

Core Outcomes Sets for Delirium Trials

The Del-COrS Project

Presented by Prof **Louise Rose**, MBE, RN, MN, PhD
King's College London, London, UK
On behalf of the **Del-COrS team**

DISCLOSURES & ACKNOWLEDGEMENTS

Del-CORs was

- **Funded** in 2018 by the Canadian Institutes of Health Research (CIHR)
- **Registered** with COMET
- **Protocol published** in BMJ Open
- **Took a village** to complete and I can't thank them enough!



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+ all the interview, Delphi, and
consensus group meeting
participants

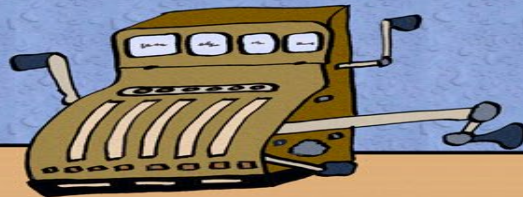


WHAT IS A CORE OUTCOME SET?

AN EARLY PROTOTYPE FOR GENERATING CLINICAL TRIAL OUTCOME SHORTCUTS.

BUT WHAT DOES IT ACTUALLY MEASURE?

THAT'S THE BEAUTY OF IT!
NO ONE WILL EVER KNOW!



Definitions

- **Core Outcome Set (COS)** = consensus driven standardized set of **outcomes**
- **Core outcome measurement set (COMS)**
= outcomes + measures + measurement characteristics
- First establish outcomes i.e. **WHAT** to measure
- Then establish measurement parameters i.e. **HOW** to measure

Why generate COS & COMS?

- Promotes **consistency** in reporting among studies
 - evaluating similar interventions in similar populations
 - can be used in clinical audit & QI projects
- Improves ability to **aggregate data** across trials thereby informing guidelines and **clinical decision making** to ultimately improve patient outcomes

The intensive care delirium research agenda: a multinational, interprofessional perspective

Pratik P Pandharipande¹, E Wesley Ely², Rakesh C Arora³, Michele C Balas⁴, Malaz A Boustani⁵, Gabriel Heras La Calle⁶, Colm Cunningham⁷, John W Devlin^{8,9}, Julius Elefante¹⁰, Jin H Han¹¹, Alasdair M MacLulich¹², José R Maldonado¹³, Alessandro Morandi¹⁴, Dale M Needham¹⁵, Valerie J Page¹⁶, Louise Rose^{17,18}, Jorge I F Salluh¹⁹, Tarek Sharshar^{20,21}, Yahya Shehabi^{22,23}, Yoanna Skrobik²⁴, Arjen J C Slooter²⁵, Heidi A B Smith²⁶

What are remaining areas of uncertainties/work to be done?

Harmonization of outcomes/development of core outcomes

condition, or intervention).[62] The COS should be small enough to minimize participant burden, limit research costs, and encourage researcher adoption, but large enough to capture outcomes deemed important to future decisions makers.

2.5 | Application of a core outcomes set for clinical studies in delirium

Another key measurement issue for delirium investigation is consistent adoption of a standardized approach to measuring delirium-related outcomes relevant to delirium research. This issue is important to

A roadmap to advance delirium research: Recommendations from the NIDUS Scientific Think Tank

Esther S Oh¹, Oluwaseun Akeju², Michael S Avidan³, Colm Cunningham⁴, Kathleen M Hayden⁵, Richard N Jones⁶, Ara S Khachaturian⁷, Babar A Khan⁸, Edward R Marcantonio⁹, Dale M Needham¹⁰, Karin J Neufeld¹¹, Louise Rose¹², Jessica Spence¹³, Zoë Tieges¹⁴, Phillip Vlisides¹⁵, Sharon K Inouye¹⁶; NIDUS Writing Group

The Del-COrS Study

AIM: To develop international consensus among key stakeholders for core outcome sets for future trials of interventions to **prevent** and/or **treat** delirium in adults

- 4 patient groups
 - Critically ill adults
 - Acute hospitalization without ICU admission
 - Palliative care
 - Older adults in long-term care


ITEM GENERATION PHASE

- Systematic reviews extracting outcomes & measures
- Semi-structured interviews with survivors/family members to identify relevant outcomes
 - Palliative & LTC COS also interviewed clinicians

ITEM REDUCTION & CONSENSUS PHASE

- Modified 2 round e-Delphis
 - 3 stakeholder groups (patients/family, clinicians, researchers)
- Consensus meetings (in-person 2019; virtual during/post pandemic)

Reporting of Outcomes and Outcome Measures in Studies of Interventions to Prevent and/or Treat Delirium in the Critically Ill: A Systematic Review

Rose, Louise PhD^{1,2}; Agar, Meera PhD³; Burry, Lisa PharmD^{4,5}; Campbell, Noll PharmD⁶; Clarke, Mike PhD⁷; Lee, Jacques MD⁸; Marshall, John MD⁹; Siddiqi, Najma PhD¹⁰; Page, Valerie MB BCh¹¹; for the Development of Core Outcome Sets for Effectiveness Trials of Interventions to Prevent and/or Treat Delirium (Del-CORs) Group [Author Information](#) 

Critical Care Medicine: April 2020 - Volume 48 - Issue 4 - p e316-e324
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- **95 non-delirium specific outcomes**
 - within 19 COMET taxonomy domains
- Mean (SD) of **10 (6.2) outcomes/study**
- Most common
 - ICU length of stay (70%)
 - hospital length of stay (48%)
 - mortality (46%)
 - ventilation duration (41%)

195 studies; 141 completed
recruiting **74,632** participants

Outcomes specific to delirium (N=195)	n (%)
Delirium incidence	147 (75)
Delirium duration	67 (34)
Use of antipsychotic medications	42 (22)
Delirium prevalence	32 (16)
Additional (rescue) medication for agitation	30 (15)
Delirium severity	25 (13)
Time to delirium onset	22 (11)
Time delirium and coma free (DCFD)	21 (11)
Time delirium free	14 (7)
Delirium type	12 (6)
Time to resolution	4 (2)
Delirium resolution	3 (2)
Delirium other	11 (7)

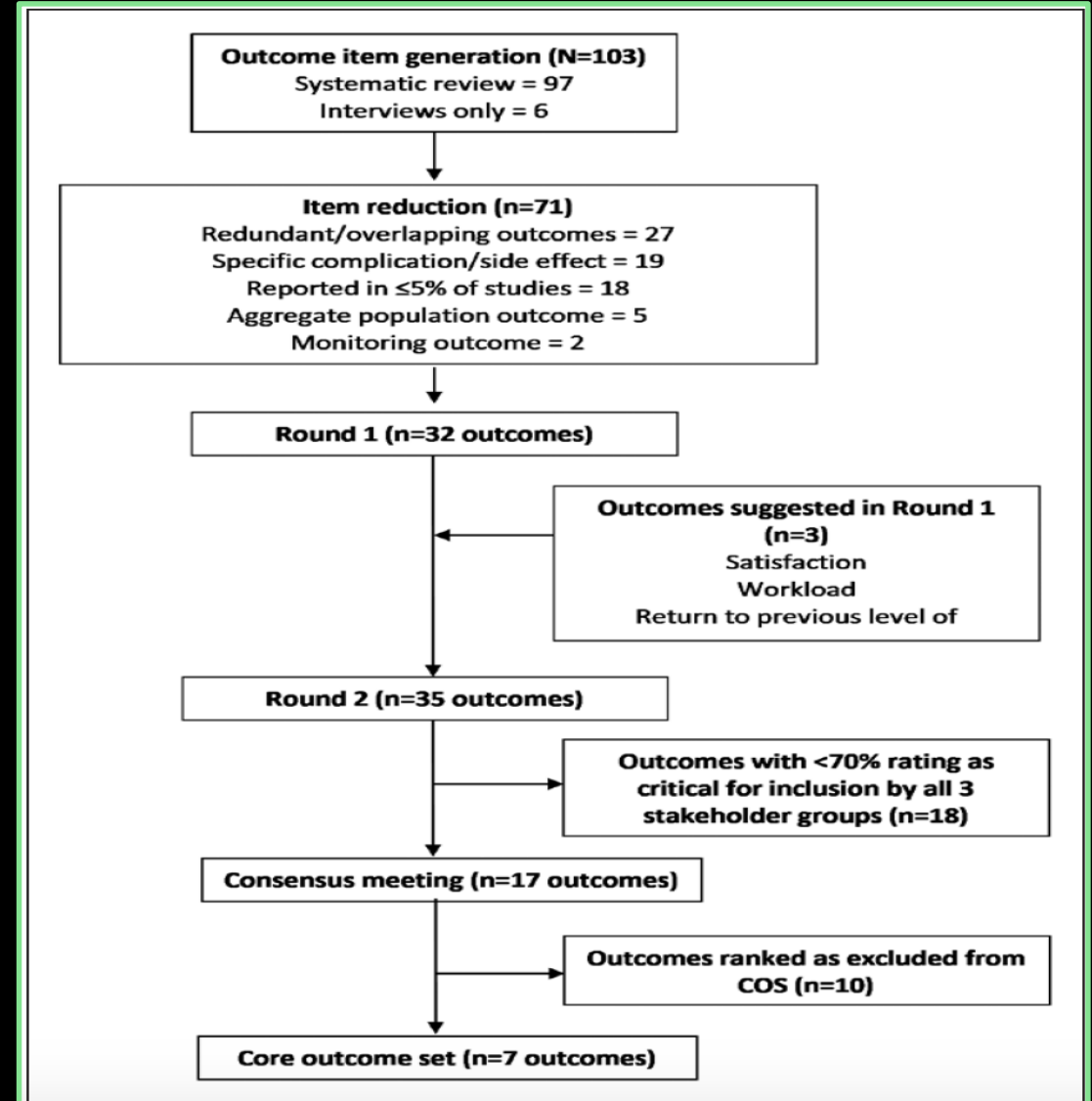
A Core Outcome Set for Research Evaluating Interventions to Prevent and/or Treat Delirium in Critically Ill Adults: An International Consensus Study (Del-COrS)

Louise Rose¹, Lisa Burry^{2,3}, Meera Agar⁴, Noll L Campbell⁵, Mike Clarke⁶, Jacques Lee⁷, John C Marshall⁸, John W Devlin⁹, Bronagh Blackwood¹⁰, Dale M Needham¹¹, Najma Siddiqi¹², Valerie Page¹³; Del-COrS Group

FINAL Del-ICU COS = 7 outcomes

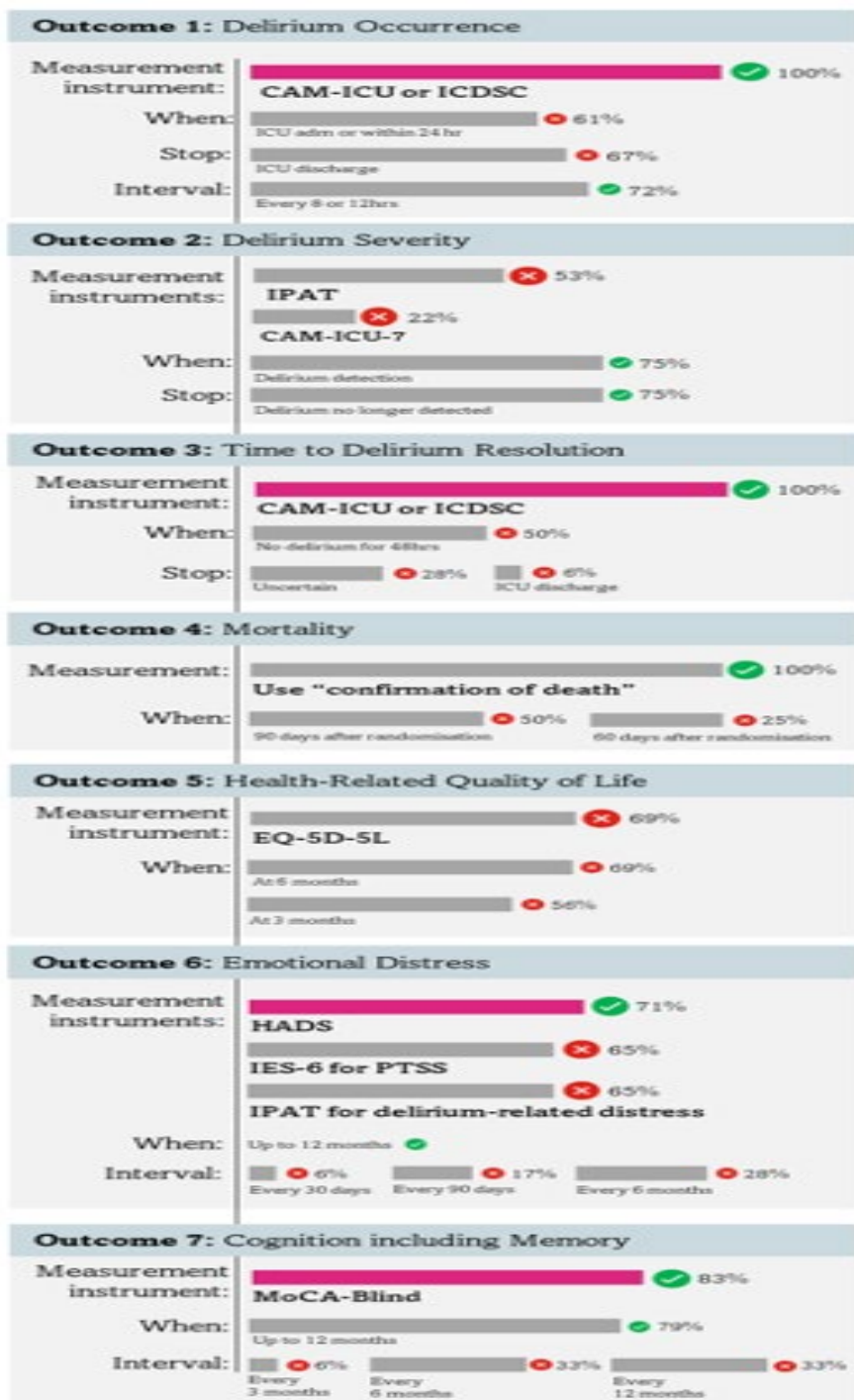
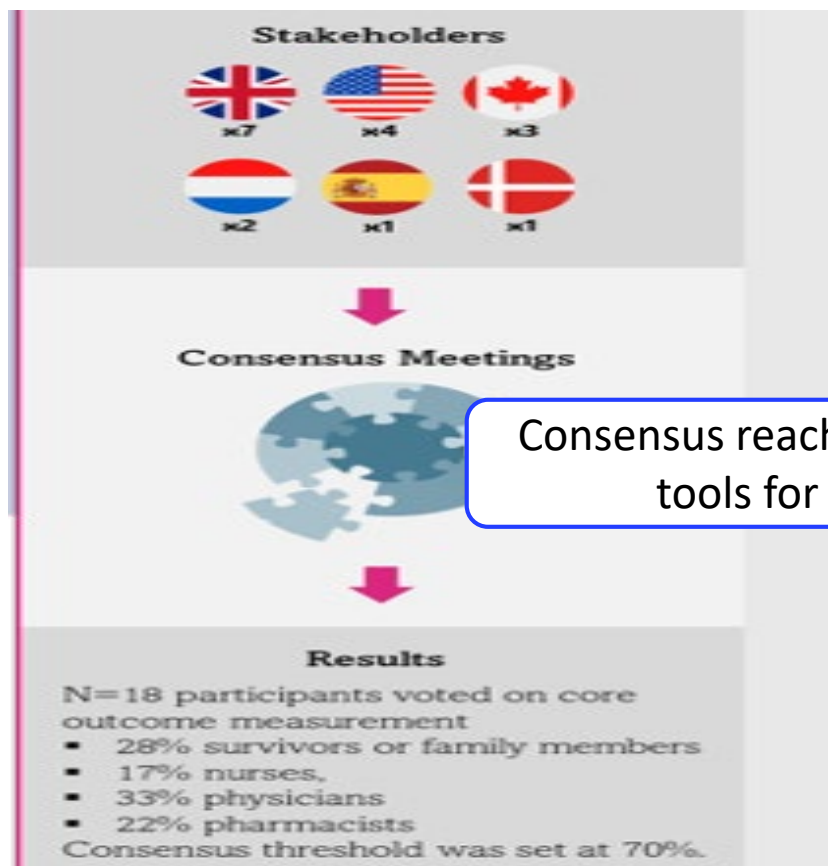
- Delirium occurrence
= incidence or prevalence
- Emotional distress (mental health)
- Delirium severity
= degree of inattention, disorganized thinking
- Time to delirium resolution
- Cognition
- Mortality
- Health-related quality of life

24 ICU survivor/family member interview participants
179 first round e-Delphi participants (46 ICU survivors/family)



Measures for the Core Outcome Set for Research Evaluating Interventions to Prevent and/or Treat Delirium in Critically Ill Adults: An International Consensus Study (Del-CORs)

Louise Rose¹, Bronagh Blackwood², Dale M Needham³, John W Devlin^{4 5}, Mike Clarke⁶, Lisa D Burry^{7 8}



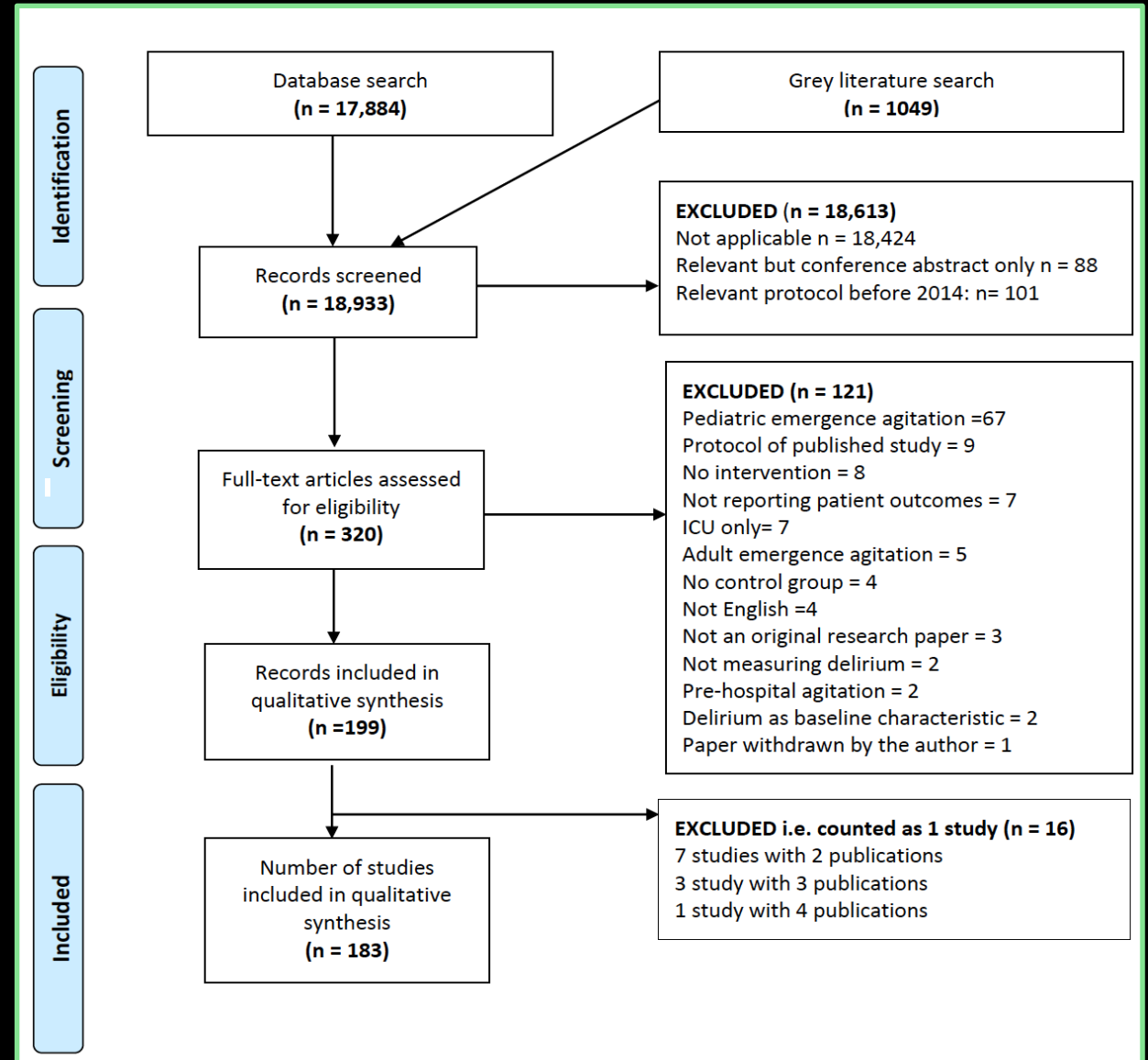
A core outcome set for studies evaluating interventions to prevent and/or treat delirium for adults requiring an acute care hospital admission: an international key stakeholder informed consensus study

Louise Rose¹, Lisa Burry^{2,3}, Meera Agar⁴, Bronagh Blackwood⁵, Noll L Campbell⁶, Mike Clarke⁷, John W Devlin⁸, Jacques Lee⁹, John C Marshall¹⁰, Dale M Needham¹¹, Najma Siddiqi¹², Valerie Page¹³

Table 1 Systematic review study characteristics

<i>N</i> = 183 studies	n (%)
Study population	
Adults only	183 (100)
Older adults only	150 (88)
Patient type	
Surgical	109 (60)
Medical	68 (37)
Both	6 (3)
Delirium as a study objective	
Primary	137 (75)
Secondary	46 (25)
Study intervention aim	
Prevention only	125 (68)
Treatment only	18 (10)
Both	44 (22)
Study intervention	
Pharmacological agent to prevent and/or treat delirium	87 (48)
Protocol or bundle to prevent and/or treat delirium	80 (44)
Non-pharmacological to prevent and/or treat delirium	16 (9)

183 studies recruiting 61,013 participants



A core outcome set for studies evaluating interventions to prevent and/or treat delirium for adults requiring an acute care hospital admission: an international key stakeholder informed consensus study

Louise Rose¹, Lisa Burry^{2,3}, Meera Agar⁴, Bronagh Blackwood⁵, Noll L Campbell⁶, Mike Clarke⁷, John W Devlin⁸, Jacques Lee⁹, John C Marshall¹⁰, Dale M Needham¹¹, Najma Siddiqi¹², Valerie Page¹³

FINAL Del-ACUTE HOSP COS = 6 outcomes

Delirium occurrence

= incidence or prevalence

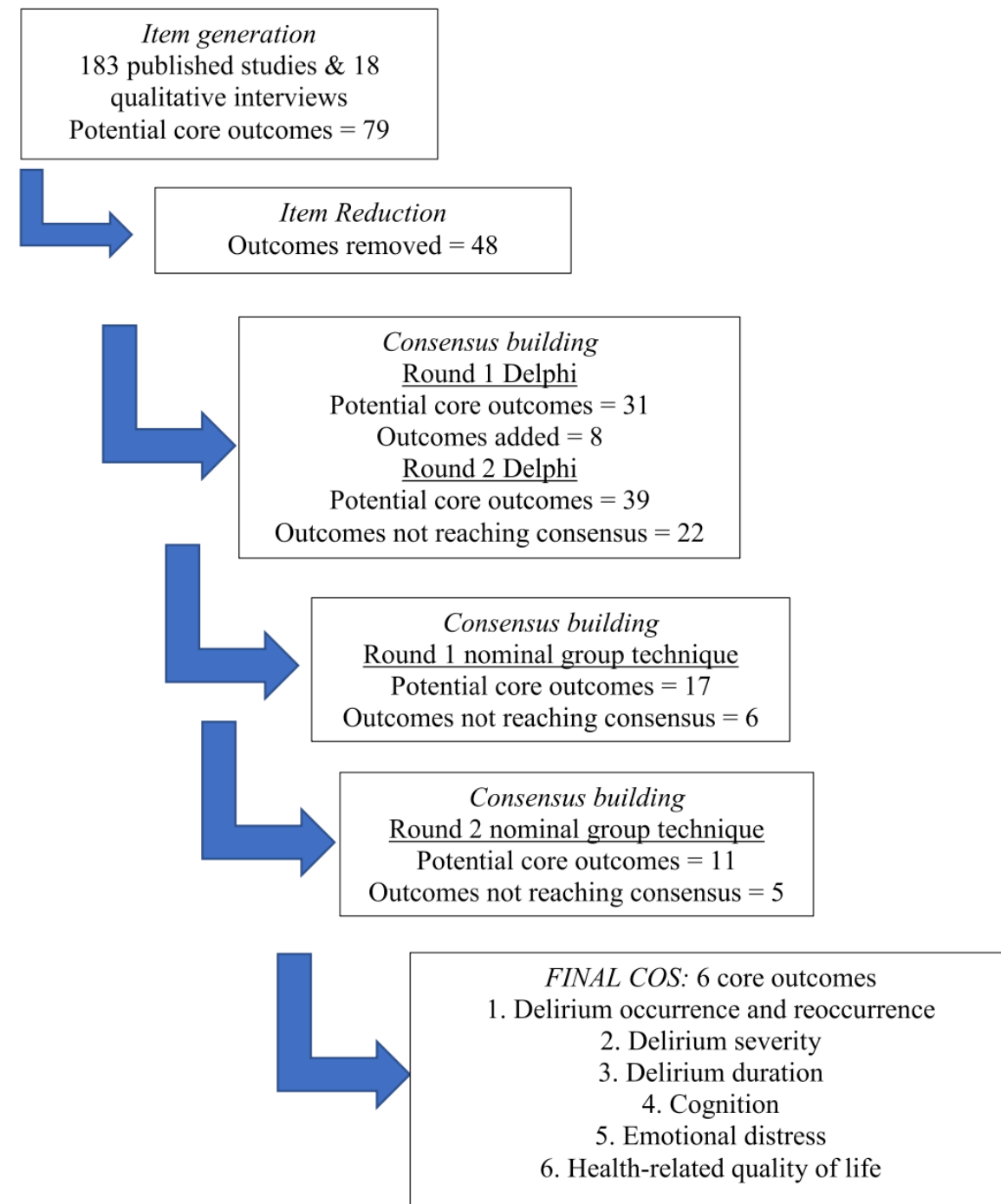
Emotional distress (mental health)

Delirium severity (degree of inattention, disorganized thinking)

Delirium duration

Cognition

Health-related quality of life

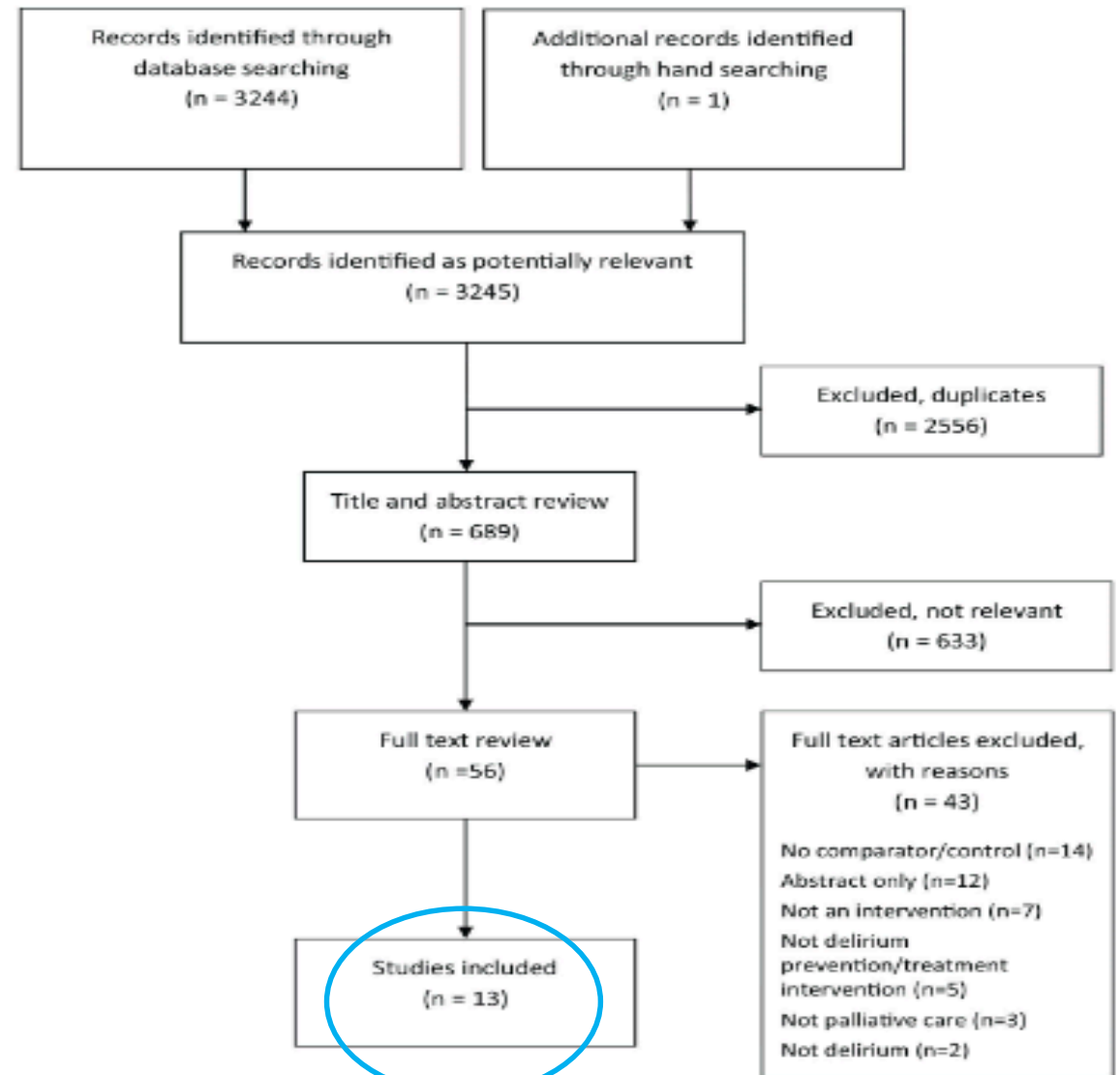


Outcomes and measures of delirium interventional studies in palliative care to inform a core outcome set: A systematic review

Meera R Agar^{1 2 3}, Najma Siddiqi^{4 5}, Annmarie Hosie^{1 6 7}, Jason W Boland⁸, Miriam J Johnson⁸, Imogen Featherstone⁴, Peter G Lawlor^{9 10 11}, Shirley H Bush^{9 10 11}, Valerie Page¹², Ingrid Amgarth-Duff¹, Maja Garcia¹, Domenica Disalvo¹, Louise Rose¹³; Del-CORs Group

Domain	Overall (all included studies) (n = 13)	primary outcome of the study in identified delirium-specific domain
Delirium severity	8	3
Delirium incidence	4	2
Delirium symptoms	3	1
Duration of first delirium episode	1	0
Duration of terminal delirium from occurrence to death	1	0
Delirium resolution	2	0
Proportion of patient-days with delirium symptoms	1	0
Delirium free survival	2	1
Hyperactive delirium severity	1	1

13 studies recruiting **2,863** participants



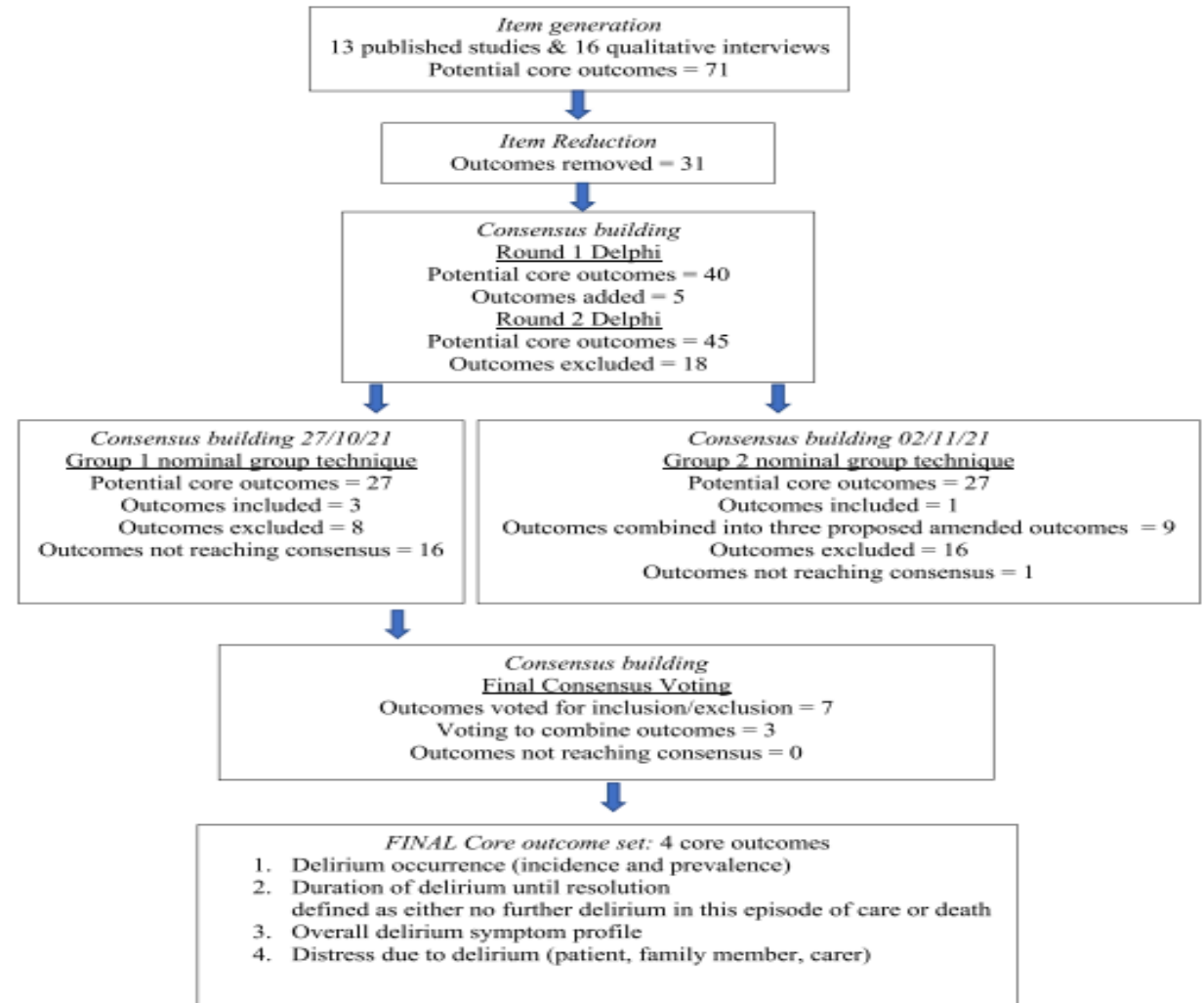
A Core Outcome Set for Interventions to Prevent and/or Treat Delirium in Palliative Care

Anna Bryans¹, Najma Siddiqi², Lisa Burry³, Mike Clarke⁴, Jonathan Koffman⁵,
Meera R Agar⁶, Louise Rose⁷

FINAL Del-PALL COS = 4 outcomes

1. Delirium occurrence
= incidence or prevalence
2. Delirium duration until resolution
(no further delirium or death)
3. Overall delirium symptom profile
4. Distress due to delirium (patient,
family member, carer)

18 family member/clinician interview participants
92 first round e-Delphi participants (8 family members)

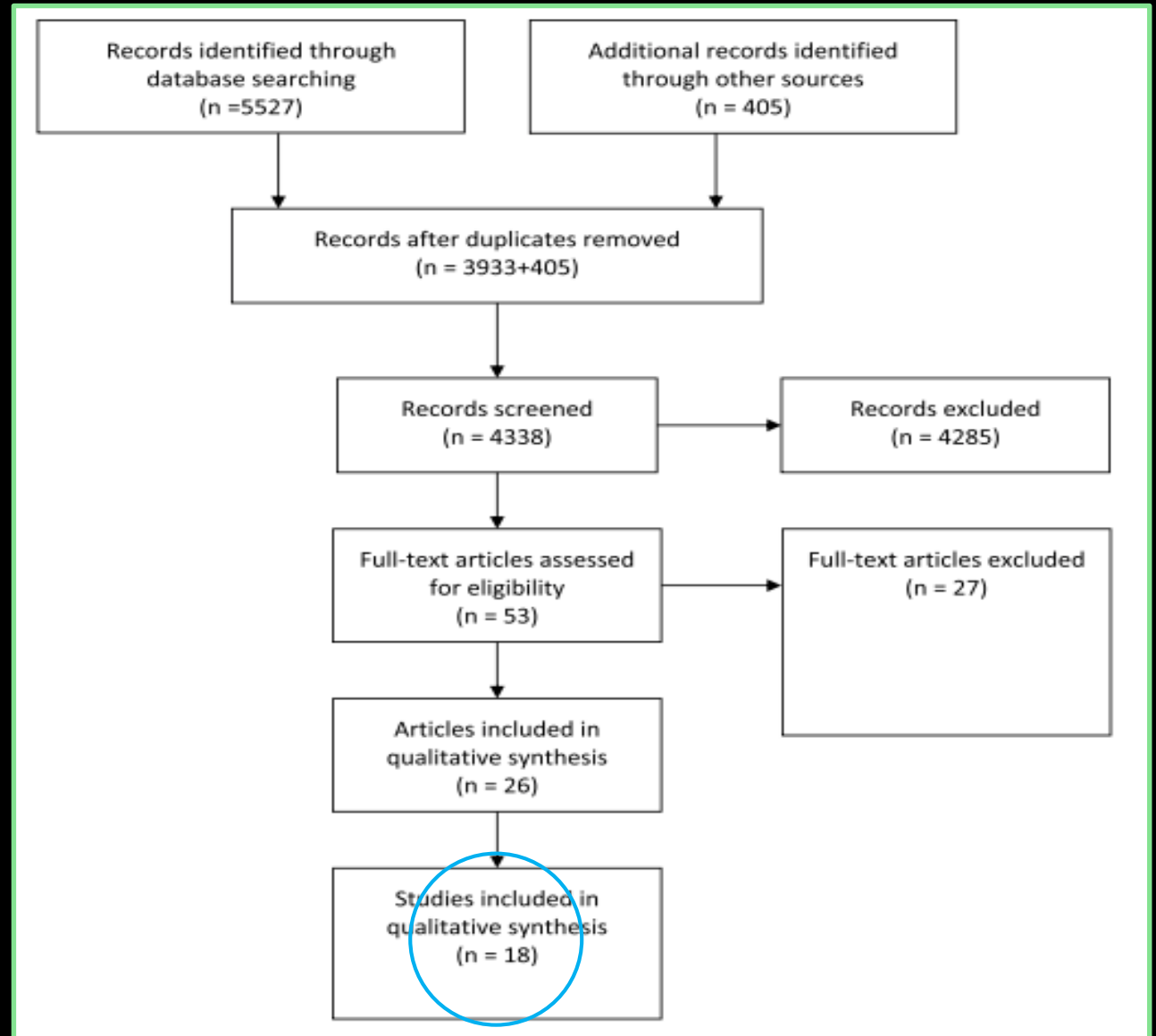


Reporting of outcomes and measures in studies of interventions to prevent and/or treat delirium in older adults resident in long-term care: a systematic review

Gregor Russell¹, Namrata Rana², Rahul Watts¹, Sefat Roshny¹, Najma Siddiqi³, Louise Rose⁴

Outcome	Number of studies (%)
Delirium incidence	14 (78)
Delirium severity	6 (33)
Cognitive functioning	4 (22)
Delirium duration	3 (17)
Delirium prevalence	3 (17)
Nurse knowledge of delirium	3 (17)
Agitation	2 (12)
Delirium motoric subtype	1 (6)
Use of antipsychotic medication	1 (6)
Number of delirium episodes	1 (6)
Nurse confidence in managing delirium	1 (6)
Nurse ability to recognise delirium	1 (6)

18 studies recruiting **5,639** participants



Reporting of outcomes and measures in studies of interventions to prevent and/or treat delirium in older adults resident in long-term care: a systematic review

Gregor Russell ¹, Namrata Rana ², Rahul Watts ¹, Sefat Roshny ¹, Najma Siddiqi ³, Louise Rose ⁴

18 studies recruiting **5,639** participants

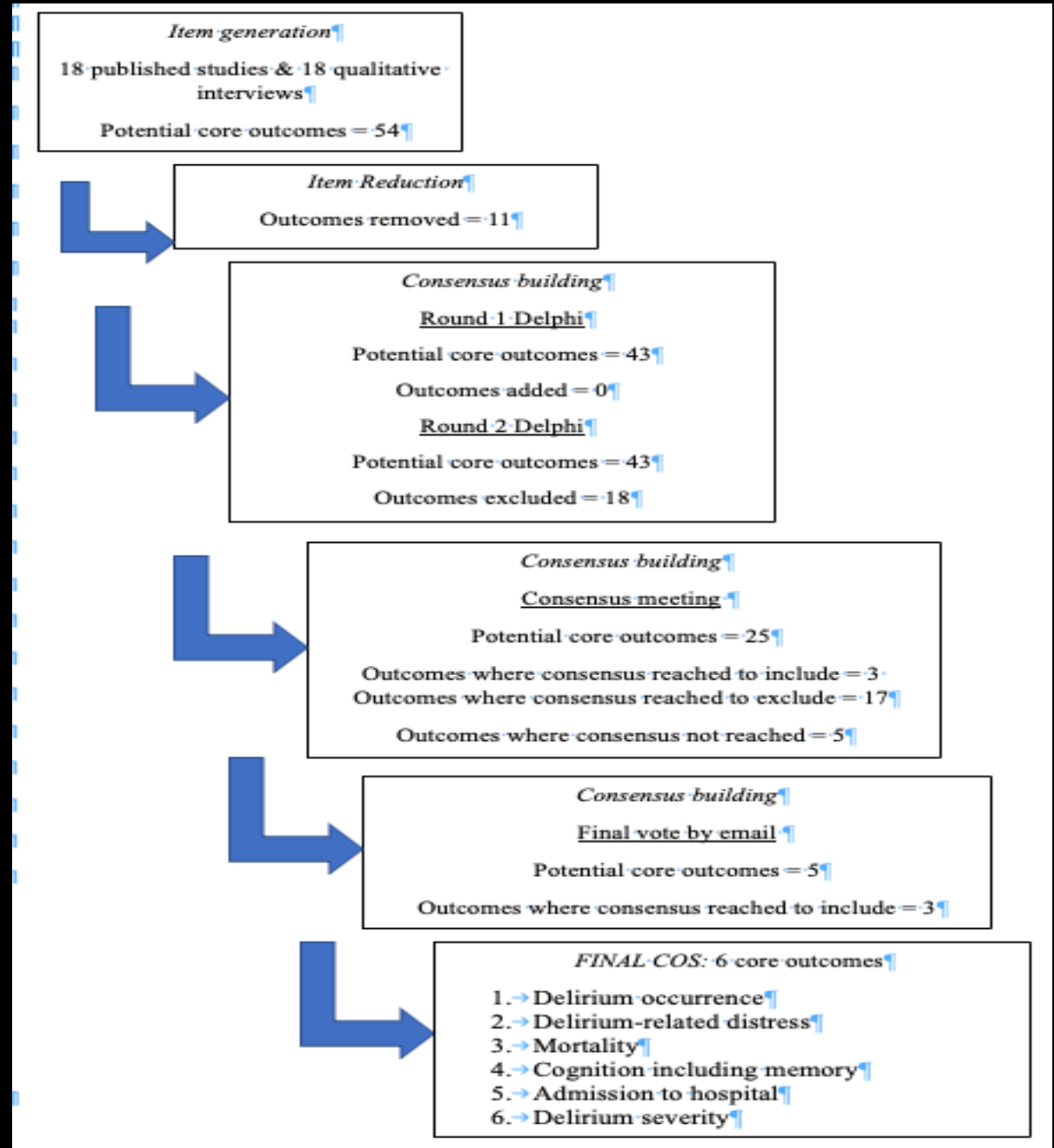
Outcome	Number of studies (%)
Admission to hospital	9 (50)
Mobility and falls	8 (44)
Performance of activities of daily living	6 (33)
Mortality	6 (33)
Quality of life	4 (22)
Infections	3 (17)
Health and social care resource use	3 (17)
Hydration	3 (17)
Polypharmacy	3 (17)
Medication appropriateness	3 (17)
Number of contacts with primary care	2 (11)
Malnutrition	2 (11)
Depressive symptoms	2 (11)
Quality of interprofessional communication	2 (11)
Acceptability/satisfaction with intervention	2 (11)

Accepted by Age & Aging Aug 2024

- 18 family member/clinician interview participants
- 169 first round e-Delphi participants
 - 34 patients or family members)

FINAL Del-LTC COS = 6 outcomes

1. Delirium occurrence
= incidence or prevalence
2. Delirium related distress
3. Delirium severity
4. Cognition including memory
5. Admission to hospital
6. Mortality



The 4 Delirium COS

ICU	Delirium Occurrence	Emotional distress	Delirium severity	Time to delirium resolution	Cognition	HrQoL	Mortality
Acute Hosp	Delirium Occurrence	Emotional distress	Delirium severity	Delirium duration	Cognition	HrQoL	
Pall	Delirium Occurrence	Distress due to delirium	Overall delirium symptom profile	Delirium duration until resolution			
LTC	Delirium Occurrence	Delirium related distress	Delirium severity		Cognition including memory	Admission to hospital	Mortality

CONCLUSIONS

- The Del-COrS project addressed call from delirium research community to produce COS for delirium research
- The four COS developed have similar elements despite substantial differences in the patient populations
 - Delirium occurrence
 - Delirium related distress/emotional distress
 - Delirium severity/symptom profile
- The ICU COMS provides some guidance on measurement
- Further work needed on other COMS and promoting adoption of the COS into future research



August 22, 2024

Dear Prof Louise Rose,

On behalf of the American Delirium Society (ADS), I am delighted to offer this letter of endorsement for the Delirium Core Outcome sets for acute care, critical care, palliative care, and long-term care as part of the broader project, "*Development of Core Outcome Set for Effectiveness Trials of Interventions to Prevent and/or Treat Delirium (Del-CORs)*."

Based on this endorsement, the ADS agrees to serve as a dissemination partner for these Core Outcome Sets and materials derived from them, using its networks to share this information to the ADS community and society at large. This includes dissemination via its website, social media accounts, and email to its members.

The ADS includes a multidisciplinary membership, including physicians, scientists, nurses, physical therapists, occupational therapists, pharmacists, patients, and care advocates, who are invested in the field of delirium science and clinical practice. Its annual conference draws presenters and attendees from around the world, including leading delirium experts within the United States and abroad.

The ADS is positioned as the leading medical society in the United States for advancing professional, consumer, governmental and health-industry knowledge concerning delirium and the most promising strategies for minimizing its human and capital costs. As such, the ADS regards this work as a significant advance in standardizing the scientific approaches of delirium research.

Sincerely,

Mark Oldham, MD

President, American Delirium Society

Associate Professor of Psychiatry

University of Rochester Medical Center

**THANK YOU
FOR YOUR ATTENTION
VERY HAPPY TO TAKE QUESTIONS**



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