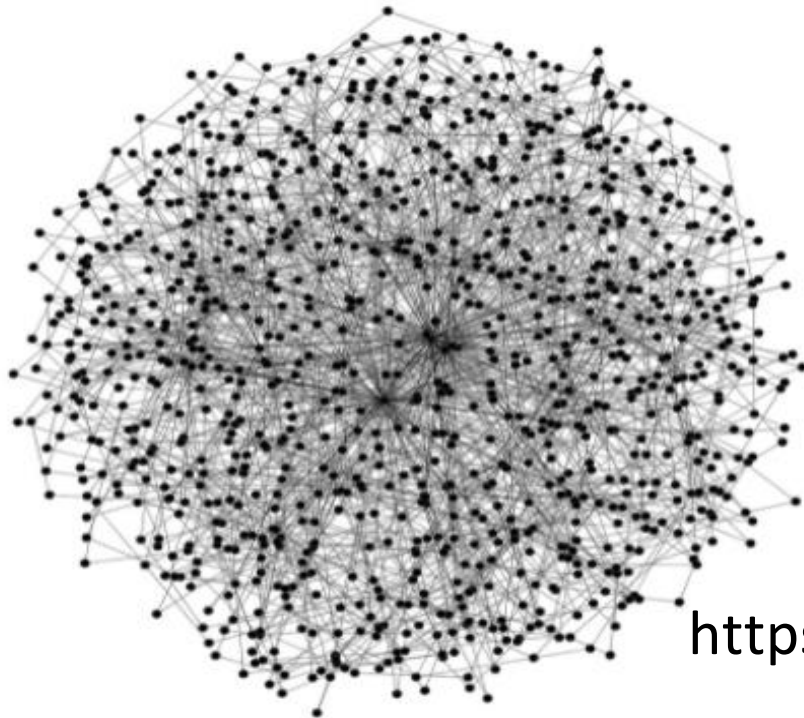
Complex Reviews Support Unit

We proved that the review world
still needs methods support

MetaInsight (including Bayesian estimates) V3.14 **

Please select your outcome type:

- Continuous (e.g. mean difference)
- Binary (e.g. Odds Ratio)



<https://crsu.shinyapps.io/MetaInsight/>

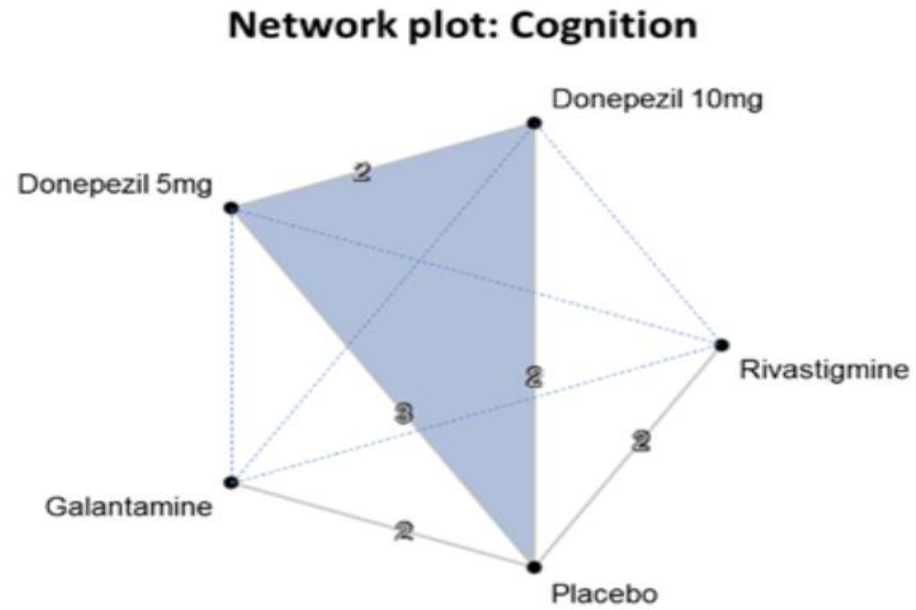
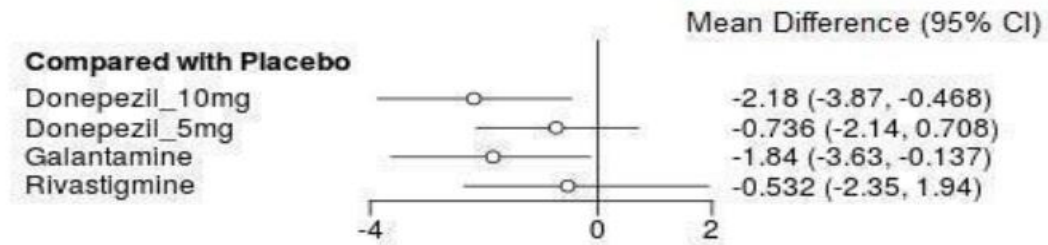
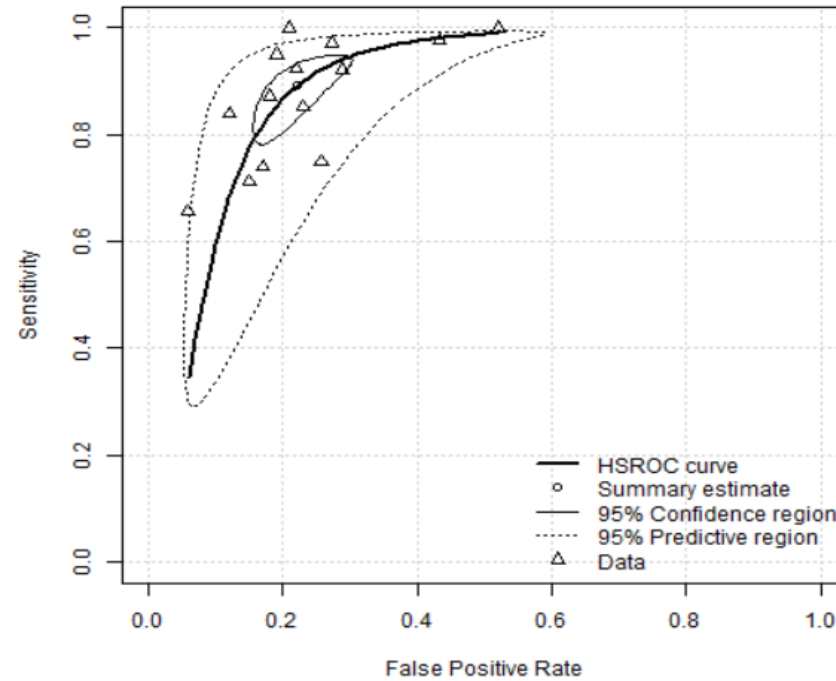


Figure 5. Forest plot (Bayesian model) network meta-analysis results: Cognition.



META-DTA v2.0

Crsu.shinyapps.io/dta_ma/



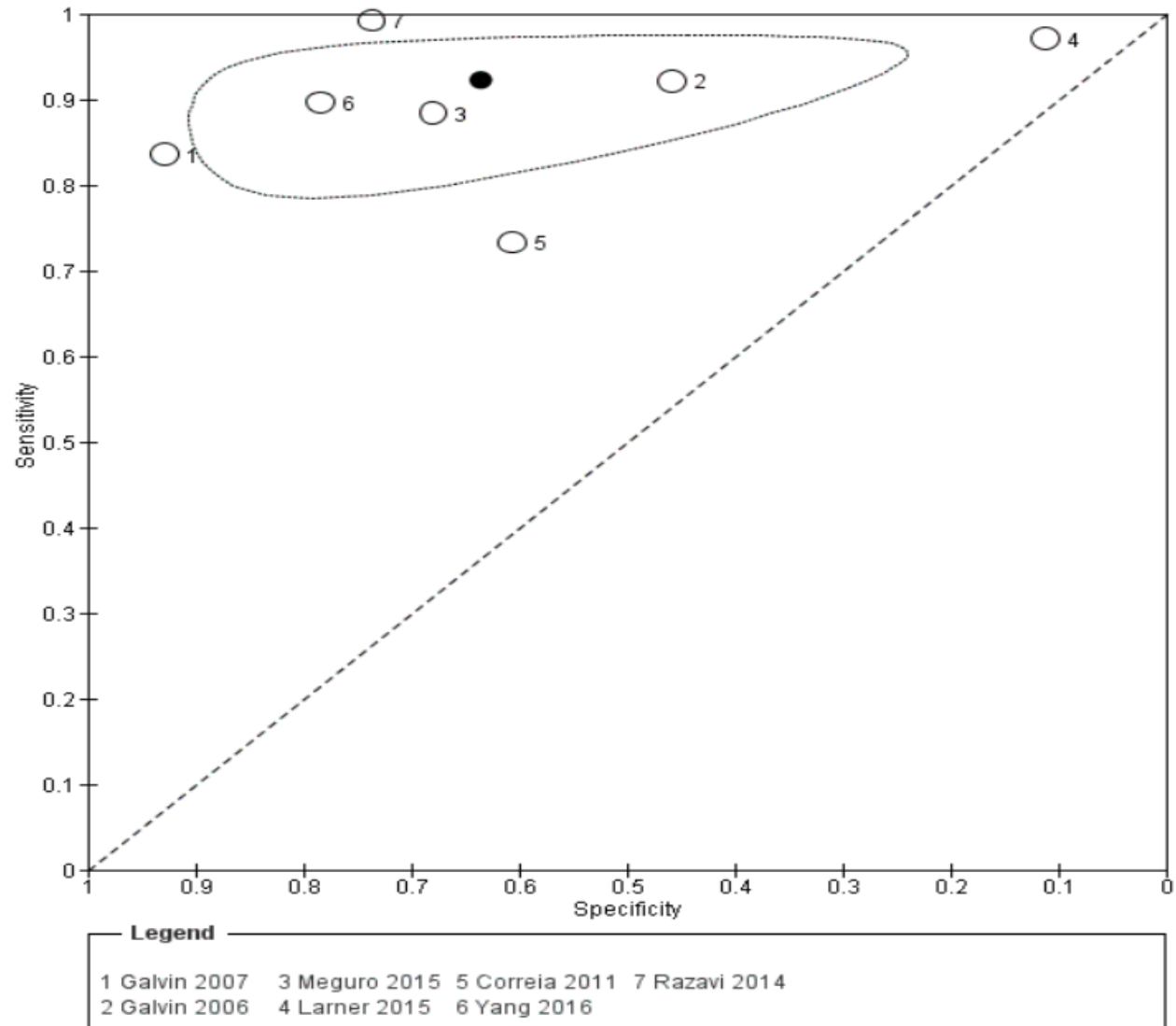
Suzanne Freeman, Clareece Nevill, Amit Patel, Nicola Cooper, Terry Quinn, Alex Sutton

For feedback/questions about this app please contact Alex Sutton at ajs22@leicester.ac.uk

App powered by Rshiny with statistical analyses performed using the package lme4:

<https://CRAN.R-project.org/package=lme4>

Figure 3. Summary ROC plot of AD-8 informant cut-off score 2. The dark point is a summary point, the other points individual studies; the broken line represents 95% confidence region.





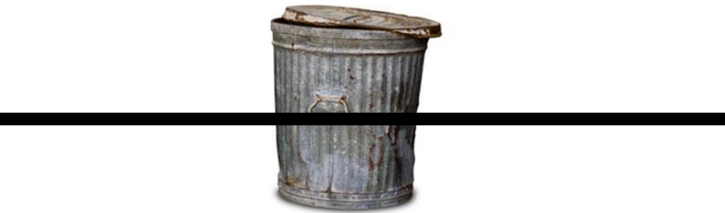


**Analysis
app**





**Analysis
app**



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Complex Reviews Support Unit

We were quick

But the methods were quicker

An aerial photograph of a winding asphalt road through rolling green hills. The road curves through the landscape, with white dashed lines marking the lanes. The hills are covered in lush green grass, and the lighting suggests a bright, sunny day. A semi-transparent white box is overlaid on the upper left portion of the image, containing text.

2016

Network analyses

Individual data

Health economics

An aerial photograph of a winding asphalt road through rolling green hills. The road curves through the landscape, with a wooden fence running alongside it. The hills are covered in lush green grass, and the lighting suggests a bright, sunny day.

2016

Network analyses

Individual data

Health economics

2019

Prognosis

Test accuracy

Qualitative

An aerial photograph of a winding asphalt road through rolling green hills. The road curves through the landscape, with a wooden fence running alongside it. The hills are covered in lush green grass, and the lighting suggests a bright, sunny day.

2016

**Network analyses
Individual data
Health economics**

2019

**Prognosis
Test accuracy
Qualitative**

2022

**Component analyses
Sequential analyses
Living reviews**

An aerial photograph of a winding asphalt road through rolling green hills. The road curves through the landscape, with a wooden fence running alongside it. The hills are covered in lush green grass, and the lighting suggests a bright, sunny day.

2016

**Network analyses
Individual data
Health economics**

2019

**Prognosis
Test accuracy
Qualitative**

2022

**Component analyses
Sequential analyses
Living reviews**

2025

**Automation?
Interactive reviews?
Apps?**

Following the
science.....















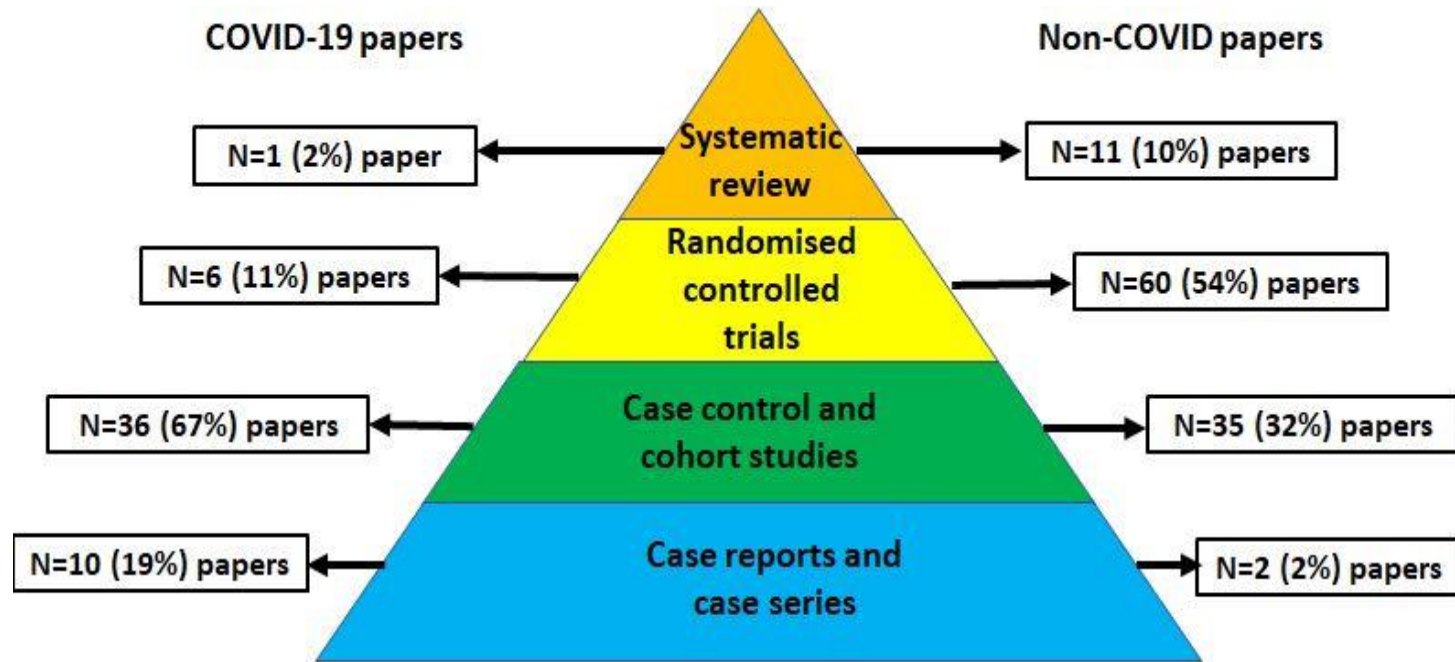
RESEARCH ARTICLE

Open Access

Following the science? Comparison of methodological and reporting quality of covid-19 and other research from the first wave of the pandemic



Terence J. Quinn^{1*} , Jennifer K. Burton² , Ben Carter³ , Nicola Cooper⁴, Kerry Dwan⁵ , Ryan Field⁶ ,
Suzanne C. Freeman⁴ , Claudia Geue⁶ , Ping-Hsuan Hsieh^{6,7} , Kris McGill⁸ , Clareece R. Nevill⁴ ,
Dikshyanta Rana⁴ , Alex Sutton², Martin Taylor Rowan² and Yiqiao Xin⁶ 



	Covid-19 papers (N=54)	Non Covid-19 papers (N=114)
Sample size	96 (IQR:16-762)	815 (IQR:219-4893)
Follow-up	4 weeks (IQR:3-7)	52 weeks (IQR:28-116)
Industry Funding	7 (13%)	74 (65%)
Brief Report	16 (30%)	6 (5%)
Retraction	7 (13%)	0 (0%)
Low risk of bias	18 (34%) (95%CI 22 to 48)	83 (73%) (95%CI 64 to 81)
Poor reporting	72% (95%CI 66 to 77)	84% (95%CI 81 to 87)



We helped review groups ask the right questions



Relationships with review groups



We worked hard on visibility



The review world still needs methods support



We were quick, but methods were quicker