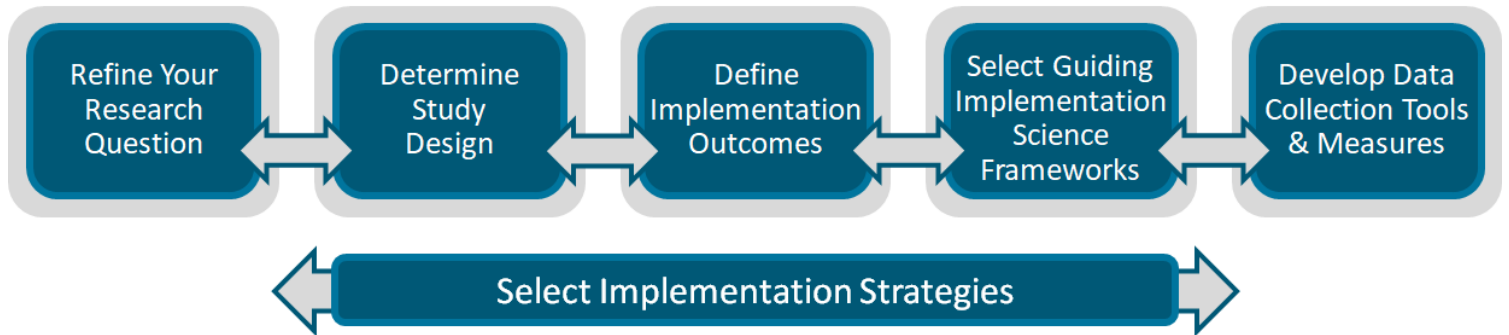


## THE STAGES OF RESEARCH



## Library of Resources

### Background to the Field of Implementation Science

#### References

- Bauer, MS, Damschroder, L, Hagedorn, H, Smith, J, Kilbourne, AM. An introduction to implementation science for the non-specialist. *BMC Psychology*. 2015; 3(1):32. <https://doi.org/10.1186/s40359-015-0089-9> PMID: 26376626; PMCID: PMC4573926
- Brownson, RC, Colditz, GA and Proctor EK. *Dissemination and implementation research in health: Translating research to practice*. New York: Oxford University Press; 2017.
- Curran GM. Implementation science made too simple: a teaching tool. *Implement Sci Commun*. 2020 Feb 25;1:27. <https://doi.org/10.1186/s43058-020-00001-z> PMID: 32885186; PMCID: PMC7427844.
- Eccles, MP, Mittman BS. Welcome to implementation science. *Implementation Science*. 2006; 1:1, 1 <https://doi.org/10.1186/1748-5908-1-1> PMCID: PMC1436009
- Lenfant, C. Clinical research to clinical practice - Lost in translation? *New England Journal of Medicine*. 2003; 349: 868-874. <https://doi.10.1056/NEJMsa035507>
- Leeman, J., Rohweder, C., Lee, M. *et al*. Aligning implementation science with improvement practice: a call to action. *Implement Sci Commun*. 2021; 2(99). <https://doi.org/10.1186/s43058-021-00201-1> PMID: 34496978; PMCID: PMC8424169.
- Proctor EK, Powell BJ, Baumann AA, Hamilton AM, Santens RL. Writing implementation research grant proposals: ten key ingredients. *Implement Sci*. 2012; 12(7):96. <https://doi.org/10.1186/1748-5908-7-96> . PMID: 23062065; PMCID: PMC3541090.
- NIH PAR [PAR-22-105: Dissemination and Implementation Research in Health \(R01 Clinical Trial Optional\)](#) (nih.gov): <https://grants.nih.gov/grants/guide/pa-files/PAR-22-105.html>

## Refining Your Research Question

### References

Lane-Fall MB, Curran GM, Beidas RS. Scoping implementation science for the beginner: locating yourself on the "subway line" of translational research. *BMC Med Res Methodol*. 2019; 28;19(1):133. <https://doi.org/10.1186/s12874-019-0783-z> PMID: 31253099; PMCID: PMC6599376.

Peters D H, Adam T, Alonge O, Agyepong I A, Tran N. Implementation research: what it is and how to do it. *BMJ*. 2013; 347:f6753. doi: <https://doi.org/10.1136/bmj.f6753> PMID: 24259324

## Determining Study Design

### References

Brown CH, Curran G, Palinkas LA, Aarons GA, Wells K, et al. An overview of research and evaluation designs for dissemination and implementation. *Annual Review of Public Health* 2017 38:1, 1-22. <https://www.annualreviews.org/doi/abs/10.1146/annurev-publhealth-031816-044215> PMID: 28384085; PMCID: PMC5384265.

Curran GM, Bauer M, Mittman B, Pyne JM, Stetler C. Effectiveness-implementation hybrid designs: Combining elements of clinical effectiveness and implementation research to enhance public health impact. *Medical Care*. 2012; 50(3):217-226. DOI: [10.1097/MLR.0b013e3182408812](https://doi.org/10.1097/MLR.0b013e3182408812) PMID: 22310560 PMCID: PMC3731143

Curran et al. Reflections of 10 years of effectiveness-implementation hybrid studies. *Frontiers in Health Services*. 2022; 2: <https://doi.org/10.3389/frhs.2022.1053496> PMID: 36925811; PMCID: PMC10012680.

Hwang S, Birken SA, Melvin CL, Rohweder CL, Smith JD. Designs and methods for implementation research: Advancing the mission of the CTSA program. *J Clin Transl Sci*. 2020; 4(3):159-167. doi: [10.1017/cts.2020.16](https://doi.org/10.1017/cts.2020.16) PMID: 32695483; PMCID: PMC7348037.

## Defining Implementation Outcomes

### References

Glasgow, R, Vogt, T, Boles, S. Evaluating the public health impact of health promotion interventions: The RE-AIM framework. *Am J Public Health*. 1999; 89: 1322-1327. <https://doi.org/10.2105/ajph.89.9.1322> PMID: 10474547; PMCID: PMC1508772.

Hermes et al. Measuring the implementation of behavioral intervention technologies: Recharacterization of established outcomes. *JMIR*; 2019; 21:e11752. <https://doi.org/10.2196/11752> PMID: 30681966; PMCID: PMC6367669.

Proctor, E, Silmere, H, Raghavan, R, Hovmand, P, Aarons, G, Bunger, A, Griffney, R, Hensley, M. Outcomes for implementation research: Conceptual distinctions, measurement challenges, and research agenda. *Adm Policy Ment Health*. 2011; 38: 65-76. <https://doi.org/10.1007/s10488-010-0319-7> PMID: 20957426; PMCID: PMC3068522

Proctor et al (2023). Ten years of implementation outcomes research: a scoping review. *Implementation Science*. 18:31. <https://doi.org/10.1186/s13012-023-01286-z> PMID: 37491242; PMCID: PMC10367273.

## Selecting Guiding Implementation Science Frameworks

### References

#### Literature about General Frameworks

- Nilsen, P. Making sense of implementation theories, models and frameworks. *Implementation Science*. 2015; 10(1): 53. <https://doi.org/10.1186/s13012-015-0242-0> PMID: 25895742; PMCID: PMC4406164.
- Nilsen, P., Bernhardsson, S. Context matters in implementation science: a scoping review of determinant frameworks that describe contextual determinants for implementation outcomes. *BMC Health Serv Res*; 2019; 19, 189 (2019). <https://doi.org/10.1186/s12913-019-4015-3>. PMID: 30909897; PMCID: PMC6432749.
- Tabak, R, Khoong, E, Chambers, D, & Brownson, R. Bridging research and practice: Models for dissemination and implementation research. *American Journal of Preventive Medicine*. 2012; 43(3): 337-350. <https://doi.org/10.1016/j.amepre.2012.05.024> PMID: 22898128; PMCID: PMC3592983.

#### Literature about Specific Frameworks

- Aarons, G, Green, A, Willging, C, et al. Mixed-method study of a conceptual model of evidence-based intervention sustainment across multiple public-sector service settings. *Implementation Science*. 2014; 9(183). <https://doi.org/10.1186/s13012-014-0183-z> PMID: 25490886; PMCID: PMC4272775.
- Aarons, GA, Hurlburt, M, and Horwitz, SM. Advancing a conceptual model of evidence-based practice implementation in public service sectors. *Adm Policy Ment Health*. 2011; 38:4-23. <https://doi.org/10.1007/s10488-010-0327-7> PMID: 21197565; PMCID: PMC3025110.
- 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. *Implementation Science*. 2009; 4(50): 1-15. <https://doi.org/10.1186/1748-5908-4-50>. PMID: 19664226; PMCID: PMC2736161
- Damschroder, L.J., Reardon, C.M., Widerquist, M.A.O. *et al.* The updated Consolidated Framework for Implementation Research based on user feedback. *Implementation Sci* **17**, 75 (2022). <https://doi.org/10.1186/s13012-022-01245-0> PMID: 36309746; PMCID: PMC9617234.
- Field, B, Booth, A, Ilott, I, Gerrish, K. Using the Knowledge to Action Framework in practice: A citation analysis and systematic review. *Implementation Science*. 2014; 9: 172. <https://doi.org/10.1186/s13012-014-0172-2> PMID: 25417046; PMCID: PMC4258036
- Gaglio, B, Shoup, J, Glasgow, R. The RE-AIM Framework: A systematic review of use over time. *Am J Public Health*. 2013; 103: e38-e46. <https://doi.org/10.2105/ajph.2013.301299> PMID: 23597377; PMCID: PMC3698732
- Gielen, AC, & Eileen, MM. (1996). The PRECEDE-PROCEED Planning Model. In *Health Behavior and Health Education*. Edited by Glanz, K, Lewis, F., & Rimer, KB. San Francisco: Jossey-Bass.
- Glasgow, R, Vogt, T, Boles, S. Evaluating the public health impact of health promotion interventions: The RE-AIM Framework. *Am J Public Health*. 1999; 89: 1322-1327. DOI: [10.2105/ajph.89.9.1322](https://doi.org/10.2105/ajph.89.9.1322) PMID: 10474547; PMCID: PMC1508772.
- Iowa Model Collaborative; Buckwalter KC, Cullen L, Hanrahan K, Kleiber C, McCarthy AM, Rakel B, Steelman V, Tripp-Reimer T, Tucker S; Authored on behalf of the Iowa Model Collaborative. Iowa Model of Evidence-Based Practice: Revisions and Validation. *Worldviews Evid Based Nurs*. 2017 Jun;14(3):175-182. DOI: [10.1111/wvn.12223](https://doi.org/10.1111/wvn.12223) PMID: 28632931.
- Rabin, B.A., Cakici, J., Golden, C.A. *et al.* A citation analysis and scoping systematic review of the operationalization of the Practical, Robust Implementation and Sustainability Model

(PRISM). *Implementation Sci* **17**, 62 (2022). [10.1186/s13012-022-01234-3](https://doi.org/10.1186/s13012-022-01234-3) PMID: 36153628; PMCID: PMC9509575.

Wiltsey-Stirman, S, Baumann, AA, Miller, CJ. The FRAME: An expanded framework for reporting adaptations and modifications to evidence-based interventions. *Implementation Science*. 2019; 14:58. DOI: [10.1186/s13012-019-0898-y](https://doi.org/10.1186/s13012-019-0898-y) PMID: 31171014; PMCID: PMC6554895.

### Links to Webtools for Framework Selection

Dissemination and Implementation Model webtool. 2022. University of Colorado, Washington University Institute for Clinical and Translational Science, UC San Diego. <https://dissemination-implementation.org/tool/>

T-CaST; Theory, Framework and Comparison Selection Tool. 2022. University of North Carolina. <https://impsci.tracs.unc.edu/tcast/>

Implementation Science, Pick A Theory, Model or Framework. 2022. University of Washington. <https://impsciuw.org/implementation-science/research/frameworks/>

## Developing Data Collection Tools and Measures

### References

Aarons, GA. Mental health provider attitudes toward adoption of evidence-based practice: The Evidence-Based Practice Attitude Scale (EBPAS). *Ment Health Serv Res*. 2004; 6(2): 61–74. <https://doi.org/10.1023/b:mhsr.0000024351.12294.65> PMID: 15224451; PMCID: PMC1564126.

Aarons, GA, Ehrhart, MG, Farahnak, LR. The Implementation Leadership Scale (ILS): Development of a brief measure of unit level implementation leadership. *Implementation Science*. 2014; 9(1):45. Epub 2014/04/16. <https://doi.org/10.1186/1748-5908-9-45> PubMed PMID: 24731295; PMCID: PMC4022333

Blegen, MA, Gearhart, S, O'Brien, R, Sehgal, NL, Alldredge, BK. AHRQ's Hospital Survey on Patient Safety Culture: Psychometric analyses. *Journal of Patient Safety*. 2009; 5(3):139-44. Epub 2009/11/19. <https://doi.org/10.1097/pts.0b013e3181b53f6e> PubMed PMID: 19920453.

Chaudoir, S, Dugan, A, Barr, C. Measuring factors affecting implementation of health innovations: A systematic review of structural, organizational, provider, patient, and innovation level measures. *Implementation Science*. 2013; 8:22. <http://www.implementationscience.com/content/8/1/22> PMID: 23414420; PMCID: PMC3598720.

Consolidated Framework for Implementation Research (CFIR):

- Qualitative Data – The Consolidated Framework for Implementation Research ([cfirguide.org](http://cfirguide.org)) <https://cfirguide.org/evaluation-design/qualitative-data/>
- Quantitative Data – The Consolidated Framework for Implementation Research ([cfirguide.org](http://cfirguide.org)) <https://cfirguide.org/evaluation-design/quantitative-data/>

Dissemination and Implementation Model webtool. 2022. University of Colorado, Washington University Institute for Clinical and Translational Science, UC San Diego <https://dissemination-implementation.org/tool/>

Ehrhart, MG, Aarons, GA, Farahnak, LR. Going above and beyond for implementation: The development and validity testing of the Implementation Citizenship Behavior Scale (ICBS). *Implementation Science*. 2015; 10: 65. <https://doi.org/10.1186/s13012-015-0255-8> PMID: 25948489; PMCID: PMC4465615.

Exploration, Preparation, Implementation, Sustainment Framework: <https://episframework.com/measures>

- Fernandez, ME, Walker, TJ, Weiner, BJ, Calo, WA, Liang, S, Risendal, B, Friedman, DB, Tu, SP, Williams, RS, Jacobs, S, Herrmann, AK. Developing measures to assess constructs from the inner setting domain of the Consolidated Framework for Implementation Research. *Implementation Science*. 2018; Dec 1;13(1):52. <https://doi.org/10.1186/s13012-018-0736-7> PMID: 29587804; PMCID: PMC5870186.
- Implementation Outcome Repository, Centre for Implementation Science, King's College, London, England; <https://implementationoutcomerepository.org/>
- Luke, DA, Calhoun, A, Robichaux, CB, Elliott, MB, Moreland-Russell, S. The Program Sustainability Assessment Tool: A new instrument for public health programs. *Preventing Chronic Disease*. 2014; 11:130184. Epub 2014/01/25. <https://doi.org/10.5888/pcd11.130184> PMID: 24456645; PMCID: PMC3900326.
- Martinez, R, Lewis, C, Weiner, B. Instrumentation issues in implementation science. *Implementation Science*. 2014; 9:118. DOI: [10.1186/s13012-014-0118-8](https://doi.org/10.1186/s13012-014-0118-8) PMID: 25185799; PMCID: PMC4164742.
- Metter, K., Lewis, C., Dorsey, C., Halko, H., & Weiner, B. (2020). Measuring implementation outcomes: An updated systematic review of measures' psychometric properties. *Implementation Research and Practice*, 1-29, [10.1177/2633489520936644](https://doi.org/10.1177/2633489520936644) PMID: 37089128; PMCID: PMC9924262.
- Proctor, E, Silmere, H, Raghavan, R, Hovmand, P, Aarons, G, Bunger, A, Griffney, R, Hensley, M. Outcomes for implementation research: Conceptual distinctions, measurement challenges, and research agenda. *Adm Policy Ment Health*. 2011; 38: 65-76. DOI: [10.1007/s10488-010-0319-7](https://doi.org/10.1007/s10488-010-0319-7) PMID: 20957426; PMCID: PMC3068522.
- Society for Implementation Research Collaboration. Instrument Review Project; <https://societyforimplementationresearchcollaboration.org/sirc-instrument-project/>
- Sorra, JS, Dyer, N. Multilevel psychometric properties of the AHRQ Hospital Survey on Patient Safety Culture. *BMC Health Services Research*. 2010; 10:199. Epub 2010/07/10. <https://doi.org/10.1186/1472-6963-10-199> . PubMed PMID: 20615247; PMCID: PMC2912897.

## Selecting Implementation Strategies

### References

- Fernandez et al (2019). Implementation mapping: Using Intervention Mapping to develop implementation strategies. *Frontiers in Public Health* 18:7:158. <https://doi.org/10.3389/fpubh.2019.00158>
- Kirchner, JE, Smith, JL, Powell, BJ, Waltz, TJ, Proctor, EK. Getting a clinical innovation into practice: An introduction to implementation strategies. *Psychiatry Research*. 2020; 283. <https://doi.org/10.1016/j.psychres.2019.06.042>
- Perry, C.K., Damschroder, L.J., Hemler, J.R., Woodson, T.T., Ono, S., & Cohen, D.J. (2019). Specifying and comparing implementation strategies across seven large implementation interventions: A practical application of theory. *Implementation Science*, 14:32. <https://doi.org/10.1186/s13012-019-0876-4>
- Powell, BJ, Fernandez, ME, Williams, NJ, Aarons, GA, Beidas, RS, Lewis, CC, McHugh, SM, Weiner, BJ. Enhancing the impact of implementation strategies in healthcare: A research agenda. *Front Public Health*. 2019; 7:3. <https://doi.org/10.3389/fpubh.2019.00003>
- Powell, BJ, Waltz, TJ, Chinman, MJ, Damschroder, LJ, Smith, JL, Mattieu, MM, Proctor, EK, Kirchner, JE. A refined compilation of implementation strategies: Results from the Expert Recommendations for Implementing Change (ERIC) project. *Implementation Science*. 2015; 10(21). <https://doi.org/10.1186/s13012-015-0209-1>
- Waltz, TJ, Powell, BJ, Matthieu, MM, Damschroder, LJ, Chinman, MJ, Smith, JL, Proctor, EK, Kirchner, JE. Use of concept mapping to characterize relationships among implementation strategies and

assess their feasibility and importance: Results from the Expert Recommendations for Implementing Change (ERIC) study. *Implementation Science*. 2015; 10(109). <https://doi.org/10.1186/s13012-015-0295-0>

## Health Equity in Implementation Science

### *References*

Kerkhoff AD, Farrand E, Marquez C, Cattamanchi A, Handley MA. Addressing health disparities through implementation science—a need to integrate an equity lens from the outset. *Implement Sci*. 2022 Jan 31;17(1):13. <https://doi.org/10.1186/s13012-022-01189-5> PMID: 35101088; PMCID: PMC8802460.

Adsul et al (2022) Grounding implementation science in health equity for cancer prevention and control. *Implementation Science Communications* 3:56. <https://doi.org/10.1186/s43058-022-00311-4> PMID: 35659151; PMCID: PMC9164317.

Baumann and Cabassa (2020). Reframing implementation science to address inequities in healthcare delivery. *BMC Health Services Research* 20:190. <https://doi.org/10.1186/s12913-020-4975-3>