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Supplementary Material 1: Brief Summary of the Guidelines

This clinical guideline answers the following focused question.

PICO question

What non-pharmacological interventions should be offered to patients in ICUs to prevent and manage agitation?

Background for Choosing the Question

Existing guidelines for agitation in ICUs do not provide recommendations on which non-pharmacological measures should be used to prevent and manage patient agitation. The lack of guidelines can result in ineffective and inconsistent practices, unintended incidents, overuse of medication, as well as frustration and burnout among staff. It is expected that a clinical guideline will provide staff with a tool that can supplement the pharmacological treatment of agitation, thereby improving the care and treatment process for patients in ICUs, as well as strengthening interdisciplinary collaboration and the clinical leadership of intensive care nurses in providing person-centred care to agitated patients.

Recommendations

Consensus Recommendations

1. It is considered good practice to assess intensive care patients for agitation early, regularly, and systematically.
2. It is considered good practice to identify and, when possible, treat the causes of agitation.
3. It is considered good practice to use non-pharmacological strategies before pharmacological treatment when treating agitation.
4. It is considered good practice to use de-escalation techniques to minimise agitation.
5. It is considered good practice to use methods that support patient comfort and relaxation to prevent and manage agitation.
6. It is considered good practice to re-orient the patient and use situational-oriented communication techniques to prevent and manage agitation.
7. It is considered good practice to mobilise patients to prevent agitation.
8. It is considered good practice to adjust the amount of stimulation to prevent and manage agitation.
9. It is considered good practice to promote sleep to prevent and manage agitation.

↑ WEAK/CONDITIONAL RECOMMENDATIONS FOR

1. Consider using non-pharmacological multi-component treatment for the prevention and management of agitation.
2. Consider involving relatives in the prevention and management of agitation.
3. Consider helping patients feel safe and involved in their treatment to prevent and manage agitation.
4. Consider playing music to prevent and manage agitation.

Supplementary Material 2: Reading Guide

Strong Recommendation For A strong recommendation for is given when there is high-quality evidence showing that the overall benefits of the intervention clearly outweigh the disadvantages. This means that all, or almost all, patients will accept the recommended intervention.

Strong Recommendation Against A strong recommendation against is given when there is high-quality evidence showing that the overall disadvantages of the intervention clearly outweigh the benefits. A strong recommendation against is also used when the review of the evidence shows that an intervention is almost certainly useless.

Conditional/Weak Recommendation For A weak/conditional recommendation for the intervention is given when the benefits of the intervention are greater than the disadvantages or the available evidence cannot rule out a significant benefit of the intervention while it is assessed that the harmful effects are few or absent. This recommendation is also used when there is evidence that patients' preferences vary.

Conditional/Weak Recommendation Against A weak/conditional recommendation against the intervention is given when the disadvantages of the intervention are greater than the benefits, but this is not supported by strong evidence. This recommendation is also used where there is strong evidence for both beneficial and harmful effects, but the balance between these is difficult to determine. It is also used when there is evidence that patients' preferences vary.

Consensus recommendation Consensus recommendation is a good practice recommendation used when there is no or little relevant evidence and the recommendation reached agreement amongst experts in a large Delphi study.

Supplementary Material 3: Basis for the Recommendation

Evidence Profile: The overall effect estimates and references to the studies. See Supplementary Material 9 and 11.

Quality of Evidence:

- **High:** We are very confident that the true effect is close to the estimated effect.
- **Moderate:** We are moderately confident in the estimated effect. The true effect is likely close to this, but there is a possibility that it is substantially different.
- **Low:** We have limited confidence in the estimated effect. The true effect is likely to be substantially different from the estimated effect.
- **Very Low:** We have very little confidence in the estimated effect. The true effect is likely to be substantially different from the estimated effect.

Undesirable effects/comments: All interventions were seen as beneficial. This section provides a brief description of potential harmful or undesirable effects. This section will also describe if an intervention was seen as less feasible and important.

Rationale: Description of how the above elements were weighted against each other and resulted in the current recommendation's direction and strength.

Origin of the evidence: References for the recommendation.

The grading of the quality of evidence and the strength of the recommendation is based on GRADE (Grading of Recommendations Assessment, Development and Evaluation).

For a quick and informative introduction to GRADE, the following article is recommended: G. Goldet, J. Howick. "Understanding GRADE: an introduction." Journal of Evidence-Based Medicine 6 (2013) 50-54. See also: http://www.gradeworkinggroup.org

Additionally, refer to the Danish Health Authority's Method Handbook and the Australian NHMRC Guidelines for Guidelines. These resources provide a comprehensive introduction to the method for developing National Clinical Guidelines. This method is applied in the development of the current guidelines.

Supplementary Material 4: Literature Search

Two literature searches were conducted: one for the systematic review and one for the umbrella review. Both searches were carried out in 2021 and updated in 2024.

Systematic review of effectiveness.

Databases included MEDLINE (OVID), EmCare, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Web of Science, PsycINFO, and Scopus. Additionally, the following repositories and registers were searched: Cochrane Central Register of Controlled Trials, Australian New Zealand Clinical Trials Register (ANZCTR), EU Clinical Trials Register, the World Health Organization International Clinical Trial Registry Platform, US National Library of Medicine Trials Register, ProQuest Dissertations & Theses Global, and OpenGrey. Reference lists of all relevant studies were also screened. All identified searches were exported to Covidence where duplicates were removed. AA and TC independently screened a random selection of titles to determine if they met the inclusion criteria. After reaching an agreement on these articles, AA screened the remaining titles. Full-text screening was conducted independently by two reviewers. A third reviewer was invited to provide their opinion when there was disagreement between the two independent reviewers.

Overview of all search strategies from all databases and registers

Table 1 Ovid MEDLINE 1946-June 11th, 2021 and updated 17th January 2024

#	**Medline**
1	Critical Illness/ or Critical Care/ or Intensive Care Units/ or Intensive Care/ or Respiration, Artificial/
2	(ICU* or ((intensive or critical) adj3 (care or unit*))).tw,kw.
3	((critical* adj3 ill*) or ((mechanical* or artificial) adj3 (respiration or ventilat*))).tw,kw.
4	Or/1-3
5	Psychomotor Agitation/
6	("Hyperactive delirium" or agitat* or psychomotor).tw,kw.
7	Or/5-6
8	randomized controlled trial/ or Random Allocation/ or Double Blind Method/ or Single Blind Method/ or clinical trial/ or Placebo/ or case control studies/ or cohort studies/ or cross-sectional studies/ or placebo/
9	("controlled clinical trial" or "multicenter study" or "randomi?ed controlled trial" or quasi-experiment* or (clinical adj3 trial*) or ((singl* or doubl* or treb* or tripl*) adj3 (blind* or mask*)) or placebo* or "randomly allocated" or (allocated adj3 random*) or "case control" or (cohort adj3 (study or studies)) or (observational adj3 (study or studies)) or (follow up adj3 (studies or study)) or longitudinal or retrospective or prospective or "pre-test" or "post-test" or "cross-sectional").tw,kw.
10	Or/8-9
11	4 and 7 and 10
12	Intensive Care, Neonatal/ or Intensive Care Units, Pediatric/
13	(neonatal or p?ediatric).ti,kw.
14	12 or 13
15	11 not 14
16	limit 15 to english language

/: MeSH

.tw.kf: Title or abstract, word in author provided keyword

Table 2 Emcare

#	**Emcare**
1	critical illness/ or intensive care unit/ or intensive care/ or artificial ventilation/
2	(ICU* or ((intensive or critical) adj3 (care or unit*))).tw,kw.

3	((critical* adj3 ill*) or ((mechanical* or artificial) adj3 (respiration or ventilat*))).tw,kw.
4	Or/1-3
5	restlessness/
6	("Hyperactive delirium" or agitat* or psychomotor).tw,kw.
7	Or/5-6
8	clinical study/ or exp case control study/ or case report/ or exp clinical article/ or clinical trial/ or intervention study/ or exp longitudinal study/ or major clinical study/ or prospective study/ or retrospective study/
9	("controlled clinical trial" or "multicenter study" or "randomi?ed controlled trial" or (clinical adj3 trial*) or ((singl* or doubl* or treb* or tripl*) adj3 (blind* or mask*)) or placebo* or "randomly allocated" or (allocated adj3 random*) or "case control" or (cohort adj3 (study or studies)) or (observational adj3 (study or studies)) or (follow up adj3 (studies or study)) or longitudinal or retrospective or prospective or "pre-test" or "post-test" or "cross-sectional").tw,kw.
10	Or/8-9
11	4 and 7 and 10
12	newborn intensive care/
13	(neonatal or p?ediatric).ti,kw.
14	12 or 13
15	11 not 14
16	limit 15 to english language

Table 3 CINAHL search

#	**CINAHL for EBSCO**
S1	(MH "Critical Illness") OR (MH "Critical Care") OR (MH "Intensive Care Units+") OR (MH "Respiration, Artificial+")
S2	TI ((ICU* OR ((intensive OR critical) N2 (care OR unit*)))) OR AB ((ICU* OR ((intensive OR critical) N2 (care OR unit*))))
S3	TI (((critical* N2 ill*) OR ((mechanical* OR artificial) N2 (respiration OR ventilat*)))) OR AB (((critical* N2 ill*) OR ((mechanical* OR artificial) N2 (respiration OR ventilat*))))
S4	S1 OR S2 OR S3
S5	(MH "Psychomotor Agitation") OR (MH "Agitation")
S6	TI (("Hyperactive delirium" OR agitat* OR psychomotor)) OR AB (("Hyperactive delirium" OR agitat* OR psychomotor))
S7	S5 OR S6
S8	(MH "Clinical Trials+") OR (MH "Case Control Studies+") OR (MH "Correlational Studies") OR (MH "Double-Blind Studies") OR (MH "Prospective Studies+")
S9	TI (("controlled clinical trial" OR "multicenter study" OR "randomi#ed controlled trial" OR (clinical N2 trial*) OR ((singl* OR doubl* OR treb* OR tripl*) N2 (blind* OR mask*)) OR placebo* OR "randomly allocated" OR (allocated N2 random*) OR "case control" OR (cohort N2 (study OR studies)) OR (observational N2 (study OR studies)) OR (follow up N1 (studies OR study)) OR longitudinal OR retrospective OR prospective OR "pre-test" OR "post-test" OR "cross-sectional")) OR AB (("controlled clinical trial" OR "multicenter study" OR "randomi#ed controlled trial" OR (clinical N2 trial*) OR ((singl* OR doubl* OR treb* OR tripl*) N2 (blind* OR mask*)) OR placebo* OR "randomly allocated" OR (allocated N2 random*) OR "case control" OR (cohort N2 (study OR studies)) OR (observational N2 (study OR studies)) OR (follow up N1 (studies OR study)) OR longitudinal OR retrospective OR prospective OR "pre-test" OR "post-test" OR "cross-sectional"))
S10	S8 OR S9
S11	S4 AND S7 AND S10
S12	(MH "Intensive Care Units, Pediatric") OR (MH "Intensive Care Units, Neonatal")
S13	TI ((neonatal OR p#ediatric)) OR SU ((neonatal OR p#ediatric))
S14	S12 OR S13
S15	S11 NOT S14
S16	S11 NOT S14 (narrow by language: English)

Table 4 Web of Science search

#	**Web of Science**
1	TS=(ICU* or ((intensive or critical) NEAR/2 (care or unit*)))
2	TS=((critical* NEAR/2 ill*) or ((mechanical* or artificial) NEAR/2 (respiration or ventilat*)))
3	#1 OR #2
4	TS=("Hyperactive delirium" or agitat* or psychomotor).

5	TS=("controlled clinical trial" or "multicenter study" or "randomi?ed controlled trial" or (clinical NEAR/2 trial*) or ((singl* or doubl* or treb* or tripl*) NEAR/2 (blind* or mask*)) or placebo* or "randomly allocated" or (allocated NEAR/2 random*) or "case control" or (cohort NEAR/2 (study or studies)) or (observational NEAR/2 (study or studies)) or (follow up NEAR/2 (studies or study)) or longitudinal or retrospective or prospective or "pre-test" or "post-test" or "cross-sectional")
6	#3 AND #4 AND #5
7	TS=(neonatal or p?ediatric).
8	#6 NOT #7 and English (Languages)

TS: title, abstract, author keywords, and keywords Plus

Table 5 PsycINFO search

#	**PsycINFO**
1	intensive care/ or artificial respiration/
2	(ICU* or ((intensive or critical) adj3 (care or unit*))).tw,id.
3	((critical* adj3 ill*) or ((mechanical* or artificial) adj3 (respiration or ventilat*))).tw,id.
4	Or/1-3
5	agitation/
6	("Hyperactive delirium" or agitat* or psychomotor).tw,id.
7	Or/5-6
8	exp clinical trials/ or cohort analysis/ or followup studies/ or exp longitudinal studies/ or retrospective studies/
9	("controlled clinical trial" or "multicenter study" or "randomi?ed controlled trial" or (clinical adj3 trial*) or ((singl* or doubl* or treb* or tripl*) adj3 (blind* or mask*)) or placebo* or "randomly allocated" or (allocated adj3 random*) or "case control" or (cohort adj3 (study or studies)) or (observational adj3 (study or studies)) or (follow up adj3 (studies or study)) or longitudinal or retrospective or prospective or "pre-test" or "post-test" or "cross-sectional").tw,id.
10	Or/8-9
11	4 and 7 and 10
12	Intensive Care, Neonatal/ or Intensive Care Units, Pediatric/
13	(neonatal or p?ediatric).ti,id.
14	Or/12-13
15	11 not 14
16	limit 15 to english language

Table 6 Scopus search

#	**SCOPUS**
1	((TITLE-ABS-KEY (icu* OR ((intensive OR critical) W/2 (care OR unit*))) OR TITLE-ABS-KEY (((critical* W/2 ill*) OR ((mechanical* OR artificial) W/2 (respiration OR ventilat*))))) AND TITLE-ABS-KEY ("Hyperactive delirium" OR agitat* OR psychomotor) AND TITLE-ABS-KEY ("controlled clinical trial" OR "multicenter study" OR "randomi*ed controlled trial" OR (clinical W/2 trial*) OR ((singl* OR doubl* OR treb* OR tripl*) W/2 (blind* OR mask*)) OR placebo* OR "randomly allocated" OR (allocated W/2 random*) OR "case control" OR (cohort W/2 (study OR studies)) OR (observational W/2 (study OR studies)) OR (follow AND up W/2 (studies OR study)) OR longitudinal OR retrospective OR prospective OR "pre-test" OR "post-test" OR "cross-sectional")) AND NOT TITLE-ABS-KEY (neonatal OR p*ediatric) AND (LIMIT-TO (LANGUAGE , "English"))

Table 7 ProQuest Dissertations and Thesis Global search

#	**ProQuest Dissertations & Theses Global**
	(mainsubject("intensive care") OR mainsubject("critical care") OR noft((ICU* or ((intensive or critical) NEAR/2 (care or unit*)))) or noft(((critical* NEAR/2 ill*) or ((mechanical* or artificial) NEAR/2 (respiration or ventilat*))))) AND (noft(("Hyperactive delirium" or agitat* or psychomotor).)) AND (noft(("controlled clinical trial" or "multicenter study" or "randomi?ed controlled trial" or (clinical NEAR/2 trial*) or ((singl* or doubl* or treb* or tripl*) NEAR/2 (blind* or mask*)) or placebo* or "randomly allocated" or (allocated NEAR/2 random*) or "case control" or (cohort NEAR/2 (study or studies)) or (observational NEAR/2 (study or studies)) or (follow up NEAR/2 (studies or study)) or longitudinal or retrospective or prospective or "pre-test" or "post-test" or "cross-sectional")))

Table 8 Cochrane Search

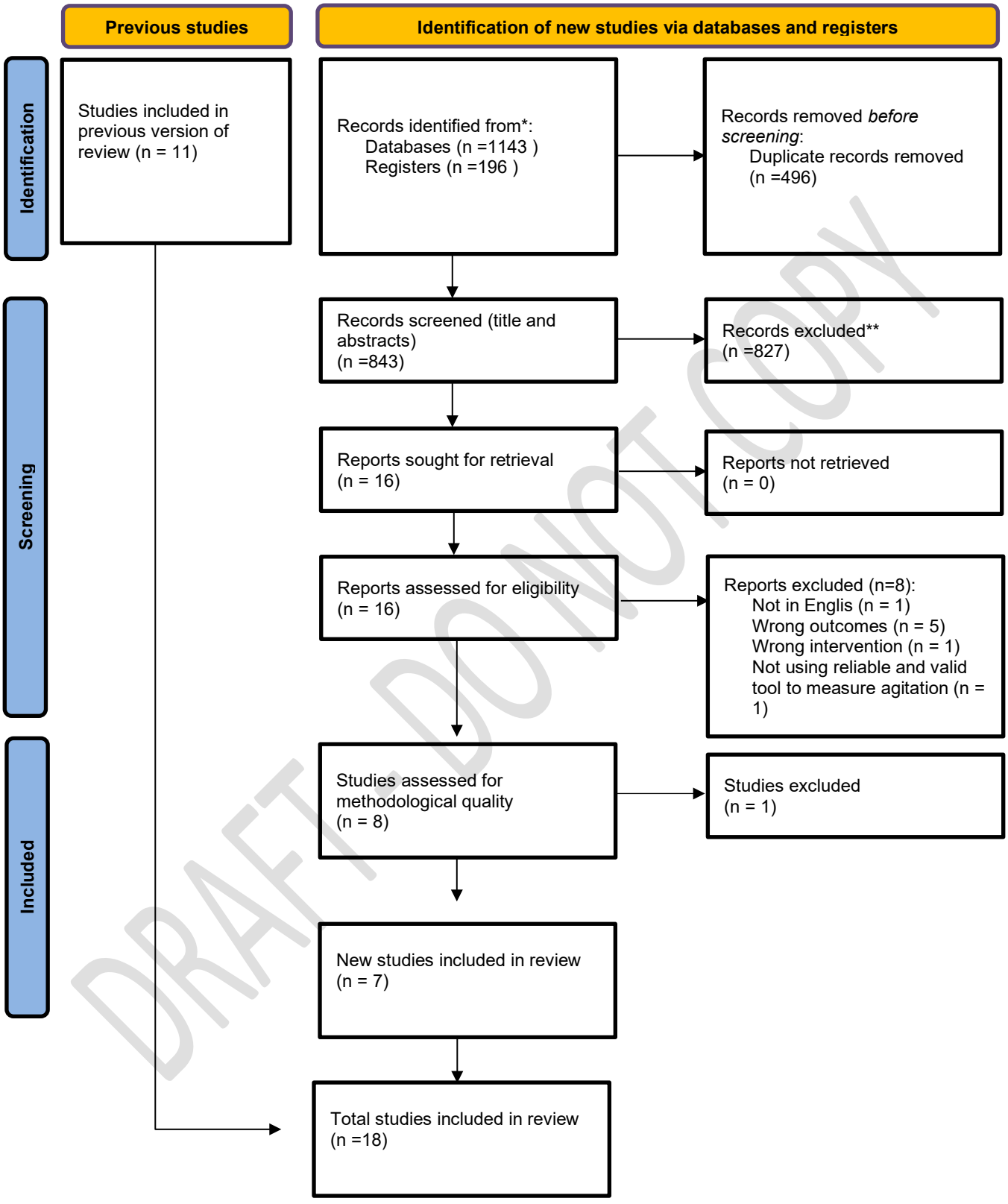
#	**Cochrane (Central)**
	Trials matching ((ICU* or ((intensive or critical) NEAR/2 (care or unit*)))) OR (((critical* NEAR/2 ill*) or ((mechanical* or artificial) NEAR/2 (respiration or ventilat*)))) in Title Abstract Keyword AND "Hyperactive delirium" or agitat* or psychomotor in Title Abstract Keyword AND ("controlled clinical trial" or "multicenter study" or "randomi?ed controlled trial" or (clinical NEAR/2 trial*) or ((singl* or doubl* or treb* or tripl*) NEAR/2 (blind* or mask*)) or placebo* or "randomly allocated" or (allocated NEAR/2 random*) or "case control" or (cohort NEAR/2 (study or studies)) or (observational NEAR/2 (study or studies)) or (follow up NEAR/2 (studies or study)) or longitudinal or retrospective or prospective or "pre-test" or "post-test" or "cross-sectional") in Title Abstract Keyword - (Word variations have been searched)

Cochrane only has MESH terms for the articles from Medline. This means that when you search Mesh terms in Cochrane, that search will only retrieve records from Medline**. If you have already searched Medline with Mesh terms, only search your keywords in Cochrane.**

Table 9 Trial registers and grey literature

Register	**Search teams**
ClinicalTrials.gov	Agitation, psychomotor
Australian New Zealand Clinical Trials Registry	Agitation
World Health Organization International Clinical Trial Registry Platform	Basic search: Agitation, completed studies
EU Clinical Trials	Agitation
Open Grey	Agitation

Figure 1 PRISMA Systematic Review Nonpharmacological interventions for agitation ICU Updated search 18th Jan 2024



From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

Modified Umbrella Review of Qualitative Systematic Reviews and Guidelines

This review aimed to examine qualitative systematic reviews of patients in intensive care units and their experiences with agitation and non-pharmacological strategies. It also aimed to investigate guidelines with recommendations for non-pharmacological prevention, minimisation, or management of agitation in all healthcare settings. The umbrella review followed JBI's methodology for umbrella reviews (49). In the umbrella review, two searches were conducted. The first search focused on qualitative systematic reviews addressing patients' experiences of agitation and non-pharmacological interventions during intensive care unit stays. This search also included practice recommendations from guidelines, consensus statements, and procedures. The second search focused solely on practice recommendations for the prevention and treatment of agitation across all departments and specialities.

Table 10 Inclusion criteria

	Inclusion criteria	
	Search 1	**Search 2**
Patient	Adult patients in the ICU	Adult patients in all healthcare institutions
Interventions/ phenomena of interest	Experiences of agitation and NPSs or NPSs for agitation. Experiences of delirium were included if the findings indicated patients had experiences of excessive motor activity, emotional tension, confusion of aggression.	NPSs for agitation
outcome	Prevention, minimisation, and management of agitation	Prevention, minimisation, and management of agitation
Study design	Systematic reviews, guidelines, consensus statements, best practices.	Guidelines, consensus statements, best practices.

Search strategies

The searches were carried out in Sep 2021 and again in Jan 2024 in the databases Medline (OVID), CINAHL (Cumulative Index to Nursing and Allied Health Literature) and PsychInfo. In addition guidelines were searched for in the following registers: NHMRC Australian Clinical Practice Guidelines (https://www.nhmrc.gov.au/about-us/publications), National Institute for Health and Clinical Excellence (https://www.nice.org.uk/guidance), US National Guideline Clearinghouse (https://www.sign.ac.uk/our-guidelines/), Scottish Intercollegiate Guidelines Network (https://www.sign.ac.uk/our-guidelines/), Worlds Health Organisation (https://www.who.int/publications/guidelines/en/ BMJ Best Practice (https://bestpractice.bmj.com/info/) Guidelines International Network (GIN) library of guidelines (https://guidelines.ebmportal.com/), Agency for Healthcare Research and Quality (https://www.ahrq.gov/prevention/guidelines/archive.html), Canadian Medical Association CPG InfoBase, Canada (https://joulecma.ca/cpg/homepage),Turning research into practice (TRIP) database (https://www.tripdatabase.com/), New Zealand Guidelines Group, New Zealand (https://www.nzgp-webdirectory.co.nz/WEB+DIRECTORY/CLINICAL+INFORMATION/GUIDELINES+NEW+ZEALAND.html), Centre for Retningslinjer (https://cfkr.dk/retningslinier/). Reference lists of all relevant papers were also screened. All citations were exported into the Covidence software (1) file. From this platform, duplicates were removed. Titles and abstracts were screened against the inclusion criteria by two independent reviewers. Full texts were retrieved from relevant papers and again assessed by two independent reviewers.

Search strategy Guidelines across all health care settings

Table 11 Original Search strategy for guidelines Medline

#	Medline
1	Psychomotor agitation/
2	("Hyperactive delirium" or agitat* or psychomotor).tw,kw.
3	1 or 2
4	guideline/ or practice guideline/ or consensus/
5	(guideline* or guidance* or statement or standards or "position paper").tw,kw.
6	4 or 5
7	3 AND 6
8	limit 7 to (english language and yr="2011 - 2021")

Table 12 Search strategy for guidelines CINAHL

#	CINAHL
1	(MH "Psychomotor Agitation") OR (MH "Agitation")
2	TI (("Hyperactive delirium" OR agitat* OR psychomotor)) OR AB (("Hyperactive delirium" OR agitat* OR psychomotor))
3	S1 or S2
4	MH (guidelines or protocols or "practice guideline" or "clinical practice guideline")
5	AB (guideline* OR guidance* OR statement* OR standards)
6	S4 or S5
7	S3 AND S6
8	Published Date 2011-2021 Narrow by language: English

Table 13 Search strategy for guidelines PsycINFO

#	PsycInfo
1	Exp agitation/
2	("Hyperactive delirium" or agitat* or psychomotor).tw,id.
3	1 or 2
4	Exp Treatment Guidelines/
5	(Guideline* or Guidance* or consensus or statement* or standards or "position paper" or "position stand" or recommendation*).tw.
6	4 or 5
7	3 and 6
8	limit 8 to (english language and yr="2011 - 2021")

Search strategy for Guidelines and qualitative reviews ICU

Table 14 Table 1 Search strategy for reviews and guidelines ICU

#	Medline
1	aggression/ or agonistic behavior/ or delusions/ or paranoid behavior/ or problem behavior/ or wandering behavior/ or confusion/ or delirium/ or emergence delirium/ or psychomotor agitation/ or anger/ or rage/ or anxiety/ or psychological distress/ or fear/ or panic/ or irritable mood/ or dangerous behavior/
2	((difficult or inappropriate or agonistic or problem* or aggressive or abusive or challenging or disturbed or disruptive or agonistic or inappropriate or repetitive or purposeless or non-specific or dangerous) adj1 (behavi?or*)).tw,kf.
3	("hyperactive delirium" or agitat* or aggressi* or confus* or restless* or delirium or delirious or delusions or paranoid or anger or rage or anxiety or "psychological distress" or fear or panic or restless or "resist* care" or panic or irrit* or hyperactiv* or "excessive motor activity" or "psychomotor activity" or pacing or pushing or biting or grabbing or scratching or pulling or kicking).tw,kf.
4	1 or 2 or 3
5	meta-synthesis/ or "Systematic Review"/ or "Review"/
6	Guideline/ or Guidance/ or consensus/ or practice guidelines/ or statement/ or standards
7	5 or 6
8	Critical Illness/ or Critical Care/ or Intensive Care Units/ or Intensive Care/ or Respiration, Artificial/
9	(ICU* or ((intensive or critical) adj3 (care or unit*))).tw,kw.
10	((critical* adj3 ill*) or ((mechanical* or artificial) adj3 (respiration or ventilat*))).tw,kw.
11	8 or 9 or 10

12	4 AND 7 AND 11
13	Intensive Care, Neonatal/ or Intensive Care Units, Pediatric/
14	("neonatal" or "p?ediatric").tw,kf.
15	13 AND 14
16	12 NOT 15
17	Limit 15 to (english language and yr="2011 - 2021")

Table 15 Table 1 Search strategy for reviews and guidelines in ICU

#	CINAHL
1	(MH "Aggression") OR (MH "Disruptive Behavior") OR (MH "Wandering Behavior") OR (MH "Compulsive Behavior") OR (MH agitation or aggression or anxiety) OR (MH Delirium) OR (MH "confusion") OR (MH psychological distress)
2	TI ((difficult OR inappropriate OR agonistic OR problem* OR aggressive OR abusive OR challenging OR disturbed OR disruptive OR agonistic OR inappropriate OR repetitive OR purposeless OR non-specific OR dangerous) N2 (behavi#OR*))
3	TI ("hyperactive delirium" OR agitat* OR aggressi* OR confus* OR restless* OR delirium OR delirious OR delusions OR paranoid OR anger OR rage OR anxiety OR "psychological distress" OR fear OR panic OR restless OR "resist* care" OR panic OR irrit* OR hyperactiv* OR "excessive motor activity" OR "psychomotor activity" OR pacing OR pushing OR biting OR grabbing OR scratching OR pulling OR kicking)
4	S1 or S2 or S3
5	MH systematic review or meta-analysis or literature review or review of literature
6	TI systematic review or meta-analysis or literature review or review of literature
7	MH guidelines or protocols or practice guideline or clinical practice guideline or recommendation
8	TI guidelines or protocols or practice guideline or clinical practice guideline or recommendation
9	5 or 6 or 7 or 8
10	(MH "Critical Illness") OR (MH "Critical Care") OR (MH "Intensive Care Units*") OR (MH "Respiration, Artificial*")
11	TI ((ICU* OR ((intensive OR critical) N2 (care OR unit*)))) OR AB ((ICU* OR ((intensive OR critical) N2 (care OR unit*))))
12	TI (((critical* N2 ill*) OR ((mechanical* OR artificial) N2 (respiration OR ventilat*)))) OR AB (((critical* N2 ill*) OR ((mechanical* OR artificial) N2 (respiration OR ventilat*))))
13	10 or 11 or 12
14	4 AND 9 AND 13
15	Published Date 2011-2021 Narrow by language: English

Table 16 Table 1 Search strategy for reviews and guidelines ICU

#	PsycINFO
1	aggression/ or agonistic behavior/ or delusions/ or paranoid behavior/ or problem behavior/ or wandering behavior/ or confusion/ or delirium/ or emergence delirium/ or psychomotor agitation/ or anger/ or rage/ or anxiety/ or psychological distress/ or fear/ or panic/ or irritable mood/ or dangerous behavior/
2	((difficult or inappropriate or agonistic or problem* or aggressive or abusive or challenging or disturbed or disruptive or agonistic or inappropriate or repetitive or purposeless or non-specific or dangerous) adj2 (behavior* or behaviour)).tw,id.
3	("hyperactive delirium" or agitat* or aggressi* or confus* or restless* or delirium or delirious or delusions or paranoid or anger or rage or anxiety or "psychological distress" or fear or panic or restless or "resist* care" or panic or irrit* or hyperactiv* or "excessive motor activity" or "psychomotor activity" or pacing or pushing or biting or grabbing or scratching or pulling or kicking).tw,id.
4	1 or 2 or 3
5	Systematic review/ OR meta-analysis/
6	(review or meta-analysis).tw,id.
7	Treatment Guidelines/
8	(Guideline* or Guidance* or consensus or statement* or standards or "position paper" or "position stand" or recommendation*).tw,id.
9	5 or 6 or 7 or 8
10	intensive care/ or artificial respiration/
11	(ICU* or ((intensive or critical) adj3 (care or unit*))).tw,id.
12	((critical* adj3 ill*) or ((mechanical* or artificial) adj3 (respiration or ventilat*))).tw,id.
13	10 or 11 or 12
14	4 AND 9 AND 13
15	limit 14 to (english language and yr="2011 - 2021")

Figure 2 PRISMA Updated search 25th Jan 2024: guidelines in all health care settings (2).

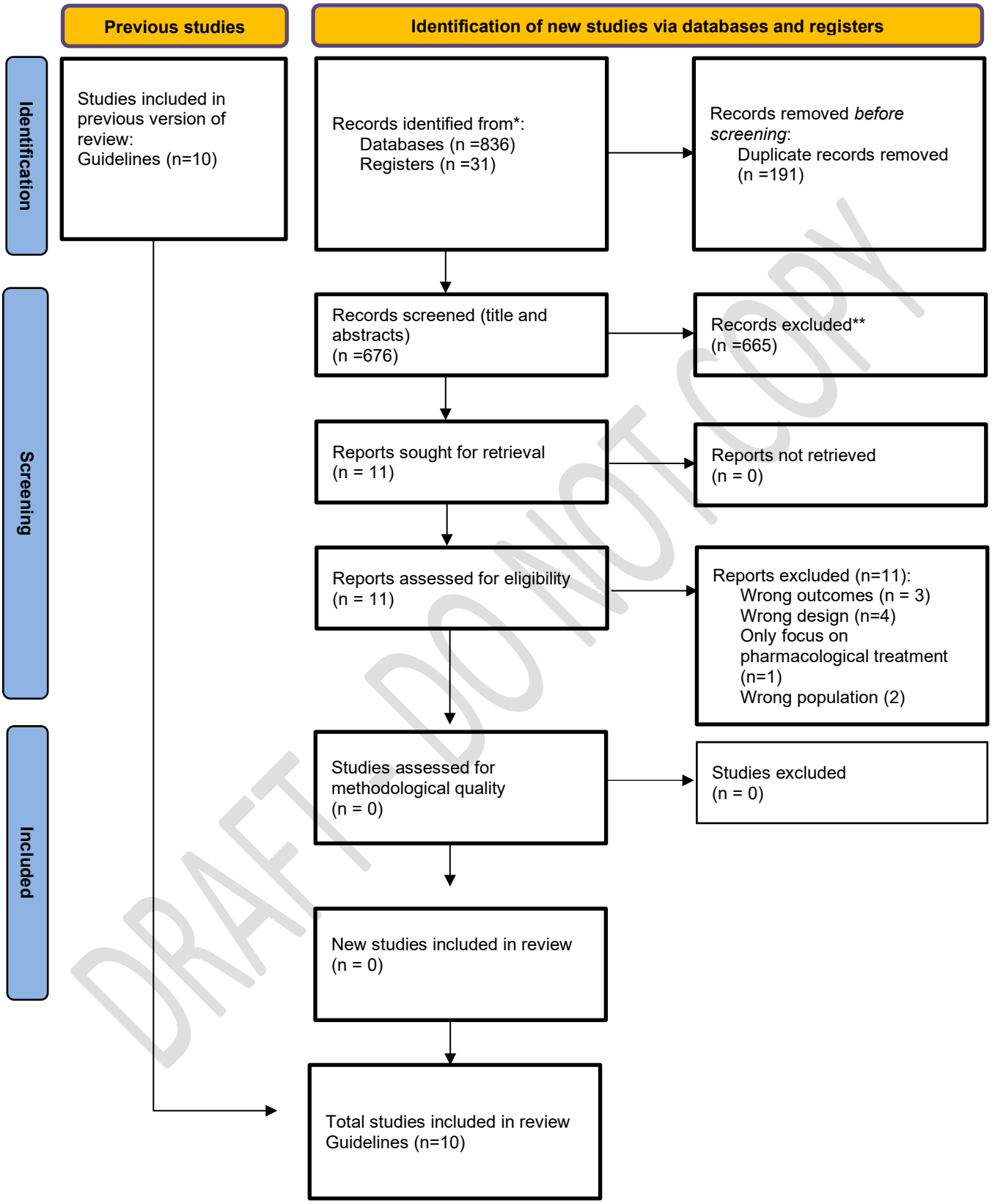
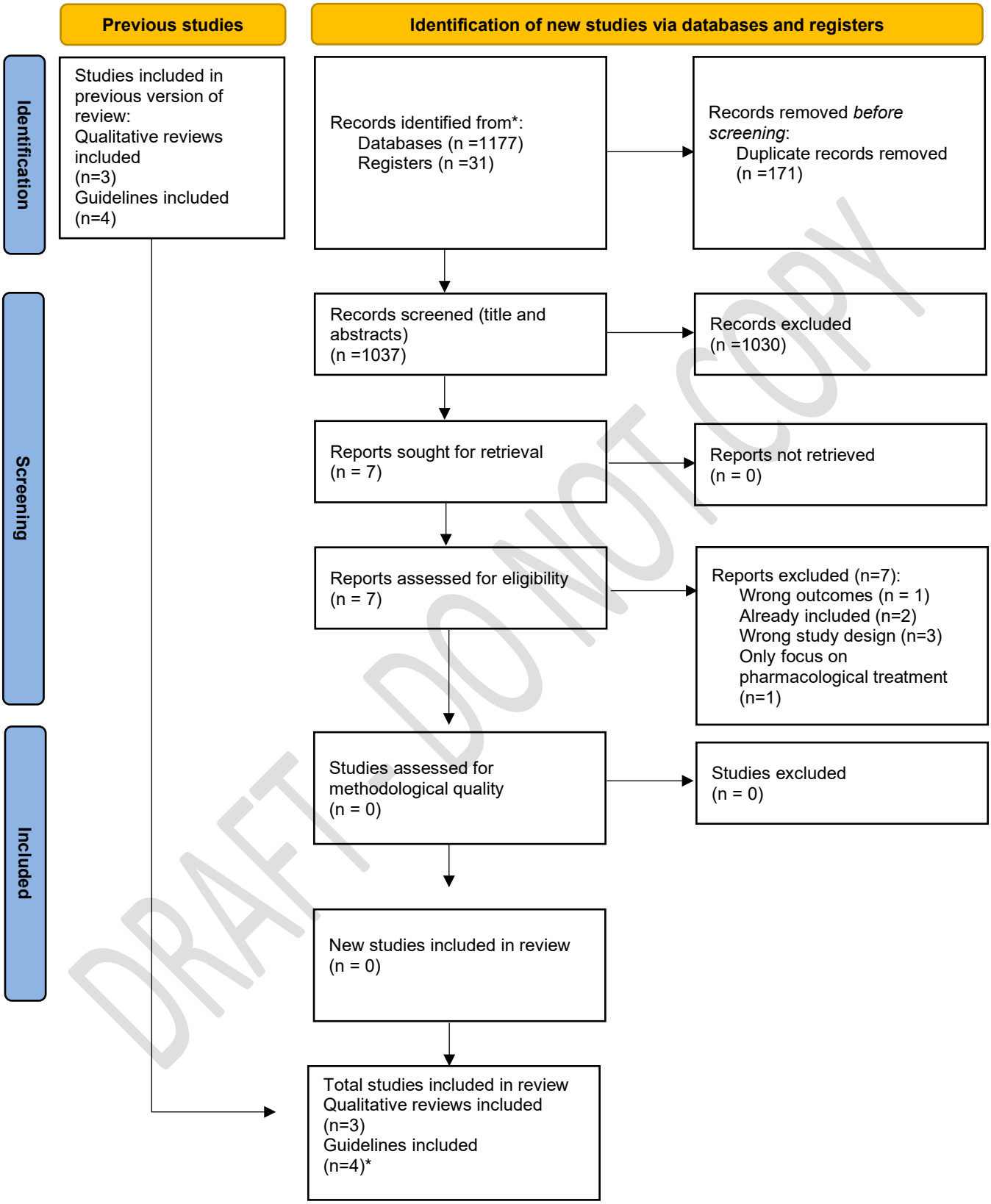


Figure 3 PRISMA updated search 25th January: review and guidelines the ICU (2).



*These guidelines were already included in the first search.

Supplementary Material 5: Description of method for guideline development

A systematic review of nurses' experiences of caring for agitated patients in the ICU, together with stakeholder consultation, highlighted the need for the guidelines. The guidelines were developed following the Australian National Health and Medical Research Council (NHMRC)'s guidelines for guidelines to ensure the production of high-quality guidelines. NHMRC's method is based on the GRADE methodology and is very similar to the Danish Health Authority's model for preparation of national clinical guidelines. The guidelines were developed over four phases.

Phase one: determination of the scope. In the first phase, Danish and Australian patients, family members, ICU clinicians and researchers (n=51) were consulted to determine the scope of the guidelines. The consultation phase resulted in several changes to the original scope, for instance, the change from the end users being only nurses to being the multidisciplinary ICU team. Stakeholders also helped identify important outcomes.

Phase two: identifying the evidence. The second phase involved identifying existing evidence. Sparse and poor quality evidence was found in a systematic review of effectiveness, and therefore the guideline development group decided to look broader a both qualitative evidence and evidence from guidelines outside the ICU. While several nonpharmacological interventions were identified through systematic searches, most of the evidence was either of low quality or indirect. It was then decided, in phase three, to carry out a three-round modified Delphi study aiming to reach a consensus on nonpharmacological strategies among Danish and Australian experts.

Phase three: Modified Delphi study. The first round of the Delphi study was informed by the existing literature and advice from stakeholders. For items to be endorsed in the final guidelines, consensus needed to be established (IQR ≤1) and the level needed to be ≥ 75% in both countries. Participants also rated the importance and feasibility of each included recommendation and the perceived barriers and facilitators of guideline implementation. Phase three identified a set of 63 clinical practice recommendations and presented these with linked evidence, undesirable effects, feasibility, importance, the certainty of the evidence, the strength of the recommendations and barriers and facilitators to guideline implementation.

Phase four: finalising guidelines for an Australian audience. By the end of 2023, the guideline working group was established to update all searches, refine the recommendations and consult stakeholders. During this process it was decided to include recommendations that only reached consensus in Australia. These recommendations, together with the original 63 recommendations, were narrowed to 13 final recommendations.

Supplementary Material 6: Definitions of key concepts

Table 17 Definitions of key concepts

Concept	Definition
Alternative communication methods	May include pen and paper, boards with icons and pictures, alphabet boards, computer communication systems, etc.
Agitation	Agitation is a psychomotor disturbance characterised by a marked increase in motor activities and emotional tension, accompanied by some or all of the following: a loss of control of action, confusion, resistance or interruption of care, aggression, and change of vital signs. Modified from Chevrolet & Jolliet (3).
De-escalation techniques	Techniques or strategies aimed at reducing tension, aggression, or conflict in a situation. This involves the use of verbal and non-verbal communication to help calm patients and prevent a situation from escalating or becoming violent. (4).
Empowerment	Empowerment is a concept built on mutual and trusting relationships, knowledge, and skills through which people can develop a sense of inner strength and self-determination (5).
Consensus Statements	A statement about an aspect that a representative group of experts in the field generally agrees upon. There is no literature search, and if there is, it has not been conducted systematically (6). The evidence has not been assessed using the GRADE method. There is no direction or strength in the recommendation (7).
Expert	In the development of this guideline, an expert has been defined as a person who is highly knowledgeable about or skilled in the field of agitation in intensive care patients (8). This included healthcare professionals with several years of experience managing agitation in patients admitted to an intensive care unit, researchers who have studied and published scientific articles on patient agitation in intensive care settings, as well as patients and relatives who have personal insights and lived experiences with patient agitation in an intensive care unit.
Fidget toys	A fidget toy is an object designed to be touched, squeezed, or pulled to keep restless hands occupied.
Prevent	Strategies to reduce the occurrence, frequency, and severity of future episodes of agitation (9).
Physical restraint	Any manual method that reduces the patient's ability to move freely (10, 11).
Clinical guidelines	Systematically developed statements that can be used by professionals and patients when making decisions about appropriate and correct healthcare services in specific clinical situations. (12). A clinical guideline provides recommendations for healthcare practices based on the best available evidence (12).
Management of agitation	A reactive strategy to manage agitated behaviour, preventing agitation from leading to serious consequences (9).
Minimise agitation	A reactive strategy to reduce the severity of agitation.

Neuropedagogy	Neuropedagogy is based on understanding how the brain functions and helps patients focus on their strengths rather than their weaknesses.
Non-pharmacological strategies	Any non-pharmacological intervention or approach that is targeted, reproducible, and potentially capable of achieving a relevant benefit. Modified from Herguedas (13).
Person-centred care	A holistic approach to patient care involves active patient participation, respect for their individual needs, values, and preferences, and the establishment of a trusting relationship between healthcare professionals and patients, considering the context (14, 15).
Protocol	Procedures or protocols include a series of procedural steps or instructions for clinical practice. (6). Minimal methodological requirements are necessary for the development of a procedural guideline (7)
Relative	Individuals who have a significant relationship with the patient (e.g., family, parent, child, friend).

Supplementary Material 7: Inclusion of Patients' and Healthcare Professionals' Perspectives

Patient perspective

Patient perspectives were integral to the development of these guidelines and were incorporated across all four study phases.

In phase one, input was sought through interviews with a family member and a former ICU patient. Their experiences and feedback provided initial insights that shaped the early scope of the guidelines.

In phase two, we explored the existing literature that captured patient experiences of agitation in the ICU through an umbrella review. This phase allowed us to gather qualitative evidence on how patients perceive and experience agitation and the management of the behaviours, which informed key recommendations based on this qualitative data. The umbrella review, which was based on three qualitative systematic reviews, revealed that many patients who had experienced agitation during their stay in an intensive care unit found the hospitalisation to be a frightening time. They felt disoriented, confused, and out of control. In retrospect, some patients felt shame and guilt over their behavior, especially those who had harmed staff. Overall, patients longed for human and trusting relationships. They described how non-pharmacological interventions such as reality orientation, empowerment support, sleep, and opportunities for communication with staff helped them. Patients also felt that their families acted as protectors, helping them find calm and providing reality orientation.

In phase three, 11 patients and family members participated in the Delphi study. While the study aimed to reach consensus among all participants, particular emphasis was placed on analysing the qualitative comments provided by patients and family members to ensure their voices were heard. To ensure

In phase four, consultation of the draft recommendations were advertised in patient and consumer organisations. Comments received were carefully considered before publication of the final guidelines.

Throughout the development process, the research team emphasised ethical and fair engagement with patients and family members. We ensured that all communications—including interviews, surveys, and study materials—were presented in easily understandable language, available in both Danish and English. This approach fostered clear and meaningful participation from patients and families.

Additionally, the authors published a paper documenting this process, further underscoring the importance of patient inclusion in the development of these guidelines (16).

Perspectives of healthcare professionals

ICU health professionals played a central role in the development of these guidelines, contributing valuable insights throughout all phases of the study.

Before the commencement of the guidelines, the perspective of healthcare professionals was examined by formulating the following PICo: *What experiences and insights do healthcare professionals working in intensive care units have with non-pharmacological interventions to prevent, minimise, and manage agitation in adult patients?* (17). The systematic review, which included 10 qualitative and one quantitative study, highlighted the complexites nurses face when caring for agitated patients in intensive care units. Nurses described the physical and emotional challenges of caring for agitated patients. This was partly due to the significant responsibility they felt for the safety of both patients and staff, as well as frustrations over not being able to fulfil other work tasks. To protect patients from self-extubation and the removal of other

life-supporting medical equipment, nurses had to remain constantly vigilant and close to patients, who could sometimes be perceived as dangerous. It became particularly clear that nurses felt uncertain about how to provide the best possible care and treatment to agitated patients without increasing the dose of sedative medication. Communication strategies, support for patient sleep, partnerships with families, and the use of physical restraints were the only non-pharmacological strategies mentioned (17).

In phase one of the study, we engaged 49 healthcare professionals, including nurses and other ICU staff, to explore their views on the scope of the guidelines. This was achieved through interviews, workshops, and written feedback, allowing a broad understanding of their perspectives on the key areas of focus.

In phase three, 103 multidisciplinary ICU health professionals participated in a Delphi study, including ten physicians, 74 ICU nurses, six researchers, and 15 other ICU staff from Denmark and Australia. These participants rated the proposed recommendations and assessed their feasibility and importance. In addition to providing quantitative feedback, they contributed extensive qualitative comments, which were meticulously reviewed and incorporated into the guidelines to ensure relevance and practicality.

In the final phase, stakeholders, including patient representatives, reviewed the final draft of the guidelines and offered additional comments, ensuring that the guidelines were practical and aligned with the needs of the ICU healthcare team.

Supplementary Material 8: The Clinical Questions (Focused Questions)

PICO 1

PICO: What non-pharmacological interventions should be offered to patients in ICUs to prevent and manage agitation?

Background for the Question: There are no guidelines regarding non-pharmacological interventions for the prevention and management of agitation among patients in ICUs. The lack of recommendations can result in variations in clinical practice, inappropriate use of medications, and impact patient safety.

Population: The clinical guideline addresses adult patients (18 years or older) admitted to an intensive care unit.

Intervention: All types of non-pharmacological interventions.

Comparison: Usual care or other non-pharmacological interventions.

Outcome: According to the COMET database, there were no existing standard outcome sets in this area (100). Therefore, users also advised the working group on important outcomes. Based on advice from the advisory group, the primary outcome was the effect on agitation, measured using a validated tool. Parameters such as pulse, stress hormones, and the use of antipsychotic or sedative medications were not considered as they could be related to other factors in the intensive care unit. Other outcomes considered included the use of pharmacology, use of physical restraints, staff and family confidence in managing agitation, adverse events such as unplanned extubations, nosocomial infections, and removal of equipment, length of stay in the intensive care unit, quality of life, risk of patient post-traumatic stress, patient satisfaction, family satisfaction, and work-related injuries.

Supplementary Material 9: Data Extraction and Quality Assessment of Included Evidence

Data Extraction

Data extraction from the included studies was conducted independently by two individuals using a data extraction template. Disagreements were resolved through discussion or by involving a third party in the extraction process.

Table 18 Characteristics of all included studies Systematic Review NPS for agitation in ICU

Study details	Design	Sample (I/C/P) and characteristics	Setting	Intervention	Comparison	Duration and frequency	Scale and Measurement points	Study results	Limitations
Aroma therapy									
Karimzadeh et al. 2021 (18) Iran	RCT	I: lavendar: n = 57, mean age 37:26 ± 12:72, I: Citrus aurantium n = 56, mean age 35:56 ± 11:41,, C: placebo n = 56, mean age 35:70 ± 10:58 Conscious and not intubated	ICUs (general, surgical and poisoning)	Lavender and Citrus aurantium. A 4 × 4 gauze saturated with 5 drops of lavender or Citrus was placed at a distance of 10cm from the patient's nose.	Placebo (normal saline NS) A 4 × 4 gauze saturated with 5 drops of NS was placed at a distance of 10cm from the patient's nose.	The patient was asked to inhale it for 30 minutes.	RASS scale Before intervention, immediately, one hour and three hours after the intervention	Restlessness/agitation reduced significantly in all three groups. Although restlessness/agitation in lavender and Citrus aurantium groups reduced more than the placebo, no significant difference was found between the three groups.	Unclear if/how inter-rater reliability was ensured. Patients and assessors not blinded
Mashouf et al. 2017 (19). Iran	QE	n=40, mean age 49.36 Gender (m/f): 26/14	General ICUs	Aromatherapy by Lavender Oil	No control	60 min x 1	RASS Before, every 15 min during the intervention, then every 30	**Agitation:** Levels before and after aromatherapy was significant	No comparison group No arguments for sample size.

		All mechanically ventilated.					min. until two hours after the intervention.	(P < 0.001). The greatest reduction of agitation was seen 180 min. after the intervention.	65% males. Unclear how inter-rater reliability was ensured. Brief intervention period with short term follow up.
Family involvement									
Nouri et al. 2021 (20) Iran	RCT	I: n = 35, mean age 62.17±9.72 C: n = 35, mean age 62.00±9.17, Patients undergoing coronary artery bypass grafting (GABG)	ICU	Family education and family presence including communications and reassurance post-surgery	Routine care which did not include family visitation	Family member present during weaning process	RASS scale Measured seven times: on time of entry into ICU, the first respiratory drive, the family entrance, 20 min and 1 hour after the presence of the family members, the time of extubation and 1 hour after extubation	There was no significant difference in the mean scores of RASS between the two experimental and control groups at any of the seven stages (P> 0.05).	Unclear how much time the family members spend with the patient and how involved they were in care. Family members not present after extubation. Patients and assessors not blinded
Welsch et al., 2023 (21) USA	Quasi-experiemental pilot study	31 patients All patients undergone spinal surgery	Spine ICU	Family present on the first night after surgery	No family present	Family present first night after surgery	RASS scale Data collected morning of the surgery and morning of day one after the surgery	There were no significant differences in agitation, in patients who did and did not have family stay the first night postsurgery in the ICU setting. The study shows some trends can may suggest that family presence can reduce agitation.	Little information on what is meant with family involvement Measurements only done twice. Small sample size Unclear if/how inter-rater reliability was ensured.

Language									
Gershengorn et al. 2023 (22) USA	Retrospective co-hort study	548 mechanically ventilated patients cared for by 157 nurses	ICU	The study investigated if would be helpful for nurses and patients to speak the same language and how speaking the same language affected the use of restraints, delirium and agitation.	Nurses and patients speaking the same language were compared with nurses and patients speaking different languages.	Study across 4326 ICU shifts	RASS measured hourly	Agitation was less common in shifts where patient and staff spoke the same language Agitation (18.6% vs 25.2%; OR: 0.71 [0.55–0.92], p = 0.009)	Unclear if/how inter-rater reliability was ensured.
Multicomponent nonpharmacological intervention									
Abbasinia 2021(23) Iran	RCT	I: n = 30, mean age 56.46±9.89 C: n = 30, mean age 58.93±10.57 Mechanical ventilation unclear. Patients recovering from CABG	Cardiac ICU	Multicomponent nonpharmacological intervention (Preoperative video and HELP program including reorientation, therapeutic activities, reduced use of psychoactive drugs, promotion of sleep, early mobilisation, adequate hydration/nutrition and provision of vision and hearing adaptions).	Usual care	Until ICU discharge ≈ day 4.	RASS Once daily on day 2 and 3	**Agitation:** no significant differences in levels of agitation between I (0.06 ± 0.25) and C (0.36 ± 0.80), P=0.057. **Length of ICU stay:** significantly lower in I (3.53 ± 0.57days) compared with C (4.06 ± 1.28 days), P = 0.042.	Staff training required. Part of intervention outside ICU Short term follow up. Assessments only done once daily - unclear when. Unclear if/how inter-rater reliability was ensured. Participants and assessors not blinded Differences between intervention and usual care unclear.

									Unclear if patients received psychoactive drugs during the intervention and if they were mechanically ventilated.
Guo, 2016 (24) China	RCT	I: n=81, mean age 73.3 ± 6.1 C: n=79, mean age 73.7 ± 5.2 Mechanical ventilation unclear. Patients recovering from oral cancer resection surgery.	Surgical ICU	Multicomponent nonpharmacological intervention (Preoperative visit to ICU, modified HELP program including reorientation, therapeutic activities, promotion of sleep, adequate hydration/nutrition, music etc).	Usual care	Until ICU discharge ≈ day 4.	RASS Twice a day, between 7-8 morning and between 19-20 evening for three days post-surgery.	**Agitation:** Levels of agitation were lower in I compared to C all three days after surgery, P < 0.05. Levels of agitation in the last day were 0.5 ± .04 in C compared 0.2 ± 0.3, in I, P = < 0.001.	Staff training required. Part of interventions outside ICU Allocation concealment unclear Participants not blinded. No arguments for sample size. Long term effect not investigated. Differences between intervention and usual care unclear. Unclear if patients received psychoactive drugs during the intervention
Music therapy									

Bilgili and Akpinar, 2023 (25) Turkey	RCT	I: n = 35, mean age 60.06 ± 16.02 C: n = 35, mean age 65.03 ± 15.19 All patients receiving noninvasive continuous positive airway pressure (CPAP) treatment No patients receiving sedatives All patients suffering from COVID	ICU	Music therapy with relaxing music developed by a music specialist	Usual care	30 minutes listening to a repared audio recording via headphones	RASS scale Compliance with CPAP Oxygen saturation, resp rate and air leakage Measurements made before CPAP and at the 1st, 15th of 30th minutes of CPAP.	The mean RASS score of the patients in the intervention group was 2.14 ± 0.69 before CPAP, 1.63 ± 064 at the 1st minute, 0.89 ± 0.58 at the 15th minute and 0.74 ± 0.61 at the 30th minute. The mean RASS score of the patients in the control group was 2.06 ± 0.53 before CPAP, 1.80 ± 0.58 at the 1st minute, 1.43 ± 0.60 at the 15th minute and 1.46 ± 0.61 at the 30th minute of CPAP. There was a statistically significant difference between the groups at the 15th and 30th minutes (t = -3.81, p < .001; t = -4.89, p < .001 respectively).	Conducted in a single centre Patients and assessors not blinded Unclear if/how inter-rater reliability was ensured.
Golino et al 2023 (26) USA	Quasi-experiemental	I: n = 57, mean age 63.5±17.5 C: n = 61, mean age 61.1±19.6 All patients mechanically ventilated.	ICU	Live music therapy (acoustic guitar, humming or quiet singing) tailored to each patients' needs.	Usual care	30 minutes with live music	RASS scale Before and after each music session.	For RASS score and heart rate, the intervention group had significantly (p<0.001) lower values at 30 minutes compared with the control group. Nonsignficant changes in heart rate and oxygen values (P=0.13)	Brief intervention period with short term follow up. Unclear if assessors were blinded. Family members offered to be present in intervention group - without actively participating.

									Unclear if/how inter-rater reliability was ensured.
Jong Yoen Park, 2019 (27) Korea	QE Crossover	I: n=3, C: n=3, Overall mean age 45.33±16.49 All mechanically ventilated.	Surgical ICU	Music therapy (Preferred music first, classical relaxation music last).	Music therapy (Classical relaxation music first, preferred music last).	30 min with classical or preferred music, 60 min washout period, 30 min with classical or preferred music.	RASS Before and after each music session.	**Agitation: S**ignificantly lower levels after both the preferred music intervention (Z=-2.24, p=.025) and classical relaxation music intervention (Z=-2, p=0.046) compared to before. There was no significant difference in the decrease in median RASS score between the two music interventions (U=15, p= 0.523)	Pilot study (inadequately powered). Participants their own controls Short "wash our" period Assessors not blinded. Brief intervention period with short term follow up.
To et al. (2013) (28) Canada	RCT	I: n=25, mean age 50.25 + 19.25 C: n=25, mean age 50.52 + 17.45 All mechanically ventilated. Patients undergoing 4-hour sedation vacation	General ICU	Mozart Piano Sonatas via headphones.	Placebo: Headphones without music.	4 hours	RAMSEY sedation scale Measurements were obtained at baseline, at every 30 minutes during the intervention and ended at 4 hours.	**Agitation** There was a trend for more successful sedation vacations (meaning no agitation) in the music group (64%) compared to the control group (52%).	Pilot study (inadequately powered). Unclear if true randomisation was used. Higher levels of agitation in music group at baseline 10 females in control group compared to 3 in intervention group. Brief intervention period with short term follow up.

Nature-based Sounds									
Rajora, 2019 (29) India	RCT	I: n=60, mean age 47.07±10.66 C: n=60, mean age 46.90±10.95 All mechanically ventilated.	Respiratory ICU	Nature based sounds via headphones.	Placebo: Headphones without nature based sounds	60 min x 1	RASS Before, then 15, 30, 45 and 60 min after commencing the intervention and 30 min after the intervention.	**Agitation:** Significant reduction of agitation in I compared to C at all time points. (p =0.003 at 15 minutes, p=0.001 at 30 minutes, p=0.001 at 45 minutes, p=0.001 at 60 minutes and p=0.001 after 30 minutes) **Length of stay** No significant differences between the groups.	Brief intervention period with short term follow up. Unclear if assessor was blinded. Unclear how inter-rater reliability was ensured. Lack of appropriate statistical analysis. Unclear if patients received psychoactive drugs during the intervention
Aghaie et al. 2014 (30) Iran	RCT	I: n=60, mean age 58.10 ± 6.05 C: n=60, mean age 56.66 ± 5.84 All mechanically ventilated. Patients recovering from CABG surgery.	Cardiac ICU	Nature based sounds via headphone.	Placebo: Headphones without nature based sounds	During weaning from mechanical ventilation, unclear for how long.	RASS Agitation recorded at baseline, and after the first trigger (unclear what this means) and at 20 min intervals throughout the procedure, immediately after the procedure, and 20 and 30 min after extubation.	**Agitation:** Authors report that I had significant lower levels of agitation than C.	Unclear if true randomisation was used. Data analysis and reporting very unclear. Only included patients between 45-65 years of age. (Different levels of agitation at baseline) Brief intervention period with short term follow up.

									Unclear if patients received psychoactive drugs during the intervention
Saadatmand (31) Iran	RCT	I: n=30, mean age 41.23 ± 15.31 C: n=30, mean age 46.60 ± 16.76 All mechanically ventilated.	General ICU	Nature based sounds via headphones.	Placebo: Headphones without nature based sounds.	90 min	RASS Before and at the 30th, 60th, 90th minutes and 30 min after intervention.	**Agitation** A significant difference was found between the agitation scores in the two groups ($p < 0.001$). The odds of having higher scores of agitation in C was ≈ 11.24 times of the same odds in the I.	Control group included 20 males and 10 females. Unclear how inter-rater reliability was ensured. Brief intervention period with short term follow up. Unclear if patients received psychoactive drugs during the intervention
Touch therapy									
Allahbakhhsian 2020 (32) Iran	RCT	I: n=40, mean age 55.90 ± 8.31 C: n=40, mean age 56.30 ± 7.11 P n=40, mean age 57.32 ± 8.62	Cardiac ICU	Foot reflexology	Control: Usual care Placebo: superficial heel touch.	15 min x 1	RASS Before (T1), after (T2) and 10 min after (T3) the intervention.	**Agitation:** Agitation was reduced in all groups from T1 to T3 ($p<0.05$). I showed a significantly higher reduction at T2 ($p<0.001$) and T3 ($p<0.001$). In I agitation levels reduced by 1.844 scores (95% CI -2,768, 0.921), while the reduction was only 0.822 scores (95% CI -	Researcher trained by a professional reflexologist for one year Assessor not blinded. Serious indirectness as only men included

		Not mechanically ventilated. Recovering from CABG						1.792, 0.147) for the placebo group.	Brief intervention period with short term follow up. Unclear if patients received psychoactive drugs during the intervention
Davies 2020 (33) USA	QE	n=87 mean age = 63.38 ± 16.09 Mechanical ventilation unclear.	5 general ICUs	Healing touch (HT)	No comparison	7-15 min once daily in 1-2 days.	RASS Before, after and 5 min after.	**Agitation** Significant decreases in agitation scores following HT Pre (-0.59 ± 1.25) to post (-0.86 ± 1.16) first session, p<0.01. Pre (-1.03 ± 1.61) to post (-1.52 ± 1.48) second session, p<0.002.	Staff training required. Feasibility study (inadequately powered). Mean RASS scores were all below 0. No comparisons. Unclear how inter-rater reliability was ensured. Brief intervention period with short term follow up. Unclear if patients received psychoactive drugs during the intervention
Harorani et al. 2021 (34) Iran	RCT	I: n=33 mean age 51.91±8.69 C: n=34	ICU	Shiatsu massage (pressure to the Hugo point, between thumb and index finger of patient)	Three 5-minute periods of a touch with a 2-minute break between	Three 5-minute periods of Shiatsu massage with a 2-	RASS scale Measured before and after the intervention	The level of agitation significantly decreased in the intervention group compared to the control group (p=.001).	To prevent influence of other sources of agiation, as soon as a patient became agitated the patient was

		mean age 45.88±10.31 Mechanically ventilated patients				minute break between			placed in a comfortable position and other needs supported (suction, nutrition, defecation, urianation, pain,mechanical ventilator settings). Both groups received similar amounts of drugs during the intervention
Suchtion Methods									
Dastdadeh (35), Iran	RCT	I: n=30, mean age 65 ±18 C: n=30, mean age 66(±20) All mechanically ventilated.	General ICU	Open endotracheal suction	Closed endotracheal suction	One suctioning	Before, during, and immediately after, 5 minutes after, and 15 minutes after the suctioning	**Agitation:** The type of suctioning system used had no effect on the level agitation ($p < 0.126$).	Allocation concealment unclear. Three participants in the "open suction" group were deeply sedated throughout the intervention. Brief intervention period with short term follow up. Unclear if patients received psychoactive drugs during the intervention

HELP: Hospital Elder Life Program, ICU: intensive care unit, I: intervention group, C: control group, p: placebo, CABG: coronary artery bypass graft, RASS: Richmond Agitation Sedation Scale, RCT: randomised controlled trial, QE: Quasi-experimental

Critical Appraisal of Included Studies

The quality of the evidence for the identified literature was assessed independently by two members of the working group. Disagreements were resolved through discussion or by involving a third party in the extraction process. JBI's checklists for RCTs and quasi-experimental studies were used. When studies lacked essential information, the primary authors were contacted. The questions in the assessment tool were rated as 'Yes', 'No', 'Unclear', or 'Not Applicable'. 'Not Applicable' was used, for example, when reviewers deemed blinding methods impossible. The overall methodological quality of each study was then calculated by adding all 'Yes' ratings and dividing them by the number of applicable questions to obtain a percentage. Studies were rated as 'low methodological quality' if assessed at less than 50%, 'sufficient' if between 50% and 69%, 'moderate' if between 70% and 85%, and 'strong' if between 86% and 100%. Since low-quality studies can affect the quality of systematic reviews, it was decided to exclude all studies with 'low methodological quality'. According to JBI's critical appraisal checklists (36), seven studies were rated as sufficient quality (19, 21, 23, 26, 33-35), ten as moderate quality (18, 22, 25, 28-30, 32, 37-39) and one as high quality (27).

Table 19 Quality assessment of methodological quality using JBIs checklist of randomised controlled trials

Study	Q1	Q2	Q3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10	Q 11	Q 12	Q 13	Total (%)	**Methodological quality**
Abbasinia et al. (23)	Y	Y	Y	Y	NA	N	U	Y	Y	U	U	Y	Y	67	Adequate
Aghaie et al. (30)	U	Y	N	Y	NA	Y	Y	Y	Y	Y	Y	N	Y	75	Moderate
Allahbakhhsian et al. (32)	Y	Y	Y	NA	NA	N	Y	Y	Y	Y	Y	U	Y	82	Moderate
Bilgili et al 2023	Y	Y	Y	N	NA	N	Y	Y	Y	Y	U	Y	Y	75%	Moderate
Dastdadeh et al. (35)	Y	U	H	NA	NA	NA	Y	Y	Y	Y	U	U	Y	60	Adequate
Golino et al.	Y	Y	Y	N	NA	U	Y	U	Y	U	Y	Y	Y	67%	Adequate
Guo et al. (24)	Y	U	Y	N	NA	Y	U	Y	Y	Y	Y	Y	Y	75	Moderate
Harorani et al (2023)	U	U	U	N	NA	Y	U	Y	Y	Y	U	Y	Y	50%	Adequate
Karimzadeh et al. 2021	Y	Y	U	N	NA	N	Y	Y	Y	Y	Y	Y	Y	75%	Moderate
Nouri et al.	Y	Y	Y	N	NA	N	Y	Y	Y	Y	U	Y	Y	75%	Moderate
Rajora et al. (29)	Y	Y	Y	NA	NA	U	Y	Y	Y	Y	U	N	Y	73	Moderate
Saadatmand et al. (31)	Y	Y	N	Y	NA	Y	Y	Y	Y	Y	U	U	Y	75	Moderate
To et al. (28)	U	Y	N	Y	Y	Y	Y	Y	Y	Y	U	Y	Y	77	Moderate

Y = yes; N = no; U = Unclear; N/A = not applicable.
0 - 49%: Low methodological Quality; 50 - 69%: Adequate methodological Quality; 70 - 85: moderate methodological Quality; 86 - 100: strong methodological Quality.

Q1. Was true randomization used for assignment of participants to treatment groups?
Q2. Was allocation to treatment groups concealed?
Q3. Were treatment groups similar at baseline?
Q4. Were participants blind to treatment assignment?
Q5. Were those delivering treatment blind to treatment assignment?
Q6. Were outcomes assessors blind to treatment assignment?
Q7. Were treatment groups treated identically other than the intervention of interest?
Q8. Was follow-up complete and, if not, were differences between groups in terms of their follow-up adequately described and analyzed?
Q9. Were participants analyzed in the groups to which they were randomized?
Q10. Were outcomes measured in the same way for treatment groups?
Q11. Were outcomes measured in a reliable way?

Q12. Was appropriate statistical analysis used?
Q13. Was the trial design appropriate, and any deviations from the standard RCT design (individual randomization, parallel groups) accounted for in the conduct and
analysis of the trial?

Table 20 Quality assessment of methodological quality using JBIs checklist of Quasi-experimental studies

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Total (%)	**Methodological Quality**
Davies (33)	Y	Y	NA	N	Y	U	Y	U	U	50	Adequate
Jong Yoen Park (27)	Y	Y	Y	Y	Y	Y	Y	Y	U	89	Strong
Mashouf (19)	Y	N	NA	N	Y	Y	Y	U	N	50	Adequate
Welsch et al	U	N	Y	Y	N	Y	Y	U	Y	55%	Adequate

Y = yes; N = no; U = Unclear; N/A = not applicable.
0 - 49%: Low methodological Quality; 50 - 69%: Adequate methodological Quality; 70 - 85: moderate methodological Quality; 86 - 100: strong methodological Quality.

Q1 = Is it clear in the study what is the 'cause' and what is the 'effect' (i.e., there is no confusion about which variable comes first)?
Q2 = Were the participants included in any comparisons similar?
Q3 = Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?
Q4 = Was there a control group?
Q5 = Were there multiple measurements of the outcome both pre and post the intervention/exposure?
Q6 = Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?
Q7 = Were the outcomes of participants included in any comparisons measured in the same way?
Q8 = Were outcomes measured in a reliable way?
Q9 = Was appropriate statistical analysis used?

Table 21 Quality assessment of methodological quality using JBIs checklist of Cohort studies

Study	Q1	Q2	Q3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10	Q 11	Total (%)	**Methodological quality (moderate, adequate etc)**
Gershengorn et al.	Y	Y	Y	Y	Y	U	U	Y	Y	NA	Y	73%	Moderate

Y = yes; N = no; U = Unclear; N/A = not applicable.
0 - 49%: Low methodological Quality; 50 - 69%: Adequate methodological Quality; 70 - 85: moderate methodological Quality; 86 - 100: strong methodological Quality.

Q1. Were the two groups similar and recruited from the same population?
Q2. Were the exposures measured similarly to assign people to both exposed and unexposed groups?
Q3. Was the exposure measured in a valid and reliable way?
Q4. Were confounding factors identified?
Q5. Were strategies to deal with confounding factors stated?
Q6. Were the groups/participants free of the outcome at the start of the study (or at the moment of exposure)?
Q7. Were the outcomes measured in a valid and reliable way?
Q8. Was the follow up time reported and sufficient to be long enough for outcomes to occur?
Q9. Was follow up complete, and if not, were the reasons to loss to follow up described and explored?
Q10. Were strategies to address incomplete follow up utilized?
Q11. Was appropriate statistical analysis used?

Modified Umbrella Review of Qualitative Systematic Reviews and Guidelines

Data extraction

Key information from each study was extracted by the primary author using the Nvivo software (40). This data included type of paper, year, authors, aim, study population, interventions, methods to evaluate evidence and formulate recommendations, recommendations including statements or explanations related to these, and finally, patient experiences related to agitation and NPSs. When guideline recommendations were clearly not relevant to the ICU population, data were not extracted. Such data included: 'transfer the patients to a seclusion room', 'the waiting room should have an exit door', 'minimise the time in the waiting room', 'use electronic bracelets' and 'prevent wandering'.

Table 22 Characteristics of included guidelines on the management of agitation

Study details (author/year/country, type of document)	Organisation responsible for development	Aim	Contexts	Patient population	End-users	Method used to evaluate evidence and formulate recommendations	AGREE II score [1]
Guidelines in ICU							
Devlin et al. (10), 2018, International. Guidelines	Society of Critical Care Medicine. Thirty-two international experts, four methodologists, and four critical illness survivors formed the guideline development group.	Prevention and management of pain, agitation, sedation, sleep, delirium, immobility and sleep	ICU	Adults	ICU clinicians	Systematic reviews, GRADE approach. Formal consensus.	94%
Donato et al. (41), 2021, Argentina. Guidelines	Sociedad Argentina de Terapia Intensiva	Propose strategies for optimal management of analgesia, sedation and delirium	ICU	Adult patients with acute respiratory distress syndrome due to COVID 19	Unclear	Systematically reviewing the literature. Formal consensus.	39%
Hospitals of Leicester NHS (42), 2018, UK Protocol	Hospitals of Leicester NHS. Unclear who developed the guidelines	Describe the management of pain, agitation and delirium in critical care	ICU	Unclear	Intensivists, Advanced Critical Care Practitioners, Nurses, Pharmacists, Anaesthetists and other physicians in the critical care units within University	Unclear	40%

Study details (author/year/country, type of document)	Organisation responsible for development	Aim	Contexts	Patient population	End-users	Method used to evaluate evidence and formulate recommendations	AGREE II score [1]
					Hospitals of Leicester.		
Guidelines and protocols outside ICU (8)							
Baldacara et al. (43), 2019, Brazil. Guidelines	Brazilian psychiatric association. Eleven Brazilian psychiatrists involved	Management of agitation in Brazil.	Emergency settings (psychiatry)	Adults	Physicians.	Systematic review, consensus. Oxford Centre for Evidence-based medicine and critical appraisal tools to determine levels of evidence.	41%
Garriga et al. (44), 2015, International. Guidelines	Not linked to any association. 24 international experts	Management of agitation	Emergency (psychiatry)	Patients with a psychiatric condition. Excluded delirium and dementia	Not stated	Systematic reviews, formal expert consensus (Delphi). Jadad scale for appraisal. NHMRC grading of evidence.	63%
Gillings et al. (45), 2016. UK. Protocol	Royal College of Emergency Medicine, UK	Management of excited delirium/ Acute Behavioural Disturbance	Emergency settings	Patients in the Emergency Department	Emergency physicians.	High quality evidence was not always available. Recommendations based on consensus of senior emergency physicians and invited experts.	38%
Luaute et al. (46), 2016, France. Guidelines	French society of physical and rehabilitation medicine working group Developed by 23 clinicians, academics and two persons representing patients and families	Agitation and aggression in TBI patients	Traumatic Brain injury	TBI patients	Not stated	Followed the guideline methodology suggested by the French Authority for Health. This included a systematic review, consensus amongst a group of professionals and patient representatives. Guidelines reviewed by a separate group.	53%
Patel et al. (47), 2018. UK. Guidelines	British association for psychopharmacology and national association of Psychiatric intensive care and Low Secure Units.	Clinical Management of acute disturbance (agitation, aggression, violence).	Emergency (psychiatry)	Adults	Health professionals	Review of existing systematic reviews, RCTs, observational studies, published NICE guidelines and Standards. Expert consensus. Strengths of recommendations applied.	58%
Richmond et al. (48), 2011, USA. Consensus Statement	American Association for Emergency Psychiatry (AAEP) Developed by psychiatrists, emergency physicians and other health professionals.	Verbal de-escalation	Emergency (psychiatry)	Agitated patients	Not stated	Part of Project BETA. Best available research (method unclear) and expert consensus (method unclear).	45%

Study details (author/year/country, type of document)	Organisation responsible for development	Aim	Contexts	Patient population	End-users	Method used to evaluate evidence and formulate recommendations	AGREE II score [1]
Vieta et al. (49), 2017, Spain. Protocol	Endorsed by the Catalan Society of Psychiatry and Mental Health, the Spanish Society of Biological Psychiatry (SEPB) and the Spanish Network Centre for Research in Mental Health Involved psychiatrists, nurses and psychologists.	Protocol on how to best manage psychomotor agitation	Emergency (psychiatry)	Adult psychiatric patients	Health professionals.	Protocol based on an international guideline, systematic review, interviews, formal consensus using Delphi.	38%

Table 23 Characteristics of included systematic reviews of experiences of agitation

Author/date/ country	Type of study	Phenomenon of interest	Study population (number of studies included)	Inclusion criteria	Conclusion	Critical Appraisal [2]
Systematic reviews in ICU						
Boehm et al. (50) USA	Qualitative meta-synthesis	Patient and family experiences of delirium in ICU	14 papers	Adult patients, 1980-2021 (four papers before 1999 and three papers 2019-2021)	Patients experience fear, anger and shame. Patients and families value compassion, communication and connectedness.	11/11
Freeman et al. (51) UK	Meta-synthesis	Patients' experiences of agitation in ICU	8 papers	Adult, 2010-2019	Staff interactions and communications skills and the ICU environment affect patient agitation.	10/11
Ortega et al. (52) Canada	Meta-ethnography	Patients' experiences of delirium in ICU	9 papers	Adult, no year limitations up until 2017	Delirious patients in ICU experience existential issues. Patients report talking about their memories would be useful.	10/11

Table 24 Overview of included studies in qualitative reviews and their overlaps

Study included	Boehm 2021	Freeman 2021	Ortega 2020
Hume 2020	x		
Bohart 2019	x		
Page 2019	x		
Clark 2017	x		
Olsen 2017	x	x	
Schmitt 2017		x	
Smithburger 2017	x		
Tramm 2017	x		
Svenningsen 2016	x	x	x
Van Rompaey 2016	x	x	x
Wade 2016			x
Whitehorne 2015	x	x	x
Guttormson 2014		x	x
Karlsson 2012		x	
Samuelson 2011		x	
Margarey and McCultcheon 2005			x
Hunt 1999	x		
Granberg 1999	x		x
Granberg 1998	x		x
Laitinen 1996	x		x
Total (of 20)	14	8	9

Data synthesis

The extracted data were evaluated for similarities and grouped into categories. As a higher level of categorisation started to form, the FoC framework was deemed suitable to organise categories into themes. The 'relationship' dimension included recommendations for developing a staff-patient relationship. The 'psychosocial needs' and 'physical needs' included recommendations related to patients' physical and psychosocial needs. The 'relational' included recommendations related to staff-patient interactions, as originally described by Kitson et al. (53). The 'context' dimension included information about factors indirectly affecting care, such as policies, staff support, safety, and leadership. Additional themes were developed when appropriate.

Critical Appraisal of Included Studies:

According to JBI's checklists (54) the three qualitative systematic reviews were of high quality, whereas 9 out of 10 guidelines were rated with an overall AGREE score lower than 65%. Of the ten guidelines, seven were from other healthcare contexts than intensive care units, and the remaining three from the intensive care area had a limited focus on non-pharmacological strategies.

The three qualitative systematic reviews were published between 2020 to 2021. None of these explicitly examined experiences of NPSs for agitation. However, they all provided insights into patients' experiences of agitation and NPSs while providing a range of recommendations to improve patient experiences. Many of the themes described in the systematic reviews were pertinent across all studies, including an overarching focus on physical, psychological and mental suffering. Overall, the three qualitative systematic reviews were of high quality (see Table 4).

Table 25 JBI critical appraisal tool for systematic reviews

Study	Q1	Q2	Q3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10	Q 11	Total (%)	**Methodological quality**
Boehm et al. (50)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100	Strong
Freeman et al. (51)	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	91%	Strong
Ortega et al. (52)	Y	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	91%	Strong

Y = yes; N = no; U = Unclear; N/A = not applicable.
0 - 49%: low methodological quality; 50 - 69%: adequate methodological quality; 70 - 85: moderate methodological quality; 86 - 100: high methodological quality.

Q1 Is the review question clearly and explicitly stated?
Q2 Were the inclusion criteria appropriate for the review question?
Q3 Was the search strategy appropriate?
Q4 Were the sources and resources used to search for studies adequate?
Q5 Were the criteria for appraising studies appropriate?
Q6 Was critical appraisal conducted by two or more reviewers independently?
Q7 Were there methods to minimize errors in data extraction?
Q8 Were the methods used to combine studies appropriate?
Q9 Was the likelihood of publication bias assessed?
Q10 Were recommendations for policy and/or practice supported by the reported data?
Q11 Were the specific directives for new research appropriate?

Characteristics and appraisal of identified guidelines

This review included ten guidelines Three guidelines were from the ICU (10, 41, 42), six from the emergency setting including psychiatry (43-45, 47-49) and one paper did not describe a specific setting (46). The ICU guidelines aimed to describe the management of delirium, sedation, and pain and none of them specifically focused on nonpharmacological management of agitation. The guidelines outside ICU all aimed to describe the management of agitation, both pharmacological and nonpharmacological.

The quality was low for the majority of the guidelines, with six guidelines receiving an overall AGREE II score below 50% (41-43, 45, 48, 49), three guidelines receiving a score between 50-65% (44, 46, 47) and one receiving a score of 94% (10). For a full overview, see Table 32 below[3]. Low rigour was a major reason for the low scores and can partly be explained by little existing evidence available and, therefore, the need to use consensus methods. For a more detailed appraisal, please see the original publication of this section (ref thesis).

Table 26 AGREE appraisal of included guidelines

Domains	Baldacara et al. (43)	Devlin et al. (10)	Donato et al. (41)	Garriga et al. (44)	Gillings et al. (45)	Hospitals of Leicester NHS (42)	Luaute et al. (46)	Patel et al. (47)	Richmond et al. (48)	Vieta et al. (49)
1. SCOPE AND PURPOSE										
The overall objective(s) of the guideline is specifically described.	Y	Y	Y	Y	Y	Y	Y	U	Y	Y
The health question(s) covered by the guideline is specifically described.	Y	Y	U	Y	N	U	U	Y	N	Y
The population is specifically described.	U	Y	Y	Y	Y	Y	Y	Y	Y	Y
Score	2/3:67%	3/3=100%	2/3=67%	3/3=100	2/3=67%	2/3=67%	2/3=67%	2/3=67%	2/3=67%	3/3=100
2. STAKEHOLDER INVOLVEMENT										
The guideline development group includes individuals	N	Y	N	U	U	U	Y	Y	U	Y

Domains	Baldacara et al. (43)	Devlin et al. (10)	Donato et al. (41)	Garriga et al. (44)	Gillings et al. (45)	Hospitals of Leicester NHS (42)	Luaute et al. (46)	Patel et al. (47)	Richmond et al. (48)	Vieta et al. (49)
from all relevant professional groups.										
The views and preferences of the target population (patients, public, etc.) have been sought.	N	Y	U	N	N	N	N	N	N	N
The target users of the guideline are clearly defined.	N	Y	U	U	Y	Y	N	N	U	U
Score	0/3=0%	3/3=100%	0/3=0%	0/3=0%	1/3=33%	1/3=33%	1/3=33%	1/3=33%	0/3=0%	1/3=33%
3. RIGOUR OF DEVELOPMENT										
Systematic methods were used to search for evidence. The criteria for selecting the evidence are clearly described.	Y	Y	N	Y	N	N	Y	N	U	Y
The criteria for selecting the evidence are clearly described.	U	Y	N	Y	N	N	Y	Y	N	N
The strengths and limitations of the body of evidence are clearly described.	Y	Y	N	N	N	N	N	N	N	N
The methods for formulating the recommendations are clearly described	U	Y	N	N	N	N	Y	Y	N	N
The health benefits, side effects, and risks have been	U	Y	Y	Y	N	N	Y	Y	N	N

Domains	Baldacara et al. (43)	Devlin et al. (10)	Donato et al. (41)	Garriga et al. (44)	Gillings et al. (45)	Hospitals of Leicester NHS (42)	Luaute et al. (46)	Patel et al. (47)	Richmond et al. (48)	Vieta et al. (49)
considered in formulating the recommendations.										
There is an explicit link between the recommendations and the supporting evidence.	U	Y	N	Y	N	N	Y	Y	N	N
The guideline has been externally reviewed by experts prior to its publication.	N	Y	Y	N	N	Y	Y	N	N	N
A procedure for updating the guideline is provided.	N	U	N	N	Y	Y	N	N	N	N
Score	5/8=63%	7/8=88%	2/8=25%	4/8=50%	1/8=13%	2/8=25%	6/8=75%	4/8=50%	0/8=0	1/8=13%
4. CLARITY OF PRESENTATION										
The recommendations are specific and unambiguous	Y	Y	Y	Y	Y	Y	N	Y	Y	N
The different options for management of the condition or health issue are clearly Presented	Y	Y	U	Y	N	Y	Y	Y	Y	Y
Key recommendations are easily identifiable.	N	Y	U	Y	N	Y	Y	Y	Y	Y
Score	2/3=67%	3/3=100%	2/3=67%	3/3=100	2/3=67%	2/3=67%	1/3=33%	3/3=100	3/3=100	1/3=33%
5. APPLICABILITY										
Describes facilitators and barriers to its application	N	U	N	N	N	N	N	N	N	N
The guideline provides advice and/or tools on how	N	Y	U	Y	N	Y	N	N	Y	Y

Domains	Baldacara et al. (43)	Devlin et al. (10)	Donato et al. (41)	Garriga et al. (44)	Gillings et al. (45)	Hospitals of Leicester NHS (42)	Luaute et al. (46)	Patel et al. (47)	Richmond et al. (48)	Vieta et al. (49)
the recommendations can be put into practice.										
The potential resource implications of applying the recommendations have been considered	N	Y	N	Y	N	N	N	N	Y	N
The guideline presents monitoring and/or auditing criteria.	N	Y	Y	y	N	Y	Y	N	N	Y
Score	0/4=0%	3/4=75%	1/4=25%	3/4=75%	0/4=0	2/4=50%	1/4=25%	0/4=0	2/4=50%	2/4=50%
6. EDITORIAL INDEPENDENCE										
The views of the funding body have not influenced the content of the guideline	U	Y	U	Y	U	U	U	Y	U	U
Competing interests of guideline development group members have been recorded and addressed.	Y	Y	Y	U	Y	U	Y	Y	Y	U
Score	1/2=50%	2/2=100%	1/2=50%	1/2=50%	1/2=50%	0/2=0	1/2=50%	2/2=100%	1/2=50%	0/2=0
Average score of the six domains	247/600=41%	563/600=94%	234/600=39%	375/600=63%	230/600=38%	242/600=40%	317/600= 53%	350/600= 58%	267/600=45%	229/600=38%

Supplementary Material 10: Method and Results of the Delphi Study

The Delphi study aimed to draft tentative recommendations, identify those reaching a high level of statistical consensus, determine the extent of participant agreement, and evaluate the perceived feasibility and importance of the recommendations for managing agitation in the ICU. Below is a summary of the Delphi study. A manuscript is currently being reviewed for publication.

Participants

The study included a panel of Danish and Australian experts comprising ICU clinicians, researchers, patients, and family members. Participants were selected based on specific inclusion criteria to ensure they had relevant experience and expertise.

Methodology

A modified Delphi method was employed, involving three rounds of surveys to achieve consensus. Both qualitative and quantitative data were collected and analyzed separately before being merged to inform subsequent rounds. In Round 1, questions were developed based on existing literature and stakeholder consultations to identify initial consensus levels and gather feedback. Round 2 focused on re-evaluating items that reached consensus in only one country and assessing new items suggested in Round 1, while also exploring facilitators and barriers to guideline implementation. In Round 3, participants reconsidered items with high consensus in only one country and evaluated the importance and feasibility of each item.

Procedure

The initial questions were based on systematic reviews and stakeholder input. Open-ended questions allowed participants to justify their choices and suggest modifications or new recommendations. Participants only rated interventions they had experience with. The questionnaires were tested and refined through cognitive interviews and pilot tests. This process involved multiple Danish and Australian stakeholders, including clinicians, researchers, and laypeople, to ensure the surveys were clear and relevant. Additionally, a rigorous translation process was employed to ensure that the surveys conveyed the same meaning in both English and Danish. Responses were collected via Qualtrics online surveys. Qualitative data were analysed using Nvivo and directed content analysis, while quantitative data were analysed through SPSS using non-parametric methods due to the skewed distribution of responses.

Consensus and Level of Consensus

Consensus was defined as "collective agreement" among participants. It was measured by the spread of data using the interquartile range (IQR). The level of consensus described the percentage of participants rating either somewhat agree or strongly agree, or somewhat useful or very useful. A high level of consensus was defined as ≥75%, and a very high level as ≥90%.

Rules for Endorsement

- An item was endorsed if it reached consensus (IQR ≤ 1) and the consensus level was ≥75% in both countries.
- Items were re-rated if ≥75% of participants somewhat agreed or strongly agreed with an item, or rated an intervention to be somewhat useful or very useful in only one country.
- Items not meeting these criteria, or items fulfilling these criteria but already re-rated once, were excluded from the final guideline.

Feedback Mechanism

The aim of providing feedback in this Delphi study was to motivate participants and encourage them to reflect on their answers before rating in the next round. Delphi participants watched a short video that was available in both Danish and English. The video provided an overview of the main findings and described the aim of the next round. Participants interested in a comprehensive description of the statistical results were encouraged to contact the researchers for more information.

Results

The study achieved consensus on 63 recommendations across various themes. Below is a table summarising these recommendations and their consensus levels:

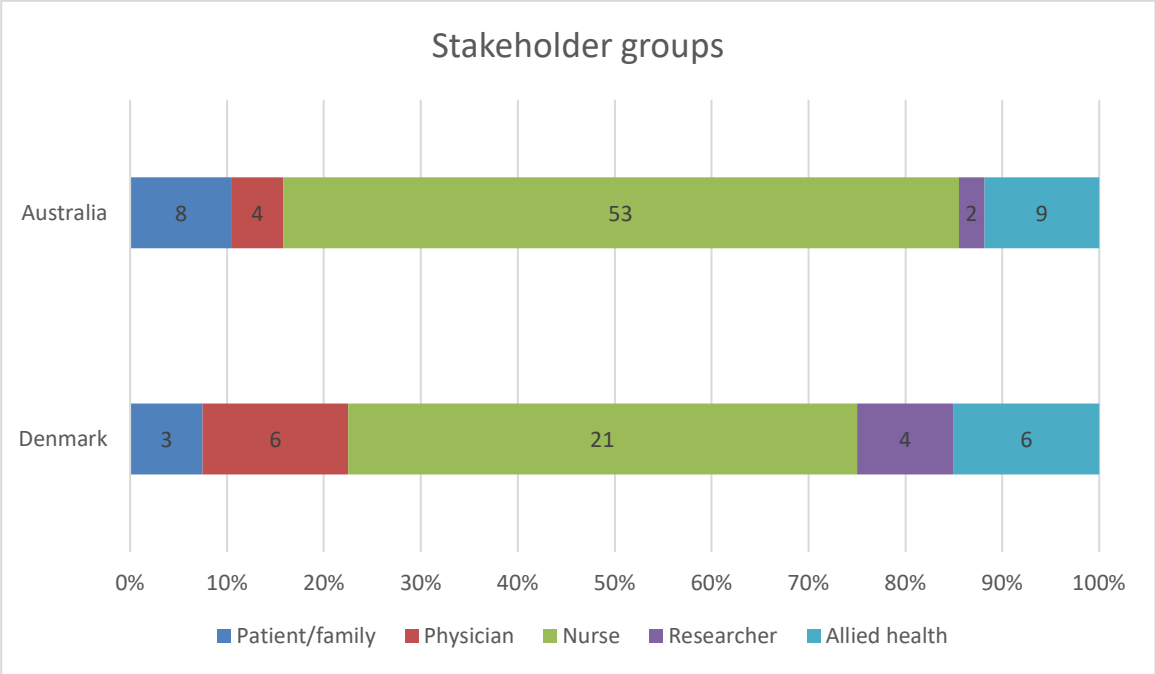


Figure 4 Stakeholder Groups

Table 27 Characteristics of clinicians

CLINICIANS	DENMARK	AUSTRALIA	TOTAL
YEARS WORKING IN ICU			
2-4 YEARS	5	3	8
5-7 YEARS	5	14	19
8-10 YEARS	1	10	11
11-20 YEARS	13	26	39
20+	13	13	26
TOTAL	37	66	103
HIGHEST LEVEL OF EDUCATION			
BACHELOR	8	5	13
GRADUATE CERTIFICATE		21	21
GRADUATE DIPLOMA		8	8
DANISH INTENSIVE CARE NURSING (2 YEARS FULL-TIME)	9		9
MASTER	5	24	29
DANISH KANDIDAT	5	0	5
PHD	5	5	10
FELLOWSHIP	3	3	6
OTHER *	2	0	2

*Clinical Nurse Facilitator Degree, EDIC, SSAI

Table 28 Recommendations from preliminary guidelines

Item	Recommendation	Consensus[a] (Percentage)	Feasibility[d] (Percentage)	Importance[e] (Percentage and ranked)
1.1.1	The safety of patients, staff and family/next of kin should be given high priority when managing agitation.	97	93	94 (14)
1.1.2	Clinicians caring for and treating agitated patients should always have access to immediate practical support[b].	99	82	99 (10)
1.1.3	Clinical staff should check that aggressive and violent agitated patients do not have access to objects that can be used to injure others (e.g. sharp objects, weapons, hard objects that can be thrown)[b]	99	94	98 (8)
1.1.4	Clinicians should consider keeping a safe physical distance from a violent patient.	88	78	98 (30)
1.1.5	The intensive care unit should be laid out in a way that makes observing agitated patients easier.	85	64	96 (26)
1.2.1	Non-drug approaches should be considered first when managing agitation	89	92	90 (5)
1.2.2	Non-drug approaches for the prevention of agitation should be an integrated part of standard care[b]	100	98	97 (2)
1.3.1	Clinicians should consider using several non-drug strategies for agitated patients simultaneously.	89	89	91 (43)
1.4.1	Clinicians should use physical restraints only as a last resort to ensure patient and staff safety.	85	85	91 (45)
1.4.2	Physical restraints should not be used as a substitute for direct observation[c].	93	89	94 (22)
1.4.3	Intensive care units should have clear guidelines for the use of physical restraints.	95	93	98 (9)
2.1.1	ICU patients should be regularly and systematically assessed for agitation.	97	100	96 (20)
3.1.1	Clinicians should support patients' fundamental care needs to reduce and manage agitation.	99	95	100 (13)
3.1.2	Clinicians should identify and, when possible, treat causes of agitation.	100	89	99 (20)
4.1.1	Develop a relationship with the patient based on empathy, respect and trust.	95	98	99 (12)
4.1.2	Become familiar with the patient's background (e.g., likes, dislikes, culture, history, values, fears and routines).	99	94	98 (35)
4.2.1	Clinicians should be trained to use de-escalation techniques[b].	99	92	97 (15)
4.2.2	Use clear and concise language.	96	99	98 (11)
4.2.3	Use "active listening".	93	96	96 (25)
4.2.4	Use alternative communication methods.	95	93	94 (34)
5.1.1	Clinicians should establish how much the family would like to and are able to be involved in managing patient agitation	89	95	97 (32)

Item	Recommendation	Consensus[a] (Percentage)	Feasibility[d] (Percentage)	Importance[e] (Percentage and ranked)
5.1.2	Clinicians should offer family members information about agitation	98	99	95 (31)
5.2.1	Teach family members/next of kin to use non-drug strategies.	91	80	92 (52)
5.2.2	Involve family members/next of kin in care.	90	77	86 (55)
5.2.3	Use telephone and/or video conferencing when family members/next of kin are unable to visit the patient in person.	83	89	94 (50)
6.1.1	Reassure the patient that they are safe.	94	99	96 (28)
6.1.2	Hold a patient's hand.	89	94	83 (58)
6.2.1	Involve patients in personal care activities.	92	91	95 (44)
6.2.2	Debrief the capable patient after an episode of agitation.	88	85	89 (51)
6.2.3	Use neuropaedagogy[b].	82	72	69 (62)
6.2.4	Involve a psychologist or psychiatrist in the treatment plan.	77	51	70 (63)
6.2.5	Respect patients' need for personal space.	94	85	95 (39)
6.2.6	Ensure patient dignity.	99	97	99 (6)
6.3.1	Ensure comfortable surroundings (i.e. by optimising room temperature, ventilation and/or design).	84	73	94 (36)
6.3.2	Offer a fidget toy.	83	73	74 (61)
6.3.3	Play classical or relaxing music, preferably adjusted to patient preferences.	89	85	84 (59)
6.3.4	Take the patient outdoors.	92	70	86 (53)
6.3.5	Use pet therapy.	86	42	78 (60)
6.3.6	Use therapeutic touch.	82	89	81 (56)
6.4.1	Inform the patient about the plan for the day.	88	95	95 (42)
6.4.2	Use a personalised fixed daily schedule with familiar activities.	89	82	87 (57)
6.4.3	Irrespective of how much the patient appears to understand, explain to them their circumstances.	95	96	94 (40)
6.4.4	Use hearing aids in the hearing-impaired patient.	100	98	99 (3)
6.4.5	Use visual aids in the vision-impaired patient.	97	100	98 (7)
6.4.6	Use appropriate lighting adjusted according to the time of the day.	97	93	98 (29)
6.4.7	Create familiar surroundings (e.g. with pictures or other items from the patient's home).	94	94	93 (48)
6.4.8	Have a clock and calendar visible to the patient.	93	94	98 (33)
7.1.1	Support capable patients to be physically active (e.g. by supporting patients to sit on the edge of the bed or take small walks)	99	92	99 (16)
7.2.1	Minimise unnecessary stimuli[b].	97	80	98 (23)
7.2.2	Group care and treatment activities, rather than disturbing the patient several times.	96	92	97 (21)
7.2.3	Clinicians should minimise routine interventions and monitoring that are less important to the outcomes of patients (stimuli can be auditory, e.g. sounds, visual, e.g. lights or moving objects, tactile, e.g. lines or equipment, social, e.g. interacting with people)	87	92	90 (41)

Item	Recommendation	Consensus[a] (Percentage)	Feasibility[d] (Percentage)	Importance[e] (Percentage and ranked)
7.2.4	Offer quiet surroundings for the patient, for example a single bed room.	95	83	95 (38)
7.2.5	Use mental stimulation such as Lego, jigsaws, radio, TV, internet, magazines, pictures[c]	88	80	85 (54)
7.3.1	Preserve patients' usual sleep-wake cycle[b].	98	80	97 (24)
7.3.2	Minimise interruptions at night from noise, light and activities.	100	91	100 (4)
8.1.1	Develop care plans based on patient preferences and values.	91	88	93 (46)
8.1.2	Non-drug interventions must be adjusted to the individual patient (e.g. patient needs, history and preferences, level of agitation, previous experiences with interventions)[b]	100	94	97 (27)
9.1.1	Additional staffing should be considered when there is an agitated patient in the ICU.	95	64	96 (17)
9.1.2	Staff caring for agitated patients should be offered debriefing.	86	79	89 (51)
9.1.3	Clinicians who provide care and treatment for agitated patients should be offered frequent breaks during their shift[b].	99	60	94 (19)
9.1.4	Ongoing staff education about agitation and methods to reduce agitation should be provided.	98	88	97 (37)
9.2.1	Nursing and medical leaders should support the use of non-drug interventions to reduce and manage agitation.	93	99	98 (47)
9.3.1	The multi-disciplinary team should collaborate to reduce and manage patient agitation.	99	99	100 (18)

[a] Percentage rating *somewhat agree* or *strongly agree*, or *somewhat useful* or *very useful*
[b] New recommendation developed during the Delphi study
[c] Re-rated recommendation.
[d] percentage rating *somewhat feasible* or very feasible
[e] Percentage *rating somewhat important* or *very important*

Discussion

The study's findings highlight the importance of integrating non-drug approaches and individualised care into ICU agitation management. The high level of consensus on many recommendations underscores their relevance and feasibility in clinical practice. However, the study also identified barriers to implementation, such as the need for additional staffing and ongoing education.

Conclusion

This Delphi study provides a robust foundation for developing clinical practice guidelines for managing agitation in the ICU. The consensus-based recommendations offer practical strategies to enhance patient care and support healthcare providers.

The Delphi study will be submitted to a journal for review, and we expect a full overview of the study to be published in 2025. This forthcoming publication will provide a comprehensive account of the methodology, results, and implications of the study.

Acknowledgements

The authors of this Delphi study are Adams, Anne Mette; Chamberlain, Diane; Brun Thorup, Charlotte; Grønkjær, Mette and Conroy, Tiffany. We acknowledge their significant contributions to the research and development of these clinical practice guidelines.

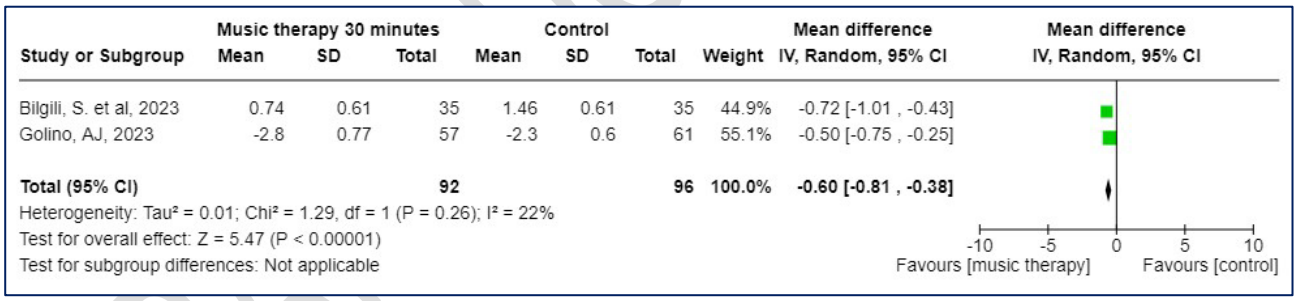
Supplementary Material 11 Summary of Evidence

In relation to the PICO question, the recommendations in this guideline are based on a systematic review of effectiveness (60), a modified umbrella review (Supplementary Material 5), and a Delphi study (Supplementary Material 6).

The systematic review of effectiveness (61) aimed to evaluate the effect of non-pharmacological interventions designed to prevent, minimise, and manage agitation in adult patients in intensive care units. The review was conducted in accordance with JBI's methodology for Systematic Reviews of Effectiveness and a pre-registered PROSPERO protocol. The primary outcome was the effect of non-pharmacological interventions on the prevention, minimisation, and management of agitation. The initial published review included 11 studies identified in June 2021. This search was updated in January 2024, identifying an additional seven studies. According to JBI's critical appraisal checklists (36), seven studies were rated as sufficient quality (19, 21, 23, 26, 33-35), ten as moderate quality (18, 22, 25, 28-30, 32, 37-39) and one as high quality(27). The confidence in the evidence was assessed using the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE). Overall, the confidence in the quality of the evidence was rated as low or very low, even for the two studies included in the meta-analysis. Harmful effects and side effects were not reported in any of the studies. All studies, except for those on suctioning techniques, showed significantly lower levels of agitation in the intervention groups. Initially, a meta-analysis of two studies on multicomponent non-pharmacological interventions was conducted in the systematic review of effectiveness. After the updated literature search in 2024, another meta-analysis focusing on two studies examining music therapy and its effect on agitation was performed.

As shown in Table 4, the meta-analysis of music interventions demonstrated significantly lower levels of agitation in the group receiving the music intervention.

Table 29 Meta analysis of music intervention



The working group assessed the quality of the evidence regarding considering playing music to prevent and treat patient agitation as very low. Only two small RCT studies with 70 and 118 patients, respectively, could be included in the meta-analysis (25, 26). The two studies were rated as sufficient (8 of 12) (26) and moderate quality (9 of 12) (25) according to JBI's checklist for randomised studies (36). There was a lack of blinding in both studies, and one study was financially supported by the music industry. See a summary of findings Table 2. Due to the low quality of the evidence, the recommendation is included in a large Delphi study where it achieved consensus among 114 experts (103 healthcare professionals and 11 patients and relatives). The recommendation can be described as a weak recommendation based on quantitative research, two RCT studies with a total of 188 patients included, as well as expert knowledge and consensus.

Table 30 Summary of findings music therapy with reduction of agitation as outcome

Table 31 Summary of Findings Music Therapy

Summary of findings:

Music therapy 30 minutes compared to no music therapy for minimising agitation in patients

Patient or population: minimising agitation in patients

Setting: Intensive care unit

Intervention: Music therapy 30 minutes

Comparison: No music therapy

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with no music therapy	**Risk with Music therapy 30 minutes**				
Reducing agitation in patients in ICU (Agitation) assessed with: RASS		MD **0.6 SD fewer** (0.81 fewer to 0.38 fewer)	-	188 (2 RCTs)	⨁◯◯◯ Very low[a,b,c]	

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **MD:** mean difference

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

Explanations

a. No blinding in the studies

b. Only 2 studies with 188 participants were included. Optimal information size not achieved

c. One study funded by a music organisation

Similarly, as shown in Table 5, meta-analyses of two studies on multicomponent treatment also showed significantly lower levels of agitation in the group receiving a multicomponent non-pharmacological intervention. This intervention included re-orientation, therapeutic activities, interventions promoting sleep, early mobilisation, rehydration and nutrition, music, and support for patients with hearing or vision

impairments, compared to those receiving usual care. Individual studies showed significant effects of nature-based sounds, music, foot reflexology, healing touch, and aromatherapy.

Table 32 Meta-analysis multicomponent nonpharmacological interventions

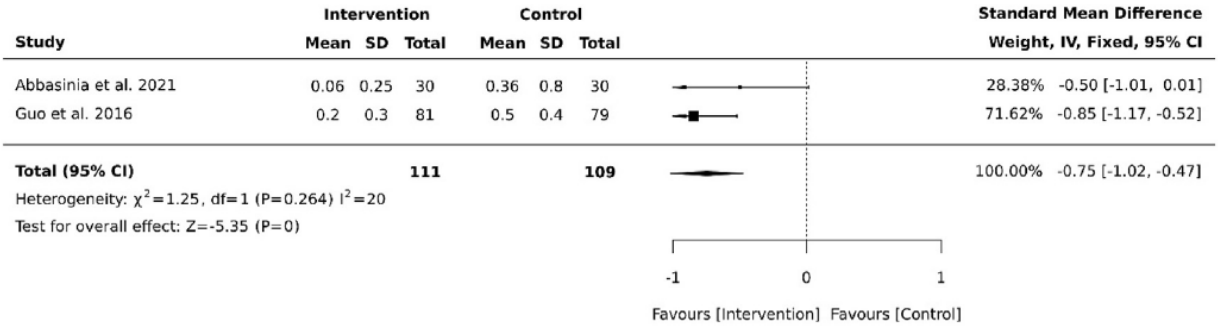


Fig. 2. Synthesis of multicomponent care interventions. CI, confidence interval; SD, standard deviation.

The working group assessed the quality of the evidence base as very low. Confidence in the estimate from the meta-analysis is low due to a significant risk of bias from unclear differences between the intervention and usual care, lack of precision with uncertainty about whether psychoactive medication was given before or during the intervention, and imprecise results due to small sample sizes, short intervention periods, and short follow-up periods. Due to low confidence in the estimate, the recommendation is included in a large Delphi study where it achieved consensus among 114 experts (103 healthcare professionals and 11 patients and relatives). The recommendation can be considered a weak recommendation based on both quantitative research with two smaller RCT studies involving 220 patients and expert knowledge and consensus.

Table 33 Summary of Findings Table for Multi-component non-pharmacological intervention

Summary of findings:

Multi-component non-pharmacological care intervention compared to usual care on ICU patient agitation

Patient or population: minimising agitation in patients

Setting: Intensive care unit

Intervention: Multi-component care intervention

Comparison: Usual care

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with no multi-component intervention	**Risk with multi-component intervention**				
Reducing agitation in patients in ICU (Agitation) assessed with: RASS		SMD 0.75 SD fewer (1.02 fewer to 0.47 fewer)	-	220 (2 RCTs)	⨁◯◯◯ Very low[a,b,c]	

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **SMD:** standard mean difference

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

Explanations

a. Unclear differences between the intervention and usual care

b. Lack of precision with uncertainty about whether psychoactive medication was given before or during the intervention

c. imprecise results due to small sample sizes, short intervention periods, and short follow-up periods

The modified umbrella review of qualitative systematic reviews and guidelines aimed to examine qualitative systematic reviews of patients in intensive care units and their experiences with agitation and non-pharmacological strategies. This review also aimed to examine guidelines with recommendations for non-pharmacological prevention, minimisation, or management of agitation in all healthcare settings. The umbrella review followed JBI's methodology for umbrella reviews (49). Two searches were conducted in the umbrella review. The first search focused on qualitative systematic reviews addressing patients' experiences of agitation and non-pharmacological interventions during intensive care unit stays. The

second search focused on existing non-pharmacological interventions for the prevention and treatment of agitation across departments and specialities (Supplementary Material 4). The umbrella review included three qualitative reviews and ten guidelines after the first literature search conducted in September 2021. This search was updated in January 2024 without identifying additional articles. According to JBI's checklists (54) the three qualitative systematic reviews were of high quality, whereas 9 out of 10 guidelines were rated with an overall AGREE score below 65%. Of the ten guidelines, seven were from other healthcare contexts than intensive care units, and the remaining three from the intensive care area had sparse focus on non-pharmacological strategies.

The recommendations from the qualitative systematic reviews and guidelines were categorised into nine areas: assessment of agitation, identification and correction of underlying causes of restlessness, prioritising non-pharmacological strategies, developing therapeutic relationships, supporting psychosocial needs, supporting relational needs, supporting physical needs, physical restraints, and the context of care. The qualitative reviews were of high quality, while most existing guidelines were rated as low quality. Overall, the evidence from this review was either indirect, meaning it came from a different context than intensive care units, qualitative, or of low quality.

The Delphi study was conducted because the systematic review of effectiveness (61), an umbrella review (see Supplementary Material X), and existing recommendations found sparse, indirect, and low-quality evidence of non-pharmacological interventions for patients with agitation. The Delphi study aimed to determine which recommendations would achieve consensus and assess their importance and feasibility. The study was conducted online in 2022 with the participation of 115 individuals, including healthcare professionals, patients, and relatives from Denmark and Australia. The first Delphi round included all non-pharmacological interventions previously identified in systematic reviews as useful against agitation in intensive care units. Participants had the opportunity to suggest new measures and assess whether the measures were useful and patient-centred. All suggestions were evaluated by the research group between Delphi rounds.

Table 34 Characteristics of clinicians

Clinicians	Denmark	Australia	Total
Years working in ICU			
2-4 years	5	3	8
5-7 years	5	14	19
8-10 years	1	10	11
11-20 years	13	26	39
20+	13	13	26
Total	37	66	103
Highest level of education			
Bachelor	8	5	13
Graduate Certificate		21	21
Graduate Diploma		8	8
Danish Intensive Care Nursing (2 years full-time)	9		9
Master	5	24	29
Danish Kandidat	5	0	5
PhD	5	5	10
Fellowship	3	3	6
Other *	2	0	2

*Clinical Nurse Facilitator Degree, EDIC, SSAI

In total, 89 interventions were tested, of which 63 achieved more than 75% consensus among participants. The included recommendations were grouped into nine themes: 1) care principles, 2) assessment of agitation, 3) addressing causes, including unmet needs, 4) caregiver behaviour and developing trusting

relationships, 5) involving relatives, 6) psychosocial needs, 7) physical needs, 8) supporting individualised care, and 9) context-related interventions. All interventions were assessed for their importance and feasibility.

Supplementary Material 12: Monitoring

We propose the following key criteria for assessing the impact of guideline implementation:

- Reduction in agitation episodes and severity of agitation: measured by the frequency and severity of patient agitation episodes before and after implementation of the guidelines, using an objective scale such as the Richmond Agitation-Sedation Scale (RASS).
- Use of non-pharmacological Interventions: tracking the frequency of non-pharmacological interventions (as recommended by the guidelines) employed by healthcare professionals in the ICU.
- Staff confidence and compliance: monitoring the adherence to guideline recommendations through staff surveys on their confidence in applying the guidelines and compliance audits of clinical practice.

In terms of advice on frequency and measurement interval, we recommend:

- Quarterly audits of guideline adherence, focusing on key recommendations such as the use of non-pharmacological interventions, documentation of patient agitation, and intervention outcomes.
- Annual surveys to assess ICU staff confidence in managing patient agitation and their perceptions of the guidelines' effectiveness.
- Patient and family feedback collected every six months to gather insights into the patient-centered outcomes of the interventions.

For operational definitions and measurement criteria, we propose the following:

- Reduction in agitation episodes and severity: defined as a measurable decrease in the number and/or intensity of agitation episodes, as recorded using standardised agitation scales.
- Compliance with non-pharmacological recommendations: measured by documenting the use of interventions such as environmental modifications, communication strategies, and relaxation techniques, with adherence rates expressed as a percentage of patient care episodes.
- staff confidence: measured through a Likert-scale survey assessing health professionals' confidence in utilising the guidelines, with scores tracked over time to evaluate changes in knowledge and application.

By using these proposed indicators and defining how they should be measured, the working group can monitor the implementation of the guidelines effectively while minimising the need for additional data collection.

Supplementary Material 13: Implementation

The successful implementation of these guidelines is crucial for improving the management of patient agitation in the ICU. To promote awareness and adoption, the guidelines can be advertised through professional organisations and their communication channels, including newsletters, websites, and social media platforms. Engaging with these networks will help disseminate the guidelines to a wide audience of ICU health professionals.

Incorporating the guidelines into existing ICU procedures and protocols is essential to ensure their integration into everyday clinical practice. Hospital leadership and ICU teams should review current practices and make the necessary adjustments to align with the guideline recommendations.

To further enhance implementation, healthcare facilities can consider additional strategies such as offering workshops or online modules for ICU staff to familiarise them with the guidelines and their application in patient care. Establishing a dedicated group of healthcare professionals to lead the implementation process, which could include clinical educators, nurse managers, and ICU team leaders. Finally, developing easy-to-follow, visually engaging resources like quick-reference cards, posters, or digital tools that highlight the key recommendations supported by real-life examples from ICU settings.

Guideline implementers should also consider the barriers and facilitators identified in this study. Key facilitators include having a supportive leadership team, a committed implementation group, and ensuring the guidelines are presented in a user-friendly design. However, major barriers, such as a lack of resources and the challenge of changing ingrained clinical habits, must be carefully addressed.

Future research should focus on evaluating these facilitators and barriers in more detail. Complex design evaluation methods, such as process evaluations and implementation science frameworks, can provide insights into the effectiveness of various implementation strategies, ultimately refining the guideline integration process in ICU settings (62).

Supplementary Material 14: Working Group, Consultation, and Assessment Process

Members of the working group:

- Dr Anne Mette Adams
- Dr Charlotte Brun Thorup
- Kay Bruce
- Professor Diane Chamberlain
- Professor Tifffany Conroy
- Professor Mette Grønkjær
- Cornelia Lamprecht
- Dr Britt Laugesen
- Dr Matthew Maiden
- Marianne W Nørgaard
- Cherie Waite

Independent Review:
The clinical guideline for non-pharmacological prevention and management of agitation in adult intensive care units has been reviewed by the following consultation parties prior to publication:

- TBC

Peer Review:
Names and titles of two peer reviewers:

Public Consultation
Publication consultation involved the preparation of the guidelines to be reviewed by independent reviewers, targeted experts and interest groups and the public.

Invitations to review the draft guidelines were published in relevant patient and professional organisations, organisations and health professionals (see list below) with a copy of the draft guidelines and a link to a Qualtrics survey. This survey was accessible for 6 weeks.

A summary of all feedback and how these affected the final guidelines are provided below (to be inserted after consultation).

Table 35 Organisations contacted for feedback

Public consultation list or organisations contacted

Supplementary Material 15: Funding Support

Anne Mette Adams received an Australian Government Research Training Stipend during the development of this guideline. Additionally, the project received two seeding grants from the Australian College of Critical Care Nurses and an Impact Seeding Grant from Flinders University. The views or interests of these funding sources have not influenced the final recommendations.

Supplementary Material 16: Conflict of Interest

Prior to involvement in the guidelines, all guideline development working group members disclosed potential conflicts of interest. No conflicts were declared (see Table below).

Stakeholders provided advice on the scope of the guidelines, and all Delphi participants were also required to declare any conflicts of interest. No conflicts were declared.

Table 36 Working group Conflict of Interest

Guideline Working Group	Conflicts of Interest Declaration
Dr Anne Mette Adams	No Conflicts to Declare
Dr Charlotte Brun Thorup	No Conflicts to Declare
Kay Bruce	No Conflicts to Declare
Professor Diane Chamberlain	No Conflicts to Declare
Professor Tifffany Conroy	No Conflicts to Declare
Professor Mette Grønkjær	No Conflicts to Declare
Cornelia Lamprecht	No Conflicts to Declare
Dr Britt Laugesen	No Conflicts to Declare
Dr Matthew Maiden	No Conflicts to Declare
Marianne W Nørgaard	No Conflicts to Declare
Cherie Waite	No Conflicts to Declare

Supplementary Material 17: Updates and Future Research Updates

As a general rule, the need for updates should be assessed every four years unless new evidence or technological advancements in the field suggest otherwise.

During the development of these clinical guidelines, several areas emerged where evidence is either sparse or entirely lacking. These gaps represent critical opportunities for future research that could significantly advance the field of preventing and managing ICU patient agitation.

One key area for future research relates to the guideline recommendations themselves. Although the recommendations are based on the best available evidence, more robust studies are needed to further validate their effectiveness and optimise their implementation in different ICU settings. Specifically, research is required to explore the long-term outcomes of non-pharmacological interventions and how these can be tailored to diverse patient populations and ICU environments.

Additionally, interventions that did not reach consensus in the Delphi study warrant further investigation. Several interventions failed to gain consensus, not because of disagreement on their potential benefits, but due to limited awareness and use among healthcare professionals. For example, some interventions were unfamiliar to many participants, resulting in a lack of sufficient data to evaluate their usability and perceived effectiveness. Future studies should aim to pilot and evaluate these lesser-known interventions, gathering both quantitative and qualitative data on their clinical application and impact on patient outcomes.

There were also interventions that reached consensus in Denmark but not in Australia, including the use of bed bikes, basal stimulation, patient diary, therapeutic weighted blankets, and ensuring the same staff members care for the patient. These interventions were thus included in the Danish guidelines but not in the Australian. More research is required in this space to widen clinicians' repertoire of nonpharmacological interventions.

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