

Implementation Science in Health and Healthcare (HPR 6200) – Spring 2025

Location: Blockley 1311 – Seminar Room

Time: Thursdays, 1:45-4:45 pm (1:45-3:00 pm and 3:15 to 4:45 pm)



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COURSE DESCRIPTION

This course presents a survey of the field of implementation science in health. The structure of the course includes two parts. **In the first part**, we will introduce the field of implementation science, with an emphasis on terminology, theory, frameworks, design, outcomes, and measurement. **In the second part**, we will focus on applied implementation science, presenting examples of research programs in implementation science as well as applying insights of implementation science to practical implementation. Each guest speaker in the second part of the course will speak for 40-45 minutes, to allow us time at the end of each class to debrief and discuss applications of implementation science concepts. An emphasis on mixed (quantitative and qualitative) methods approaches is featured throughout the course.

Changes to the original syllabus may occur over the course of the semester due to University closures and speaker availability. Updated copies of the syllabus will be posted on Canvas as they are created. Please note the syllabus date in the bottom left corner of each page of this document. All changes will be reflected in blue and bolded text for ease of reference.

Inclusion, Diversity, and Equity

The Penn Medicine Office of Inclusion and Diversity (OID), in partnership with executive leadership, and other leadership and representatives throughout Penn Medicine and the Children's Hospital of Philadelphia (CHOP) continue to work to implement an ever-evolving strategic plan around racism, racial justice, and social equity. This strategic plan is a multi-prong approach aimed at combating several key areas of concern we heard during the Penn Medicine Virtual Community Town Hall on Monday, June 8th 2020 and thereafter. The community town hall, which was the first of many, served as the precursor to our whole-scale strategic planning process. It allowed us, as a community to become better aware and acknowledge the pain and suffering of individuals that deal with racism and inequities every day. This virtual meeting resulted in a unified view that significant change is needed in order to uphold our mission, vision, and values as an institution as well as the need for developing strategies that will have a sustainable impact on our culture and community.

More information on the DEI mission and priorities: <https://www.med.upenn.edu/inclusion-and-diversity/mission/>

To report an incident of bias, you may use the Bias Incident Reporting Form: <https://diversity.upenn.edu/diversity-at-penn/bias-motivated-incident-report>

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COURSE GOALS

1. Introduction to the foundations of implementation science, including terminology, conceptual models and frameworks, study design, measurement, and implementation outcomes.
2. Exposure to a broad range of research through guest speakers conducting implementation studies in health and health care, including discussion of project development stages and proposal development.
3. Learning to critically evaluate and design implementation science studies, with an emphasis on application of this skill within each student's area of interest.
4. Learning how to apply principles of implementation science to practical implementation efforts.

OPTIONAL TEXT FOR FURTHER READING

Brownson RC, Colditz GA, Proctor EK. [Dissemination and Implementation Research in Health: Translating Science into Practice](#) (3rd ed). New York, NY: Oxford University Press; 2023.

*Please note this text presents a useful overview of the field but is not required reading. This text is available online through the Penn Biomedical Library website <https://www.library.upenn.edu/biomed> (use the Franklin search function), and is available via course reserve using the link in the title above on the electronic syllabus.

GRADING AND HOMEWORK

1. **Homework (HW), 33% of grade:** This consists of the homework assignments described in the pages following the syllabus. See course schedule for details.

- **Readings.** The readings are listed in the syllabus for each date and will be posted to Canvas. Please complete the reading assigned associated with each class, as these contain seminal papers in the field designed to solidify learning from each lecture.
 - **Homework assignments.** Some weeks there will also be a written homework assignment. These are designed to engage your brain but not take all of your time. The maximum length is 1 page, single spaced (see homework pages following this syllabus for more instructions). **Please submit your homework assignment on Canvas by 1:45 pm (i.e., start of class) on the day it is due.** Assignments submitted late will be docked 10 grading points per day late. Assignments are below. Homework may be resubmitted within one week of initial grading for an updated grade.
2. **Attendance and participation, 33% of grade:** We expect all students to participate at least once per class session. For any given session, one “point” will be given for attendance and another “point” for participation. **If you miss class, the makeup assignment (see next section on absences) will replace the attendance and participation score for the missed day.**
- **Student Workshops:** Up to 6 students will sign up for each class session taking 10-15 minutes each to do one of the following: 1) discuss current research ideas and how implementation science concepts can be applied, or 2) review an article of interest. See more details on the options below. Slides may be used, but are not required.
 - Student workshops: Will sign up via Signup Genius link:
<https://www.signupgenius.com/go/10C0C45A8AB2CA6FAC16-54280540-student>

Option 1: Research Ideas

Please come prepared to describe your research of interest to which you are applying implementation science concepts. This may be related to class assignments or other ongoing/proposed work.

- BRIEFLY provide a background to your research.
- Identify points of tension that you’re experiencing.
- Pose 2-3 discussion questions to the group that would be helpful to you.

Option 2: Journal Club

Please select an article that interests you that relates to implementation science. Please address the following items:

- BRIEFLY summarize the article content.
- Comment on the research design. Briefly describe the methods.
- What key Implementation Science concepts does this article raise?
- How might the information in this article inform your research?
- What did this article clarify for you, and what questions did it raise?

3. **Final project, 34% of grade:** For your final project, you will choose one of two projects:

- Write a specific aims page for an implementation science related research proposal
- Write a review article about implementation science in your field (or a field of interest)

Examples of these final projects will be posted to the course site in Canvas. In addition to writing and submitting your final project, you will present your project on the final day of class in lieu of a final examination. This presentation will be short, no more than 10 minutes, highlighting key attributes of your project and relevant implementation science principles. Your pre-recorded 10-minute presentation is due **by 12:00pm on April 17, 2025 (regardless of the day you will be presenting).**

ABSENCES (COMPLETE AND PARTIAL)

Although attendance at each class is required, we recognize that exceptional circumstances do occur. In the event that you miss a class session, you will be required to do the following:

- Complete all readings and homework assignments scheduled for that day
- Watch the class session recording
- Write a 250-500 word reflection about the topic(s) for the class session
- Complete any small group activities for the missed session

If you arrive late or leave early (planned or unplanned), please contact the course directors to discuss whether make-up work is needed. The goal of this policy is not to be punitive. Rather, we aim to fulfill our responsibility to make sure that you are exposed to all the course's concepts.

The maximum number of absences (excused or unexcused) is two, unless prior approval is obtained from the course director.

COURSE SNAPSHOT

This course overview ("snapshot") is provided to give you an at-a-glance view of the semester. Session by-session details about speakers, readings, and homework follow this overview.

Week	Date	Topic #1 (Speaker)	Topic #2 (Speaker)	Homework due
PART 1: Implementation Theory				
1	1/16/25	Introductions and overview of course (Cullen, Becker-Haimes) Sign up for student workshop	Introduction to implementation science (Cullen)	

2	1/23/25	Frameworks, theories and models (Becker-Haimes)	Implementation outcomes (Cullen)	
3	1/30/25	Context (Cullen)	Organization theory (Becker-Haimes)	HW #1 due by 1:45 pm
4	2/6/25	Implementation Strategies (Cullen)	Strategy Mechanisms (Becker-Haimes)	
5	2/13/25	Design (Cullen)	Hybrid trials (Becker-Haimes)	HW #2 due by 1:45 pm
6	2/20/25	Quality improvement & implementation science (Becker-Haimes)	Methods (Becker-Haimes)	
PART 2: Implementation in Practice				
7	2/27/25	Dissemination (Becker-Haimes); Sustainability (Turi)	Implementation Grant Writing (Wolk)	HW #3 due by 1:45 pm
8	3/6/25	Informatics/Clinical Decision Supports (Thayer)	Guidelines (Siddique)	
9	3/13/25	SPRING BREAK		
10	3/20/25	Community Partnered Research (Pellecchia & Zeigler)	De-implementation (Rendle)	HW #4 due by 1:45 pm
11	3/27/25	Student Workshop	Student Workshop	
12	4/3/25 (VIRTUAL)	Student Workshop	Course in Review	
13	4/10/25	Health Equity (Hoskins)	Office hours for student presentations	
14	4/17/25	Final presentations		Final Project (written and presentation) due by 12:00 pm
15	4/24/25	Final presentations		

SESSION-BY-SESSION DETAILS

The required readings from this course are largely drawn from relevant journal articles. Required reading for each session is in **boldface font**. Recommended reading is in *italicized font*.

Week 1 – January 16, 2025: Course overview, introduction to implementation science

Part 1: Introduction to course and to each other

Speakers: D. Cullen, E. Becker-Haimes

Objectives: Review the syllabus, important course dates, student and course director expectations, get to know each other.

Part 2: Introduction to implementation science

Speaker: D. Cullen

Objective: Understand, in a general sense, what implementation science (IS) is, why the discipline arose, and the place of IS in the translational research spectrum.

Required Readings:

Curran GM. Implementation science made too simple: a teaching tool.

Implementation Science Communications. 2021 Dec;1(1):1-3.

Lane-Fall M, Curran G, Beidas, R. Scoping implementation science for the beginner: Locating yourself on the “subway line” of translational research. BMC medical research methodology. 2019 Dec;19(1):133.

Homework due: None

Homework for next session: Week 1 Readings only

Week 2 January 23, 2025: Frameworks, theories, and models | Implementation outcomes

Part 1: Frameworks, theories, and models

Speaker: E. Becker-Haimes

Objective: Understand and describe the role of frameworks, theories, and models in the planning, design, execution, and interpretation of implementation science studies.

Part 2: Implementation Outcomes

Speaker: D. Cullen

Objective: Understand and describe outcomes prioritized in implementation studies and how they differ from effectiveness outcomes.

Required Readings:

Esmail et al. A scoping review of full-spectrum knowledge translation theories, models, and frameworks. Implement Sci. 2021 Feb 14;15(1):11.

Proctor E, Silmere H, Raghavan R, Hovmand P, Aarons G, Bunger A, Griffey R, Hensley M. Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda. *Adm Policy Ment Health* 2011; 38(2):65-76.

Recommended Readings:

Moullin JC, Dickson KS, Stadnick N, Albers B, Nilsen P, Broder-Fingert S, et al. Ten recommendations for using implementation frameworks in research and practice. *Implement Sci Commun.* 2020;1(1):42. <https://doi.org/10.1186/s43058020-00023-7>.

Nilsen P. Making sense of implementation theories, models and frameworks. *Implement Sci.* 2015;10(1):53

Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Imp Sci.* 2009;4:50. doi:10.1186/1748-5908-4-50

Damschroder LJ, Reardon CM, Opra Widerquist MA, Lowery J. Conceptualizing outcomes for use with the Consolidated Framework for Implementation Research (CFIR): the CFIR Outcomes Addendum. *Implement Sci.* 2022 Jan 22;17(1):7. doi: 10.1186/s13012-021-01181-5.

*See also: <https://cfirguide.org/constructs/>

Lyon AR, Bruns EJ. User-Centered Redesign of Evidence-Based Psychosocial Interventions to Enhance Implementation—Hospitable Soil or Better Seeds? *JAMA Psychiatry* 2019; 76(1):3-4.

Homework due: Week 1 Readings only

Homework for next session: HW#1 and Week 2 Readings

Week 3 January 30, 2025: Context | Organization Theory

Part 1: Context	Part 2: Organization Theory
Speaker: D. Cullen	Speaker: E. Becker-Haimes
Objective: Understand and describe the importance of context in the planning, execution, and interpretation of implementation science studies.	Objective: Understand and describe the importance of organizational theory in implementation science studies.

Required Readings:

Aarons GA, Hurlburt M, Horwitz S. Advancing a conceptual model of evidence-based practice implementation in public service sectors. *Adm Policy Ment Health* 2011;38:4-23.

Kimberly J, Cook JM. Organizational measurement and the implementation of innovations in mental health services. *Adm Policy Ment Health.* 2008;35:11-20.

Recommended Readings:

Shea CM, Turner K, Albritton J, Reiter KL. Contextual factors that influence quality improvement implementation in primary care: The role of organizations, teams, and individuals. *Health Care Manage Rev* 2018;43(3):261-269

Parker H, Frost J, Day J, Bethune R, Kajamaa A, Hand K, et al.(2022) Tipping the balance: A systematic review and meta-ethnography to unfold the complexity of surgical antimicrobial prescribing behavior in hospital settings. *PLoS ONE*17(7): e0271454. <https://doi.org/10.1371/journal.pone.0271454> *Implement Sci.* 2013;8:139.

Aarons GA, Ehrhart MG, Farahnak LR, Hurlburt MS. Leadership and organizational change for implementation (LOCI): a randomized mixed method pilot study of a leadership and organization development intervention for evidence-based practice implementation. *Implement Sci.* 2015;10:11.

Homework due: HW#1, Week 2 Readings

Homework for next session: Week 3 Readings

Week 4 February 6, 2025: Implementation Strategies | Strategy Mechanisms

Part 1: Implementation Strategies

Speaker: D. Cullen

Objective: Understand the range of implementation strategies available and the effectiveness of these approaches.

Required Readings:

Powell BJ, Waltz TJ, Chinman MJ, et al. A refined compilation of implementation strategies: results from the Expert Recommendations for Implementing Change (ERIC) project. *Implement Sci* 2015;10.

Lewis, C. C., Klasnja, P., Powell, B. J., Lyon, A. R., Tuzzio, L., Jones, S., ... & Weiner, B. (2018). From classification to causality: advancing understanding of mechanisms of change in implementation science. *Frontiers in public health*, 6, 136.

Recommended Readings:

Takvorian, S.U., Bekelman, J., Beidas, R.S. et al. Behavioral economic implementation strategies to improve serious illness communication between clinicians and high-risk patients with cancer: protocol for a cluster randomized pragmatic trial *Implementation Sci* 16, 90 (2021). <https://doi.org/10.1186/s13012-021-01156-6>

Part 2: Strategy Mechanisms

Speaker: E. Becker-Haimes

Objective: Delineate the importance of understanding causal pathways of implementation strategies and methods for delineating them

Powell BJ, Beidas RS, Lewis CC, et al. Methods to improve the selection and tailoring of implementation strategies. J Behav Health Serv Res. 2017;44.

Lewis, C. C., Boyd, M. R., Walsh-Bailey, C., Lyon, A. R., Beidas, R., Mittman, B., ... & Chambers, D. A. (2020). A systematic review of empirical studies examining mechanisms of implementation in health. Implementation Science, 15, 1-25.

Lewis, C. C., Frank, H. E., Cruden, G., Kim, B., Stahmer, A. C., Lyon, A. R., ... & MNoE. (2024). A research agenda to advance the study of implementation mechanisms. Implementation Science Communications, 5(1), 98.

Homework due: Week 3 Readings

Homework for next session: Week 4 Readings and HW #2

Week 5 February 13, 2025: Design | Hybrid Trials

Part 1: Design

Speaker: D. Cullen

Objective: Describe different study designs relevant to the conduct of implementation science; understand and prioritize tradeoffs between internal validity, external validity, and resource conservation

Required Readings:

Hangley MA, Lyles CR, McCulloch C, Cattamanchi A. Selecting and Improving Quasi-Experimental Designs in Effectiveness and Implementation Research. Ann Rev Public Health. 2018;39:5-25.

Landes SJ, McBain SA, Curran GM. An introduction to effectiveness implementation hybrid designs. Psychiatry Research 2019 280: 112513.

Recommended Readings:

Miller C, Smith S, Pugatch, M. Experimental and quasi-experimental designs in implementation research. Psychiatry Research.

Brown CH, Curran G, Palinkas LA, et al. An Overview of Research and Evaluation Designs for Dissemination and Implementation. Annu Rev Public Health. 2017;38:1-22

Part 2: Hybrid Trials

Speaker: E. Becker-Haimes

Objective: Understand and describe the importance of context in the planning, execution, and evaluation of implementation science studies

Beidas, R.S., Ahmedani, B., Linn, K.A. et al. Study protocol for a type III hybrid effectiveness-implementation trial of strategies to implement firearm safety promotion as a universal suicide prevention strategy in pediatric primary care. *Implementation Sci* **16**, 89 (2021).
<https://doi.org/10.1186/s13012-021-01154-8>

Lyon, A. R., Pullmann, M. D., Dorsey, S., Levin, C., Gaias, L. M., Brewer, S. K., ... & Cook, C. R. (2021). Protocol for a hybrid type 2 cluster randomized trial of trauma-focused cognitive behavioral therapy and a pragmatic individual-level implementation strategy. *Implementation Science*, *16*, 1-15.
<https://link.springer.com/article/10.1186/s13012-020-01064-1>

Homework due: Week 4 Readings and HW#2
Homework for next session: Week 5 Readings

Week 6 February 20, 2025: Quality improvement and IS | Methods

Part 1: Quality improvement and IS	Part 2: Methods
Speaker: E. Becker-Haimes	Speaker: E. Becker-Haimes
Objective: Understand similarities and differences between quality improvement, improvement science, and implementation science.	Objective: Describe commonly used methods, including quantitative, qualitative, and mixed methods approaches to conducting implementation science.

Required Readings:

Koczwara B, Stover AM, Davies L, et al. Harnessing the Synergy Between Improvement Science and Implementation Science in Cancer: A Call to Action. *Journal of Oncology Practice* 2018;14(6):335-340.

QualRIS (Qualitative Research in Implementation Science) Group. Qualitative Methods in Implementation Science. National Cancer Institute 2018:
<https://cancercontrol.cancer.gov/IS/docs/NCIDCCPS-ImplementationScienceWhitePaper.pdf>

Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Adm Policy Ment Health* 2013;42(5):533-544

Recommended Readings:

Ovretveit J, Mittman B, Rubenstein L, Ganz D. Using implementation tools to design and conduct quality improvement projects for faster and more effective improvement. *International Journal of Health Care Quality Assurance*.

Smith, J. D., Li, D. H., & Rafferty, M. R. (2020). *The implementation research logic model: a method for planning, executing, reporting, and synthesizing implementation projects. Implementation Science, 15*, 1-12.

Bonell C, Fletcher A, Morton M, Lorenc T, Moore L. Realist randomized controlled trials: a new approach to evaluating complex public health interventions. *Social Science and Medicine*. 2012;75(12):2299-2306.

Palinkas LA, Zatzick D. *Rapid Assessment Procedure Informed Clinical Ethnography (RAPICE) in Pragmatic Clinical Trials of Mental Health Services Implementation: Methods and Applied Case Study. Administration and Policy in Mental Health and Mental Health Services Research*. 2018.

Homework due: Week 5 Readings

Homework for next session: Week 6 Readings, HW #3

Week 7 February 27, 2025: Dissemination Science | Sustainability | IS Grant Writing

Part 1: Dissemination Science Sustainability	Part 2: Implementation Grant Writing
Speaker: E. Becker-Haimes	Speaker: C. Wolk
Objective: Describe the difference between dissemination and implementation research, provide an introduction to dissemination frameworks and methods	Objective: Describe key components of and strategies for successful implementation science grant proposals
Speaker: E. Turi	
Objective: Describe sustainability conceptualizations in implementation science, measurements, frameworks, and tools/resources	
Required Readings:	
Purtle, J., Marzalik, J. S., Halfond, R. W., Bufka, L. F., Teachman, B. A., & Aarons, G. A. (2020). Toward the data-driven dissemination of findings from psychological science. <i>American Psychologist, 75</i> (8), 1052. https://doi.org/10.1037/amp0000721	
Proctor, E. K., Powell, B. J., Baumann, A. A., Hamilton, A. M., & Santens, R. L. (2012). Writing implementation research grant proposals: ten key ingredients. <i>Implementation Science, 7</i> , 1-13. https://doi.org/10.1186/1748-5908-7-96	

Shelton, R.C., Cooper, B.R., & Stirman, S.W. (2018). The sustainability of evidence-based interventions and practices in public health and health care. *Annual Review of Public Health*, 39, 55-76. <https://doi.org/10.1146/annurev-publhealth-040617-014731>

Recommended Readings:

Ashcraft, L. E., Quinn, D. A., & Brownson, R. C. (2020). Strategies for effective dissemination of research to United States policymakers: a systematic review. *Implementation Science*, 15, 1-17. <https://doi.org/10.1186/s13012-020-01046-3>

Baumann, A. A., Hooley, C., Kryzer, E., Morshed, A. B., Gutner, C. A., Malone, S., ... & Mazzucca, S. (2022). A scoping review of frameworks in empirical studies and a review of dissemination frameworks. *Implementation Science*, 17(1), 53. <https://doi.org/10.1186/s13012-022-01225-4>

Stadnick, N. A., Viglione, C., Crable, E. L., Montoya, J. L., Gholami, M., Su, I., & Rabin, B. (2023). Enhancing review criteria for dissemination and implementation science grants. *Implementation science communications*, 4(1), 17. <https://doi.org/10.1186/s43058-023-00399-2>

Crane, M. E., Triplett, N. S., Nelson, K. L., Larson, M. F., Wright, B., & Van Pelt, A. E. (2023). Recommendations for writing a National Institutes of Health individual predoctoral fellowship (F31) training grant in dissemination and implementation science. *Global Implementation Research and Applications*, 3(3), 299-310. <https://doi.org/10.1007/s43477-023-00096-1>

Homework due: HW #3, Week 6 Readings

Homework for next session: Week 7 Readings

Week 8 March 6th, 2025: Informatics/Clinical Decision Support | Guidelines

Part 1: Informatics/Clinical Decision Support	Part 2: Guidelines
Speaker: J. Thayer	Speaker: S. Siddique
Objective: Describe the intersection between informatics and implementation science and the science of clinical decision supports	Objective: Discuss the role of guideline utilization in implementation science.

Required Readings:

Ye, J. (2022, February). Design and development of an informatics-driven implementation research framework for primary care studies. In *AMIA Annual Symposium Proceedings* (Vol. 2021, p. 1208). <https://pmc.ncbi.nlm.nih.gov/articles/PMC8861697/>

Pereira, V. C., Silva, S. N., Carvalho, V. K., Zanghelini, F., & Barreto, J. O. (2022). Strategies for the implementation of clinical practice guidelines in public health: an overview of systematic reviews. *Health research policy and systems*, 20(1), 13. <https://doi.org/10.1186/s12961-022-00815-4>

Homework due: Week 7 Readings

Homework for next session: Week 8 Readings; HW#4

Week 9 March 13, 2025: SPRING BREAK

Week 10 March 20, 2025: Community Partnered Research | De-Implementation

Part 1: Community Partnered Research	Part 2: De-Implementation
Speaker: M. Pellecchia & L. Zeigler	Speaker: K. Rendle
Objective: Describe the importance of and strategies for conducting community partnered research in implementation science	Objective: To describe de-implementation and how it differs from implementation

Required Readings:

Pellecchia, M., Mandell, D. S., Nuske, H. J., Azad, G., Benjamin Wolk, C., Maddox, B. B., ... & Beidas, R. S. (2018). Community-academic partnerships in implementation research. *Journal of community psychology*, 46(7), 941-952.

Norton WE, Chambers DA, Kramer BS. Conceptualizing de-implementation in cancer care delivery. *JCO*. Published online November 8, 2018:JCO.18.00589.

Prusaczyk B, Swindle T, Curran G. Defining and conceptualizing outcomes for de-implementation: key distinctions from implementation outcomes. *Implementation Science Communications*. 2020;1:43.

Recommended Readings:

Schondelmeyer AC, Bettencourt AP, Xiao R, et al. Evaluation of an Educational Outreach and Audit and Feedback Program to Reduce Continuous Pulse Oximetry Use in Hospitalized Infants With Stable Bronchiolitis: A Nonrandomized Clinical Trial. *JAMA Network Open*. 2021;4(9):e2122826-e2122826.

Homework due: Week 8 Readings, HW #4

Homework for next session: Week 10 Readings, Student workshop #1 (selected students)

Week 11 March 27, 2025: Health Equity | Student Workshop

Part 1: Health Equity	Part 2: Student Workshop #1
Speaker: K. Hoskins	Speaker: Selected Students
Objective: Discuss work at the intersection of health equity, behavioral economics, and implementation science.	Objective: The objective of this workshop session is to give all students in the class an opportunity to workshop their research ideas, and explore tensions and opportunities to incorporate implementation science into their work
Required Readings:	
Woodward, E. N., Singh, R. S., Ndebele-Ngwenya, P., Melgar Castillo, A., Dickson, K. S., & Kirchner, J. E. (2021). A more practical guide to incorporating health equity domains in implementation determinant frameworks. <i>Implementation Science Communications</i>, 2(1), 61. https://doi.org/10.1186/s43058-021-00146-5 Baumann, A. A., Shelton, R. C., Kumanyika, S., & Haire-Joshu, D. (2023). Advancing healthcare equity through dissemination and implementation science. <i>Health services research</i>, 58, 327-344. https://doi.org/10.1111/1475-6773.14175 <i>Recommended Readings</i> Hoskins, K., Linn, K. A., Ahmedani, B. K., Boggs, J. M., Johnson, C., Heintz, J., ... & Beidas, R. S. (2022). Equitable implementation of SAFE Firearm: A multi-method pilot study. <i>Preventive medicine</i>, 165, 107281. https://doi.org/10.1016/j.ypmed.2022.107281	
Homework due: Week 10 Readings and Student Workshop #1 (selected students)	
Homework for next session: Week 11 Readings and Student workshop #2 and #3 (selected students)	

Week 12 April 3, 2025: Student Workshop | Student Workshop

Part 1: Student Workshop #2	Part 2: Student Workshop #3
Speaker: Selected Students	Speaker: Selected Students
Objective: The objective of this workshop session is to give all students in the class an opportunity to workshop their research ideas, and explore tensions and opportunities to incorporate implementation science into their work	Objective: The objective of this workshop session is to give all students in the class an opportunity to workshop their research ideas, and explore tensions and opportunities to incorporate implementation science into their work
Required Readings:	

There is no required reading this week; please use the time to prepare remaining questions and get started on your final presentations.

Homework due: Week 11 Readings and Student Workshops #2 and #3 (selected students)
Homework for next session: None

Week 13 April 10, 2025: Course in Review | Office hours for student presentations

Part 1: Course in Review	Part 2: Office Hours for Student Presentations
Speaker: D. Cullen, E. Becker-Haimes	Speaker: D. Cullen, E. Becker-Haimes
Objective: Review all the concepts covered during the semester-long course.	Objective: Open time for students to ask the course directors about their final projects or other work related to implementation science.
Required Readings:	

There is no required reading this week; please use the time to prepare your final presentations.

Homework due: Week 11 Readings
Homework for next session: None

Week 14 & Week 15 April 17 & April 24, 2025: Final Presentations

Homework due: written component and uploaded presentation of final project due 4/17/24 at 12:00pm

HOMWORK ASSIGNMENTS

Homework #1: In this homework, you will begin applying IS concepts to develop a research question in your own field of study or area of interest. Specifically, your objective is to identify a **research to practice gap** that you will try to solve. You will build on this research to practice gap in subsequent homework assignments to further articulate a formal research design and implementation science related project.

Articulate a research question relevant to studying the implementation of the evidenced-based practice. Your research question can include an effectiveness component but should clearly delineate how you are addressing a question related to implementation science. Please address the following, in no more than a page:

Intervention/Innovation: What is the evidence-based practice (or “thing”) you are trying to implement (or de-implement)?

Research/Practice Gap: What evidence is there that there is a research to practice gap (i.e., why is implementation research needed)?

Population of Interest: Who are the provider types who will be asked to deliver the intervention in a potential implementation effort? What setting(s) do these providers work in?

Key Players: Who are the key stakeholders/constituents that likely would need to be involved in any implementation effort to increase use of the evidence-based practice/reduce the research to practice gap?

This homework is **due by the start of class on January 30, 2025.**

Homework #2: In this homework assignment, you will identify key contextual constructs of interest related to addressing the research to practice gap you delineated in Homework #1. Select **5 CFIR constructs or subconstructs** (there are 26 main constructs and 13 subconstructs) that will help you understand why your EBP is underutilized. Your choices do not have to be evenly distributed across domains, but you should choose constructs from ≥ 2 CFIR domains.

After you have identified your constructs of interest, develop a relevant question for each (sub)construct that you selected. Then, rate your perception of the relevance of each question to actually improving the uptake of your EBP of interest. Rate each as high, medium, or low.

See below for an example of how to write this up. Our examples are in gray shaded boxes – you should select different constructs!

This homework is **due by the start of class on February 13, 2025.**

Evidence Base Practice: Inhaled corticosteroid prescribing			
CFIR domain	CFIR construct and why you selected it	Application to EBP (inhaled corticosteroid prescribing or your own example)	Relevance*
Intervention characteristics	Intervention source – Clinicians’ perceptions of where the intervention came from may be relevant to their intentions to use it.	Who developed the inhaled corticosteroids? Did it come from academic research, or from pharma?	Low
Outer setting	Peer pressure – Rates of prescribing corticosteroids at similar clinics, if higher, may encourage uptake.	What are the prescribing rates at comparable clinics?	High
Inner setting	Culture – The organization’s culture about using inhaled corticosteroids.	To what degree does the culture of the organization support prescribing behavior?	Medium
Characteristics of individuals	Knowledge and beliefs about the intervention – Clinicians are unlikely to use an intervention whose efficacy they question.	To what degree do clinicians believe that inhaled corticosteroids improve asthma control and decreased emergency visits and hospitalizations?	High
Process	Champions – Trusted, engaging champions may be necessary to facilitate uptake in a setting where providers have autonomy of clinical practice.	Are there individuals who are committed to increasing inhaled corticosteroid prescriptions?	High

*Rate the relevance of each CFIR construct to narrowing the evidence-to-practice gap (in this case, how relevant is each construct to increasing inhaled corticosteroid prescribing)?

Relevant citation: Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Imp Sci*. 2009;4:50. doi:10.1186/1748-5908-4-50

To find constructs and subconstructs, visit the CFIR Wiki: <https://cfirguide.org/constructs>

Homework #3: In this homework assignment, you will apply what you have learned about study design to the question of increasing the evidence-based practice from HW #1 & 2. First, articulate a research question relevant to increase the implementation of the evidenced-based practice. Acknowledging that there are multiple ways to design a study to answer that question, select **two** different, valid research designs.

Explain the pros and cons for the design that you chose. How will you deal with threats to inference? Specify the population of interest (e.g., providers, clinic staff, patients) and sample/selection units (e.g., clinics, provider networks). Be thoughtful about inclusion/exclusion/size/limitations. This is due by the start of class on **February 27, 2025**.

For guidance on writing research questions, consider referencing the PICO-T template:
<https://libraryguides.nau.edu/c.php?g=665927&p=4682772>

For potential research design ideas, see: Brown CH, Curran G, Palinkas LA, et al. An Overview of Research and Evaluation Designs for Dissemination and Implementation. *Annu Rev Public Health*. 2017;38:1-22. *Remember to focus your research question on implementing ‘the thing,’ not the ‘the thing’ itself, as described in Curran GM. Implementation science made too simple: a teaching tool. Implementation Science Communications. 2021 Dec;1(1):1-3.*

Design	
Relevant outcomes (consider qual and quant outcomes)	
Population	
Inclusion criteria	
Exclusion criteria*	
Sample size considerations	
Pros: benefits of this design	
Cons: biases/limitations of this design	

Design	
Relevant outcomes (consider qual and quant outcomes)	
Population	
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*Exclusion criteria are not the opposite of inclusion criteria. They are additional factors that would invalidate a participant’s involvement. For example, if an inclusion criterion was “provides care to patients at risk for HPV infection,” a relevant exclusion criterion might be “clinic co-location inside a public school.”

Homework #4: Continue using the example from HW #1-3. **The study sites have told you that they are unwilling to participate in a traditional randomized controlled trial, which they see as unethical.** Select one study design to utilize that does not require traditional randomization (you may carry over one design from HW#3 or select a different design).

For this homework assignment, specify two implementation strategies that you might use in a study of implementation. This is **due by the start of class on March 20, 2025**

Research question:	
Design	
Population	
Inclusion	
Exclusion	
Sample size considerations	

Implementation Strategy 1	
Actor	
Action	
Target of the action	
Temporality	
Dose	
Implementation outcome impacted	
Justification/Pros/Cons	
Implementation Strategy 2	
Actor	
Action	
Target of the action	
Temporality	
Dose	
Implementation outcome impacted	
Justification/Pros/Cons	

Relevant citations:

Powell BJ, Waltz TJ, Chinman MJ, et al. A refined compilation of implementation strategies: results from the Expert Recommendations for Implementing Change (ERIC) project. *Implement Sci.* 2015;10.

Proctor EK, Powell BJ, McMillen CJ. Implementation strategies: recommendations for specifying and reporting. *Imp Sci.* 2013;8(139).

Powell BJ, Beidas RS, Lewis CC, et al. Methods to improve the selection and tailoring of implementation strategies. *J Behav Health Serv Res.* 2017;44.

Final Project: This assignment is a combined homework and final examination. It is meant to encapsulate the foundational implementation science principles that you learned throughout the course. In prior years, we asked everyone to write an NIH-style specific aims page that could be used as a foundation of a grant application with an implementation science focus. While many of you do plan to write grant proposals going forward, we also wanted to offer a second option to demonstrate mastery of course principles.

Option #1:	Write an NIH-style specific aims page focused on the implementation of an evidence-based practice. You are not required to describe the manipulation of implementation strategies, although we do suggest including this element. Include the grant mechanism that your grant is targeting (e.g., career development (“K award” or equivalent), R03, R21, R01, etc.). See the following websites for examples: https://impsci.tracs.unc.edu/get-funded/sample-grants/ https://cancercontrol.cancer.gov/IS/sample-grant-applications.html
Option #2:	Write a 1500- to 3000-word manuscript reviewing implementation science as it relates to your specialty or discipline. This manuscript could take the form of a narrative review or a commentary. In the manuscript, you should mention at least 2 evidence-based practices that have an evidence-to-practice gap. Include references as you would in a manuscript to be submitted for peer review. As an example, see Lane-Fall MB, Cobb BT, Cene CW, Beidas RS. Implementation science in perioperative care. <i>Anesthesiology Clinics</i> 36(1): 1-15, March 2018. (PMID: 29425593)

Both options have a written and a presentation component.

The written component **and pre-recorded** 10-minute presentation is due for all students by **12:00pm on April 17, 2025. (regardless of the date of your final presentation).**

Presentations to the entire class will be shown on **April 17 and April 24, 2025** Signups are linked in this sign up poll: <https://www.signupgenius.com/go/10C0C45A8AB2CA6FAC16-54280797-hpr6200>

Please contact the course directors as early as possible if you have questions or concerns about this final homework assignment.