

# NYIR

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in Review



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# Nursing Year in Review Bibliography

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## TABLE OF CONTENTS

### Implementation Science in Pulmonary, Critical Care and Sleep

- Implementation Science: Definitions, Theories, Frameworks and Strategies ..... 3
- Implementation Science Approaches in COPD..... 6
- The Underside of the Iceberg: Uncovering the Many Complexities of Implementation Science in the ICU..... 10
- Strategies for Successful Implementation of Cognitive Behavioral Therapy for Insomnia..... 13

# Implementation Science: Definitions, Theories, Frameworks and Strategies

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Weiss CH, Krishnan JA, Au DH, Bender BG, Carson SS, Cattamanchi A, Cloutier MM, Cooke CR, Erickson K, George M, Gerald JK, Gerald LB, Goss CH, Gould MK, Hyzy R, Kahn JM, Mittman BS, Mosesón EM, Mularski RA, Parthasarathy S, Patel SR, Rand CS, Redeker NS, Reiss TF, Riekert KA, Rubenfeld GD, Tate JA, Wilson KC, Thomson CC; ATS Ad Hoc Committee on Implementation Science. **An Official American Thoracic Society Research Statement: Implementation Science in Pulmonary, Critical Care, and Sleep Medicine.** *Am J Respir Crit Care Med.* 2016 Oct 15;194(8):1015-1025. doi: 10.1164/rccm.201608-1690ST. PMID: 27739895; PMCID: PMC5441016.

## Overview

This document is an official research statement from the American Thoracic Society on implementation science in pulmonary, critical care, and sleep medicine.

## Summary

Implementation science is the study of how effective health care interventions are adopted or not adopted in clinical and community settings. The document defines implementation science, distinguishes it from the act of implementation, and discusses the use of conceptual frameworks in implementation science. It also emphasizes the importance of stakeholder involvement and the role of professional medical societies, like the ATS, in promoting implementation science. The document provides recommendations for professional societies to consider in supporting implementation science, such as creating an organizational home for implementation science, linking front-line clinicians with implementation scientists, and prioritizing the use of rigorous methods in developing clinical practice guidelines.

## Comments

1. This was an early effort to demonstrate the value of promoting implementation science by professional societies.

2. This statement provided definitions of common terms used in Implementation Science including a table with examples.
3. This statement included a table illustrating application of several Implementation Science conceptual frameworks to guide planning and execution of studies focused on pulmonary, sleep and critical care.
4. This statement also included strategies the ATS supports in the area of Implementation Science.
5. The statement outlines recommendations for professional societies to actively engage in Implementation Science and support the translation of evidence into practice.

Nilsen, P. **Making sense of implementation theories, models and frameworks.** *Implementation Sci* 10, 53 (2015). <https://doi.org/10.1186/s13012-015-0242-0>

## Summary

The paper discusses the use of theories, models, and frameworks in implementation science. It proposes a taxonomy that categorizes these approaches into five categories: process models, determinant frameworks, classic theories, implementation theories, and evaluation frameworks. Nilsen highlights the importance of understanding and explaining what influences implementation outcomes, as well as evaluating implementation. It also emphasizes the need for interdisciplinary and multiprofessional approaches in implementation science. These categories of theoretical approaches are not always recognized as separate types of approaches in the literature, and there is overlap between some of the theories, models, and frameworks. However, understanding the differences between these categories is important for selecting and applying relevant approaches in implementation studies.

### Comments

1. This is the seminal work in categorizing Implementation Science theories, models and frameworks.
2. These theories, models and frameworks and the categories have been utilized over time to plan and execute Implementation Science studies.

Smith JD, Li DH, Rafferty MR. **The Implementation Research Logic Model: a method for planning, executing, reporting, and synthesizing implementation projects.** *Implement Sci.* 2020 Sep 25;15(1):84. doi: 10.1186/s13012-020-01041-8. PMID: 32988389; PMCID: PMC7523057.

### Summary

The Implementation Research Logic Model (IRLM) is a tool designed to improve the specification, rigor, reproducibility, and testable causal pathways involved in implementation research projects. It provides a means of describing the complex relationships between critical elements of implementation research and practice, such as determinants, strategies, mechanisms, and outcomes. The IRLM can be used for planning, executing, reporting, and synthesizing implementation projects. It offers researchers and partners a useful tool for improving the rigor and reproducibility of projects, serving as a roadmap for project execution, clearly reporting and specifying project conduct, and understanding the connections between determinants, strategies, mechanisms, and outcomes. The IRLM has been evaluated in a training with implementation researchers and healthcare delivery system partners, and the results indicated a high utility of the IRLM for multiple purposes. The IRLM is a semi-structured, principle-guided tool that is adaptable and can be used in diverse projects and contexts. It is an ongoing development with ongoing adaptation, refinement, and the development of resources for use.

### Comments

1. This is a comprehensive tool for guiding large-scale implementation projects. This tool provides a means for improving rigor and reproducibility.
2. The author provide fillable forms and multiple exemplars in supplemental materials with the aim to provide ways to tailor the model to meet the needs of projects.

Porritt K, McArthur A, Lockwood C, Munn Z. **JBII's approach to evidence implementation: a 7-phase process model to support and guide getting evidence into practice.** *JBII Evid Implement.* 2023 Mar 1;21(1):3-13. doi: 10.1097/XEB.0000000000000361. PMID: 36545902.

### Summary

The paper Joanna Briggs Institute's (JBI) approach to evidence implementation and provides a seven-phase process model to guide the implementation of evidence into practice. The central tenets of JBI's approach include the use of evidence-based audit and feedback, identification of the context, facilitation of change, and evaluation. Overall, JBI's approach emphasizes the importance of collaboration, context analysis, and evaluation in the implementation of evidence into practice. It provides practical guidance and tools to support healthcare professionals and organizations in implementing evidence-based practices.

### Comments

1. The central tenet of JBI's approach to evidence implementation is the use of evidence-based audit and feedback. This is a melding of EBP with IS and not unexpected from JBI as they emphasize careful review of evidence.
2. The paper mentions several theories, models and frameworks relevant for facilitating evidence into practice. These frameworks and theories provide guidance and insights into the factors that influence the successful implementation of evidence into practice. They help identify barriers and enablers, develop strategies for change, and evaluate the outcomes of implementation efforts.
3. The seven phase approach is comprehensive and reflects alignment with standard quality improvement principles.

Wang Y, Wong EL, Nilsen P, Chung VC, Tian Y, Yeoh EK. **A scoping review of implementation science theories, models, and frameworks - an appraisal of purpose, characteristics, usability, applicability, and testability.** *Implement Sci.* 2023 Sep 19;18(1):43. doi: 10.1186/s13012-023-01296-x. PMID: 37726779; PMCID: PMC10507824.

## Summary

This paper is a systematic review of 143 theories, models, and frameworks (TMFs) in the field of implementation science. The review assessed the usability, applicability, and testability of the development and refinement of TMFs in the field of implementation science. This paper reflects the diverse goals of TMFs in implementation science, ranging from understanding the factors that influence implementation to providing guidance on strategy design and evaluation.

## Comments

1. The authors provide an updated list of Implementation Science TMF.
2. The authors utilized 5 metrics to assess quality of the TMFs they reviewed. These metrics are relevant and comprehensive.
3. The percentage of studies with sound evidence of change mechanisms is 57%.
4. The authors excluded stakeholder understanding, application and operationalization in the usability domain from the review as this was viewed as largely subjective.
5. This review provides insights for others to develop new theories, models and frameworks.

## OTHER ARTICLES OF INTEREST

Alostaz Z, Rose L, Mehta S, Johnston L, Dale C. **Physical restraint practices in an adult intensive care unit: A prospective observational study.** *J Clin Nurs.* 2023 Apr;32(7-8):1163-1172. doi: 10.1111/jocn.16264. Epub 2022 Feb 22. PMID: 35194883.

Chambers, D. (2023). **Dissemination and implementation research in health: translating science to practice.** Oxford University Press.

Cushman GK, Koinis-Mitchell D, Alsina M, Barker D, Drew L, DeCesare C, Yeo AJ, Durkin K, Elwy AR, Jandasek B, Pearlman DN, Vivier P, McQuaid EL. **Design of a community-based, Hybrid Type II effectiveness-implementation asthma intervention study: The Rhode Island Asthma Integrated Response (RI-AIR) program.** *Contemp Clin Trials.* 2023 Jun;129:107204. doi: 10.1016/j.cct.2023.107204. Epub 2023 Apr 23. PMID: 37088129.

Florman KEH, Siddharthan T, Pollard SL, Alupo P, Barber JA, Chandyo RK, Flores-Flores O, Kirenga B, Mendes RG, Miranda JJ, Mohan S, Ricciardi F, Rykiel NA, Sharma AK,

Wosu AC, Checkley W, Hurst JR; Additional GECO Study Investigators. **Unmet Diagnostic and Therapeutic Opportunities for Chronic Obstructive Pulmonary Disease in Low- and Middle-Income Countries.** *Am J Respir Crit Care Med.* 2023 Aug 15;208(4):442-450. doi: 10.1164/rccm.202302-0289OC. PMID: 37369142; PMCID: PMC10449073.

Levenson JC, Williamson AA. **Bridging the gap: leveraging implementation science to advance pediatric behavioral sleep interventions.** *J Clin Sleep Med.* 2023 Jul 1;19(7):1321-1336. doi: 10.5664/jcsm.10476. PMID: 36722616; PMCID: PMC10315605.

Moullin JC, Dickson KS, Stadnick NA, Albers B, Nilsen P, Broder-Fingert S, Mukasa B, Aarons GA. **Ten recommendations for using implementation frameworks in research and practice.** *Implement Sci Commun.* 2020 Apr 30;1:42. doi: 10.1186/s43058-020-00023-7. PMID: 32885199; PMCID: PMC7427911.

Nilsen P, Thor J, Bender M, Leeman J, Andersson-Gäre B, Sevdalis N. **Bridging the Silos: A Comparative Analysis of Implementation Science and Improvement Science.** *Front Health Serv.* 2022 Feb 4;1:817750. doi: 10.3389/frhs.2021.817750. PMID: 36926490; PMCID: PMC10012801.

Peltan ID, Knighton AJ, Barney BJ, Wolfe D, Jacobs JR, Klippel C, Allen L, Lanspa MJ, Leither LM, Brown SM, Srivastava R, Grissom CK. **Delivery of Lung-protective Ventilation for Acute Respiratory Distress Syndrome: A Hybrid Implementation-Effectiveness Trial.** *Ann Am Thorac Soc.* 2023 Mar;20(3):424-432. doi: 10.1513/AnnalsATS.202207-626OC. PMID: 36350983; PMCID: PMC9993149.

Silver S, Jones KC, Redmond S, George E, Zornes S, Barwise A, Leppin A, Dong Y, Harmon LA, Kumar VK, Kordik C, Walkey AJ, Drainoni ML. **Facilitators and barriers to the implementation of new critical care practices during COVID-19: a multicenter qualitative study using the Consolidated Framework for Implementation Research (CFIR).** *BMC Health Serv Res.* 2023 Mar 20;23(1):272. doi: 10.1186/s12913-023-09209-w. PMID: 36941593; PMCID: PMC10026230.

Wolfenden L, Foy R, Pesseau J, Grimshaw JM, Ivers NM, Powell BJ, Taljaard M, Wiggers J, Sutherland R, Nathan N, Williams CM, Kingsland M, Milat A, Hodder RK, Yoong SL. **Designing and undertaking randomised implementation trials: guide for researchers.** *BMJ.* 2021 Jan 18;372:m3721. doi: 10.1136/bmj.m3721. PMID: 33461967; PMCID: PMC7812444.

## Implementation Science Approaches in COPD

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### ADHERENCE TO LONG-TERM OXYGEN

Prieto-Centurion V, Holm KE, Casaburi R, Porszasz J, Basu S, Bracken NE, Gallardo R 3rd, Gonzalez V, Illendula SD, Sandhaus RA, Sullivan JL, Walsh LJ, Gerald LB, Krishnan JA. **A Hybrid Effectiveness/Implementation Clinical Trial of Adherence to Long-Term Oxygen Therapy for Chronic Obstructive Pulmonary Disease.** *Ann Am Thorac Soc.* 2023 Nov;20(11):1561-1570.

#### Summary

The Peer-Led Supplemental Oxygen InfoLine for Patients and Caregivers (PELICAN) study aimed to evaluate two alternatives for telephone-based peer coaching compared with usual care. This was the first study to evaluate peer coaching for long-term oxygen therapy for COPD with a randomized trial design. A three-arm block randomized pragmatic effectiveness/implementation hybrid type 1 clinical trial design was used for this study. The hybrid design was used to concurrently evaluate effectiveness and implementation outcomes. Early implementation domains in the reach, adoption, and implementation framework (RE-AIM) were assessed as secondary outcomes. Participants were randomized to proactive peer coaching, reactive peer coaching, or usual care. Proactive peer coaching included five-session telephone-based curriculum delivered by peer coaches. Reactive peer coaching participants were instructed to contact an InfoLine for assistance as needed. All participants received self-management educational examples. Between 94-97% across the 3 arms completed the study. Researchers found less patient-reported depression and sleep disturbance symptoms reported in the proactive group compared to usual care. Reach, adoption, and implementation were acceptable, but results were inconclusive on the effects of either method of phone-based peer coaching (proactive or reactive) on long term oxygen therapy adherence.

#### Comments

1. Results on the effects of peer coaching on adherence to long term oxygen therapy were inconclusive, but there were less patient-reported depression and sleep disturbance symptoms reported in the proactive group compared to usual care.
2. Reach, adoption, and implementation of the PELICAN intervention were acceptable, and there were high levels of fidelity in intervention implementation.
3. There were challenges in collection of primary effectiveness outcome measures, with incomplete oxygen equipment worksheets, errors in worksheet data recording, and inconsistencies in data collection during follow-up sessions.
4. Researchers note these challenges support the need to minimize reliance on participant-reported outcome data for effectiveness trials, particularly when these are the primary outcome variables.

### IMPLEMENTATION OF A COPD DIGITAL SUPPORT SERVICE

Taylor A, Cushing A, Dow M, Anderson J, McDowell G, Lua S, Manthe M, Padmanabhan S, Burns S, McGinness P, Lowe DJ, Carlin C. **Long-Term Usage and Improved Clinical Outcomes with Adoption of a COPD Digital Support Service: Key Findings from the RECEIVER Trial.** *Int J Chron Obstruct Pulmon Dis.* 2023 Jun 22;18:1301-1318.

#### Summary

This prospective observational cohort hybrid implementation-effectiveness study was conducted to determine feasibility, acceptability, and utility of a COPD digital service. Intervention elements included a patient web application for symptom entry and standardized self-management advice, a clinician dashboard that

displayed patient data, asynchronous messaging between patient and provider, and a support website with additional self-management resources. No implementation framework was reported. Implementation outcomes included feasibility, acceptability, adoption, and appropriateness. Cost was acknowledged to be a goal of future work and was not included in this study. Authors reported high, sustained utilization by participants enrolled in the study. There was no traditional randomized control arm, but additional outcomes included a reduction in mean hospitalization days in those using the service compared to a comparator cohort. Authors determined the high, sustained utilization and improvement in clinical outcomes supported the scale up of the service (currently in progress). While this is reported as an implementation study, no framework was used and clear implementation outcomes were not categorized and reported here. However, acceptability, feasibility, and adoption were discussed throughout the general findings.

### Comments

1. Observed reductions in hospital bed days could have promising implications for healthcare systems and costs.
2. Lack of a randomized control arm, limited data about the comparator cohort, and abrupt study interruption during COVID-19 are limitations of this study and interpretation of these findings.
3. Patient and clinician co-design of the intervention strengthened the acceptability of this intervention.
4. Additional strengths include daily prompts to complete PROs, asynchronous messaging options, and a verified COPD diagnosis at time of onboarding.

### MULTIPHASE DEVELOPMENT OF COPD PALLIATIVE CARE INTERVENTION

Iyer AS, Wells RD, Dionne-Odom JN, Bechthold AC, Armstrong M, Byun JY, O'Hare L, Taylor R, Ford S, Coffee-Dunning J, Dransfield MT, Brown CJ, Bakitas MA. **Project EPIC (Early Palliative Care In COPD): A Formative and Summative Evaluation of the EPIC Telehealth Intervention.** *J Pain Symptom Manage.* 2023 Apr;65(4):335-347

### Summary

This was a formative and summative evaluation study to adapt and pilot test the Early Palliative Care in COPD (EPIC) intervention, which consisted of telephonic, nurse coach-led early palliative care for patients with moderate-very severe COPD and their family caregivers. The NIH Stage Model for development of complex interventions was used to prepare, engage, analyze, adapt, and assess the EPIC Intervention over multiple phases. During Phase 1 (Formative Evaluation), patients, caregivers, and clinicians were engaged to prepare and adapt the initial intervention. Early COPD-Palliative Care needs were mapped, and included coping with COPD, illness understanding, prognostic awareness, and emotional and respiratory symptoms. Each need was integrated into an EPIC intervention component. A Phase II single-arm pilot study was conducted for eligibility, setting, and procedures. An ongoing single-blind, hybrid type-1 effectiveness-implementation pilot randomized control trial with primary outcomes of feasibility and acceptability is a continuance of the NIH Stage Model. Secondary outcomes include mobility, quality of life, and caregiver burden.

### Comments

1. To promote implementation and dissemination, researchers opted to utilize a low-tech telephone option that does not rely on broadband.
2. Very few COPD interventions focus on family caregivers, and EPIC has a family caregiver-facing component.
3. The EPIC prototype, mapped to priority COPD early palliative care needs, was found to be feasible and acceptable following a multiphase formative and summative evaluation.
4. Qualitative research was used to map early COPD-Palliative Care needs for the EPIC intervention, and researchers identified coping with COPD, illness understanding, prognostic awareness, and emotional and respiratory symptoms as early PC needs for COPD.

## USING RE-AIM TO IMPLEMENT AN ENHANCED PULMONARY REHAB PROGRAM

van der Braak K, Wald J, Tansey CM, Paes T, Sedeno M, Selzler AM, Stickland MK, Bourbeau J, Janaudis-Ferreira T. **Implementation and maintenance of an enhanced pulmonary rehabilitation program in a single centre: An implementation study.** *Chron Respir Dis.* 2023 Jan-Dec;20:14799731231179105.

### Summary

This was a single-site implementation study with a prospective pre-post design that used the Reach, Effectiveness, Adoption, Implementation and Maintenance (RE-AIM) framework to evaluate an enhanced pulmonary rehabilitation (PR) program at a single site at two time points. In addition to evaluation of reach, adoption, implementation, and maintenance (primary outcome measures), a secondary aim was to identify facilitators and barriers to implementation and maintenance of the program. Two cohorts were evaluated during two evaluation periods, 6 months after implementation and 18 months following implementation. Patient-level and organizational-level outcomes were assessed. Reach was high (70-75%) compared to other PR studies. The enhanced pulmonary rehabilitation program was found to be acceptable by patients and healthcare providers. Implementation and fidelity were maintained over 18 months, and adoption was determined to be maximal, as all healthcare providers were willing to adopt the program.

### Comments

1. Successful implementation was attributed to strong and established healthcare teams working on this project, and there may be barriers to implementation at sites with fewer or less experienced healthcare providers.
2. This is the first study to use the RE-AIM framework to implement a PR program in a hospital setting, allowing a rich program evaluation on multiple levels and domains.
3. There is a need for a variety of pulmonary rehabilitation programs, such as virtual and home PR programs, to increase accessibility for patients unable to visit regular outpatient programs.

4. Lessons learned included the need for a clearer introduction of the program based upon knowledge and experience of providers, a desire for increased education about program resources (e.g. presentation slides and reference guides), and an allowance for adaptation of program components as needed.

## RURAL COPD PROGRAM IMPLEMENTATION

Freeman S, Peach L, Ross C, Marchal K, Meyer A, Skinner K. **Development and evaluation of the Rural and Northern Community Focused Model of COPD Care (RaNCoM).** *BMC Pulm Med.* 2023 Oct 20;23(1):399.

### Summary

This study used the Process Evaluation Framework to evaluate the program development, implementation, mechanisms of impact, and context of a rural COPD program to enhance primary care for COPD patients. The process evaluation included qualitative thematic analysis of stakeholder interviews (n=11) and a document review (n=60; ~500 pages) of key clinical documents. Five phases of the COPD program were described: Survive, Reorganize and Stabilize, Assess and Respond, Build and Refine, and Sustain and Share. Access (reducing barriers to care), capacity building (strengthen/support well-being of patients, providers, and community), and relationships (for a robust and responsive healthcare system) were identified as program outcomes and impact. Program implementation key elements were identified as the resources needed to ensure operation, including operational, infrastructure, and software. Researchers concluded that community-based initiatives are impactful on the health of rural and remote communities and may facilitate the effective management of complex, chronic conditions.

### Comments

1. The rural COPD program is situated within a rural care context, and is both patient-centered and community-centered to ensure effectiveness.
2. A care approach connecting all service providers into a team and mindfully serving the patients and wider community contributes to build an “ecosystem of health care” in this patient-centered, shared-care model.



3. To respond to community needs in an ongoing, longitudinal approach, the COPD program is fueled by a relational and collaborative environment and continually assesses and refines program resources and outcomes.
4. Operational resources include evidence-based practices to guide and improve processes through implementing Plan-Do-Study-Act (PDSA) cycles.

Pollard SL, Siddharthan T, Hossen S, Rykiel NA, Flores-Flores O, Alupo P, Quaderi S, Ascencio I, Barber JA, Chandyo R, Das SK, Gianella G, Kirenga B, Grunstra K, Miranda JJ, Mohan S, Ricciardi F, Sharma AK, Shrestha L, Soares MO, Wosu AC, Hurst JR, Checkley W; GECO2 Trial Investigators. **Chronic Obstructive Pulmonary Disease Self-Management in Three Low- and Middle-Income Countries: A Pilot Randomized Trial.** *Am J Respir Crit Care Med.* 2023 Nov 15;208(10):1052-1062.

#### OTHER ARTICLES OF INTEREST

Polo J, Basile MJ, Zhang M, Ordonez K, Rodriguez D, Boye-Codjoe E, Williams M, Tsang D, Medina R, Jacome S, Mir P, Khanijo S, Pekmezaris R, Hajizadeh N. **Application of the RE-AIM framework to evaluate the implementation of telehealth pulmonary rehabilitation in a randomized controlled trial among African-American and Hispanic patients with advanced stage Chronic Obstructive Pulmonary Disease.** *BMC Health Serv Res.* 2023 May 23;23(1):515.

# The Underside of the Iceberg: Uncovering the Many Complexities of Implementation Science in the ICU

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## IMPLEMENTATION AND DISSEMINATION OF A NURSE-LED DELIRIUM PREVENTION PROTOCOL

Brennan K, Sanchez D, Hedges S, Lynch J, Hou YC, Al Sayfe M, Shunker SA, Bogdanoski T, Hunt L, Alexandrou E, He S, Mai H, Rolls K, Frost SA. **A nurse-led intervention to reduce the incidence and duration of delirium among adults admitted to intensive care: A stepped-wedge cluster randomised trial.** *Aust Crit Care.* 2023 Jul;36(4):441-448. doi: 10.1016/j.aucc.2022.08.005. Epub 2022 Sep 28. PMID: 36182540.

### Summary

Delirium represents an acute brain dysfunction experienced by approximately 50% of intensive care unit (ICU) patients. Multicomponent nonpharmacological interventions have been shown to reduce the risk of incident delirium. However, sustained efficacy following implementation and dissemination has been equivocal. To address this gap, a hybrid stepped-wedge cluster randomized controlled trial enrolled consecutive adult patients admitted to ICUs across four hospitals to test the implementation and effectiveness of a nurse-led delirium prevention protocol to reduce the incidence and duration of delirium. In total, 2,566 patients were enrolled with an average age of 65 years (+/- 18) and were 56% male sex. The trial reported a nonsignificant decrease in delirium incidence from pre-to-post intervention [14.1% (95%CI: 12.1, 16.2%) and 10.7% (95%CI: 9.1, 12.4%)] and a nonsignificant increase in delirium-free days [4.1 days (3.8-4.4%) to 4.4 days (4.2-4.5%)]. The trial reported a significant increase in monthly documented delirium screenings [9.2 (6.7-12.2) to 43.3 (39.6-47.1),  $p < .001$ ] and a decrease in the rate of coded delirium per 1,000 admissions [2.7 (2.5, 3.3) to 2.4(2.2, 2.7),  $p = .0126$ ] 12 months following the study period. In summary, a nonsignificant trend towards reduced delirium incidence was reported following the implementation and dissemination of a nurse-led delirium prevention protocol.

### Comments

1. While the study investigators conducted a rigorous clinical trial, the adoption and use (i.e., adherence or intervention fidelity) of the nurse-led delirium prevention measures was not reported or discussed and could have contributed to the nonsignificant findings.
2. The significant improvement in the number of documented delirium assessments over time is an important outcome and may better reflect the efficacy of the implementation and dissemination process.
3. The author's mention of modest effect size in relation to nurse-led delirium prevention measures is an important consideration for future implementation and dissemination studies.
4. The consideration of de-implementation at the end of the study is notable and should be incorporated into future implementation and dissemination studies.
5. Implementation related findings included significant barriers to sleep-related interventions reported by staff included nighttime admissions, discharges, and the acuity of the patient.

## A PREMORTEM: FACILITATORS AND BARRIERS PRE-IMPLEMENTATION

Verweij L, Oesch S, Naef R. **Tailored implementation of the FICUS multicomponent family support intervention in adult intensive care units: findings from a mixed methods contextual analysis.** *BMC Health Serv Res.* 2023 Dec 1;23(1):1339. doi: 10.1186/s12913-023-10285-1. PMID: 38041092; PMCID: PMC10693161.

### Summary

Following an ICU hospitalization, between 5-57% of family members of critically ill patients will report symptoms of depression, anxiety, post-traumatic stress disorder, and sleep deprivation 6-months after discharge. Together, these adverse post-ICU mental health outcomes define Post-Intensive Care Syndrome-Family (PICS-F). A multi-component family support

intervention that includes a nurse-coordinated liaison, therapeutic family conversations, and structured interprofessional communication was developed to support family caregivers in the ICU and prevent downstream PICS-F. Before implementation, the study investigators conducted a contextual analysis with key stakeholders to identify potential barriers and facilitators to adoption and then tailored the intervention accordingly. Survey and focus group questions were informed by the Consolidated Framework for Implementation Research (CFIR) and Organization Readiness for Implementing Change (ORIC) scale. Quantitative results from the surveys (n=33) demonstrated a supportive environment with high leadership engagement and readiness for change (all scores >3, 1-5 scale). Qualitative findings identified potential concerns and barriers to implementation including the lack of resources, potential staff burnout, and new role adoption. In response to these findings, the implementation team tailored implementation strategies per site and role to proactively address barriers. Future studies can use this study framework to assess readiness to implement family support interventions in the ICU.

### Comments

1. This contextual analysis was conducted across eight ICUs with key stakeholders including nursing and physician leadership, family nurses delivering the intervention, and implementation support individuals.
2. The study investigators conducted a rigorous assessment of pre-implementation readiness by using a mixed-method approach (n=33 survey respondents, n=40 attended one of eight focus group sessions).
3. While the quantitative survey results indicated a higher level of readiness, the qualitative interviews provided a more granular exploration of potential concerns and barriers prior to implementation, demonstrating the importance of a mixed-methods approach.
4. Identified enablers for implementation included implementation support roles that are available during the trial period.
5. The authors did not include staff outside of leadership or intervention-specific roles that may have different concerns related to the intervention.

### A POSTMORTEM: FACILITATORS AND BARRIERS POST-IMPLEMENTATION

Tilburgs B, Rood PJT, Zegers M, van den Boogaard M; UNDERPIN-ICU study group. **The implementation of nURsiNg DELiRium preventive INterventions in the Intensive Care Unit (UNDERPIN-ICU): A qualitative evaluation.** *Int J Nurs Stud.* 2023 Jan;137:104386. doi: 10.1016/j.ijnurstu.2022.104386. Epub 2022 Nov 8. PMID: 36427481.

### Summary

A multicenter cluster-randomized controlled clinical trial implementing nurse-driven delirium prevention interventions across ten ICUs reported no change in delirium-free or coma-free days [n=1,749; median of 23 (4-27) days in both intervention and control groups]. The study team conducted a qualitative evaluation using focus groups at each study site (n=10 sites, 31 participants) to understand the barriers and facilitators to adopting the standardized, multicomponent intervention. Transcripts and field notes were analyzed using content and thematic analyses. Forty-one factors that facilitated or hindered implementation were identified. These factors were grouped into 5 overarching themes: 1) intervention, 2) healthcare professional, 3) patient, 4) implementation process, and 5) capacity for organizational change, incentives, and resources. In brief, facilitators included attractiveness of study materials, observable results when interventions were applied, training methods, the availability of superusers, family and patient engagement, and interventions were in the nursing domain. Barriers included lack of perceived evidence for the program, the use of interventions as standard care before implementation, limited resources, frequency of use, illness severity, administrative burden, technological issues, and priority of the program. These qualitative interview findings highlight several factors that may have contributed to the lack of effectiveness in reducing delirium days.

### Comments

1. The study investigators used purposive sampling to recruit a representative sample of stakeholders (ICU nurses, ICU physicians, local delirium working group) from each study site (n=10).
2. A topic list was developed using implementation science literature and expert consultation then pilot tested prior to focus group conduct.
3. The reported 41 factors (categorized into 5 themes) with quotes from interviews are illuminating and highlight the multidimensional, behavioral change strategies likely needed in

- conjunction with implementation to facilitate program success.
4. There was a lack of awareness on the importance of delirium prevention and previous reported effectiveness of interventions to prevent delirium that were reported to impact motivation to do the interventions.
  5. Future studies should consider proactively surveying and addressing the reported 41 factors (facilitators and barriers) in future implementation studies in the ICU environment.

# Strategies for Successful Implementation of Cognitive Behavioral Therapy for Insomnia

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## IMPLEMENTING COGNITIVE BEHAVIORAL THERAPY FOR INSOMNIA (CBT-I) IN VETERANS

Pfeiffer PN, Ganoczy D, Zivin K, Gerlach L, Damschroder L, Ulmer CS. **Guideline-concordant use of cognitive behavioral therapy for insomnia in the Veterans Health Administration.** *Sleep Heal.* 2023;9(6):893-896. doi:10.1016/J.SLEH.2023.07.002

### Summary

When administered appropriately by a clinical psychologist or other trained provider, Cognitive Behavioral Therapy for Insomnia (CBT-I) is highly effective in treating insomnia. CBT-I incorporates sleep education, counseling, and sleep restriction therapy. The objective of this 2021 study was to assess the adherence to the Veterans Health Administration (VA) guidelines established in 2019, which recommend Cognitive Behavioral Therapy for Insomnia (CBT-I) as the primary treatment for patients with insomnia. The medical records of 5,519,016 patients within the Veterans Health Administration (VA) who attended both primary and specialty mental health appointments in 2021 were included. Although the VA has employed over 1300 providers of CBT-I, patients reporting primary insomnia symptoms were 11-24 times more likely to receive a prescription for sleep medication. CBT-I was more frequently prescribed to younger patients, women, and nonwhite patients, whereas older patients, White patients, or men were more likely to receive sleep medications. Two years may not have been a sufficient amount of time to expect full implementation of the guidelines. Enhanced referral procedures and increased time should be allocated to therapists to implement CBT-I.

### Comments

1. While CBT-I presents a superior method for addressing insomnia, it necessitates comprehensive training to effectively instruct providers on its implementation.

2. Unlike prescribing sleep medicine, which is quick and usually effective, CBT-I takes several visits to a provider and frequent follow up.
3. While the VA established CBT-I has first line treatment for insomnia, it is unclear from this article what processes they put in place to ensure successful implementation.
4. The article did not indicate if there were benchmarks that VA had set that would indicate success in implementing these guidelines.

## IMPLEMENTATION OF CBT-I USING TELEMEDICINE

Martin JL, DeViva J, McCarthy E, et al. **In-person and telehealth treatment of veterans with insomnia disorder using cognitive behavioral therapy for insomnia during the COVID-19 pandemic.** *J Clin Sleep Med.* 2023;19(7):1211-1217. doi:10.5664/jcsm.10540

### Summary

Cognitive Behavioral Therapy for Insomnia (CBT-I) traditionally involves one-on-one in-person sessions with a provider such as a clinical psychologist, social worker, or professional counselor. The VA established guidelines in 2019 that it be a first line treatment approach for Veterans with insomnia. However, data indicated a rise in insomnia cases during the Covid-19 pandemic and thus more providers were trained in CBT-I to meet the need. Restrictions imposed by the pandemic limited in-person contact, thereby complicating the administration of CBT-I which may include up to 6 in-person sessions. To ensure continuity of treatment, CBT-I via telehealth was introduced, implemented, and evaluated for its effectiveness. All sessions were recorded and monitored for treatment fidelity. Fifty-six veterans completed CBT-I treatment via telehealth only or a hybrid of telehealth and in person sessions. All veterans, regardless of treatment modality, significantly improved their scores on the insomnia severity index questionnaire by an average of 9 points from before to after treatment ( $P < .001$ ). When in-person CBT-I treatment is not feasible, telehealth has proven to be an effective alternative.

## Comments

1. This is the first study to evaluate CBT-I delivered through telehealth in a real-world setting.
2. There is a need to continue training providers in CBT-I to fulfill the guidelines set by the VA to implement as a first line treatment for insomnia.
3. Telehealth can provide flexibility in treating patients with insomnia who do not have access to in person care.
4. Increasing access to CBT-I may ameliorate or prevent other mental health conditions including suicidality.

## IMPLEMENTATION OF GROUP CBT-I USING A TELEHEALTH TO HOME MODALITY

Arizmendi BJ, Gress-Smith JL, Krieg C, Waddell J. **Adapting Group CBT-I for Telehealth-to-Home With Military Veterans in Primary Care.** *J Prim Care Community Health.* 2023;14. doi:10.1177/21501319221143722

### Summary

CBT-I has proved efficacious in a 1:1 in-person or group setting. However, implementing Cognitive Behavioral Therapy for Insomnia (CTB-I) posed numerous challenges during Covid-19 because of the difficulty in accessing in-person care. Furthermore, rural veterans face difficulties accessing in-person mental health care, as they may not be located near large VA health systems, where the majority of such care is typically available. Telehealth-to-home presents an ideal solution, but it was unknown if could be administered in a group format. A study of Veterans (N=102) compared a group telehealth intervention to a 1:1 in-person intervention. They also aimed to outline the barriers of implementing the CBT-I program via telehealth. Thirty percent of veterans, including those in the group intervention (n=15) and those in the in-person intervention (n=12), completed most or all sessions in both comparison groups, showing similar reductions in insomnia scores. Those in the in-person session demonstrated a slightly larger improvement in insomnia symptoms. Barriers to the telehealth-to-home intervention were access to a video camera, not having adequate privacy, and technological literacy. As a result, the authors introduced a one-hour class on teleconferencing and provided assistance with completing the initial questionnaires online.

### Comments

1. Although the limited sample size makes it difficult to generalize this study to other populations, it

identified several barriers that could affect the implementation of telehealth-based CBT-I in other settings.

2. Attrition was attributed to technological barriers, and it was unclear if there was an option for paper handouts, consents, and questionnaires.
3. As this was a 'real-world' implementation study, there was limited methodological control.
4. Further research is needed to address technological literacy when implementing telehealth-to-home CBT-I.

## IMPLEMENTATION OF NURSE DELIVERED CBT-I IN PRIMARY CARE SETTINGS

Kyle SD, Siriwardena N, Espie CA, et al. **Clinical and cost-effectiveness of nurse-delivered sleep restriction therapy for insomnia in primary care (HABIT): a pragmatic, superiority, open-label, randomised controlled trial.** [www.thelancet.com](http://www.thelancet.com). 2023;402:2023. doi:10.1016/S0140-6736(23)00683-9

### Summary

Providing training for clinical psychologists to deliver CBT-I therapy is time-consuming, and they may be less accessible in certain locales, particularly rural regions. It has been unknown if nurses could be trained to give CBT-I therapy and if it would be both clinically and cost effective. This study, conducted in England, compared the clinical efficacy, and cost effectiveness of nurse provided sleep restriction therapy (similar to CBT-I) to sleep hygiene education in patients with insomnia. Nurses received 4 hours of training. The participants received 2 in-person sessions and 2 telephone sessions. Both groups received education in sleep hygiene. A clinical psychologist reviewed the recorded sessions for fidelity. Of the participants (N=642), 489 (76.2%) were women and 153 (23.8%) were men. After 6 months, the mean ISI score was 10.9 (SD 5.5) for sleep restriction therapy and 13.9 (SD 5.2) for sleep hygiene suggesting the nurse provided sleep restriction therapy was clinically effective. At a threshold of £20,000, the treatment had a 95.3% probability of being deemed cost-effective. There were also improvements in the sleep restriction group compared to the sleep hygiene only group in depressive symptoms and work-related quality of life.

### Comments

1. Nurse-delivered sleep restriction therapy shows promise in addressing the challenge of an insufficient number of providers for treating insomnia.

2. Clinical psychologists receive up to 60-days of training in CBT-I in England, but there was no discussion of how they streamlined that for the nurse's training.
3. There was no discussion of any challenges the nurses faced when delivering the intervention.
4. Further research is needed to determine scalable implementation strategies for nurse delivered CBT-I.

#### OTHER ARTICLES OF INTEREST

Espie CA, Henry AL. **Disseminating cognitive behavioural therapy (CBT) for insomnia at scale: capitalising on the potential of digital CBT to deliver clinical guideline care.** *J Sleep Res.* 2023;32(6):e14025. doi:10.1111/jsr.14025

Rachel Manber, Norah Simpson, Nicole B Gumport. **Perspectives on increasing the impact and reach of CBT-I.** *Sleep*, Volume 46, Issue 12, December 2023, zsad168, <https://doi.org/10.1093/sleep/zsad168>