



**MICHIGAN INSTITUTE  
FOR CLINICAL &  
HEALTH RESEARCH**  
UNIVERSITY OF MICHIGAN

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# IMPLEMENTATION SCIENCE NETWORK CAREER TOOLKIT

## TOOLS & RESOURCES

This toolkit provides tools and resources on training, mentoring, and funding opportunities for those interested or working in dissemination and implementation science.

### PREPARED BY:

**Michele W Marenus, Amy Kilbourne, Anne Sales, Celeste Liebrecht, and Veronica Williams**

Department of Kinesiology, Department of Learning Health Sciences, and Michigan Institute for Clinical & Health Research at the University of Michigan

## How to use this Toolkit



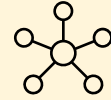
### SPARK

Leverage talent to promote implementation science learning opportunities.



### SEED

Promote novel and competitive implementation research and practice initiatives.



### SPREAD

Build implementation science capacity for implementation in health systems and communities.

**The ISN Toolkit outlines resources for investigators interested in pursuing implementation science research, with an eye towards building capacity for implementation science across U-M and beyond that also bridges community-based and health equity research to inform successful competitive research funding with the goal of reducing health disparities.**

The Toolkit is organized by three levels of experience and interest:

- **Basic Conceptual Resources:** Intended for individuals interested in learning more about implementation science but are not serving as a lead for implementation science studies.
- **Applied Practitioner Resources:** Intended for site investigators working at a clinical site interested in learning more about implementation strategies and measurement.
- **Expert Resources:** Intended for career investigators interested in or currently conducting hybrid trials.

Within each level described above, the Toolkit includes resources currently available across the three objectives:



**Spark:** Leverage talent to promote implementation science learning opportunities.



**Seed:** Promote novel and competitive implementation research and practice initiatives.



**Spread:** Build implementation science capacity in health systems and communities.

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# INTRODUCTION

## Summary

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The Implementation Science Network Career Toolkit is the first of many products to be developed by the U-M Implementation Science Network (ISN). The purpose of the ISN is to align research, education, and clinical initiatives to improve health and reduce health care disparities in communities in Michigan and beyond by promoting innovative implementation and quality improvement research to promote sustainment of effective practices. The Toolkit provides guidance to investigators interested in pursuing funding or careers in implementation science, which is defined by NIH as the study of strategies that promote the uptake of effective practices to improve population health. The Toolkit is an evolving document and is based on interviews conducted in the summer of 2021 among U-M faculty interested in implementation science as well as research on existing implementation science.

## Mission of the ISN

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The mission of the ISN is to connect researchers to promote more innovative and impactful implementation science, making U-M a destination for innovative, interdisciplinary implementation science and practice in communities and health systems.

## Toolkit Goal

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The goal of the ISN Career Toolkit is to provide an initial guide to U-M researchers to help them further leverage their strengths to foster innovative implementation research, education and clinical opportunities to make an international impact on the field of implementation science and ultimately, enable patients and communities to more effectively and efficiently access needed evidence-based practices in Michigan and beyond. While not exhaustive, the Toolkit is meant to provide current and practical resources for investigators interested in pursuing implementation science research.

Acknowledgements and Disclosures: Initial funding for the ISN Career Toolkit was provided by the U-M Institute for Healthcare Policy and Innovation. Revisions were supported by the Michigan Institute for Clinical & Health Research. The authors declare no competing interests related to the content described in this Toolkit.

## Background

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Implementation science, or the study of provider, system, and policy-level strategies to improve uptake of evidence-based practices to improve population health, is a funding priority in NIH and AHRQ. Implementation science improves diversity, equity, and inclusion, as a vehicle for successful funding of community-based research, and recruitment and retention of under-represented investigators. U-M is a national leader in implementation research, quality improvement, community-based research, and informatics, and their practical application in community practices and health systems through cross-disciplinary strategies to promote uptake of effective practices, or in some cases, de-implement low value practices, to improve health outcomes and reduce disparities.

Implementation science is about changing healthcare practice to promote healthier lives, especially in the context of organizational and resource constraints. But without more investment in implementation research, we risk losing a generation of talent. It is heartening that some federal funding agencies, notably the National Heart, Lung, and Blood Institute ([NHLBI](#)), National Cancer Institute ([NCI](#)), U.S. Department of Veteran Affairs ([VA](#)), and the Patient-Centered Outcomes Research Institute ([PCORI](#)) have put out more calls for implementation research and, more recently, as a vehicle to support the elimination of health disparities. However, even with a growing demand for implementation science-focused research, we lack sufficient numbers of those who are trained in this field in Michigan.

# BASIC CONCEPTUAL RESOURCES

The following resources provide the fundamentals of implementation science and practice to aid in quality improvement efforts, including learning about the role of implementation strategies. **Intended audience: individuals interested in learning more about implementation science but are not serving as a lead for implementation science studies.**



## Spark

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### **Leverage U-M talent to promote implementation science learning opportunities.**

The following provides a list of learning opportunities in implementation science, including directed readings, existing webinars, and methods training.

### **Online Resources**

- [The QUERI Roadmap for Implementation and Quality Improvement](#) is a comprehensive, practice guide for health care practitioners and researchers to plan and deploy methods to support uptake of effective practices in routine care settings
- [Dissemination and Implementation Research](#) at Washington University in St. Louis has resources, consultations, and training in D&I, and links to many centers and projects
- University of Washington's [Implementation Science Resource Hub](#) provides an introductory overview of the field
- National Cancer Institute's [Orientation to the Science of Dissemination and Implementation Webinar](#) led by Dr. Beidas, Dr. Lewis, and Dr. Powell provides an introduction to those new to implementation science
- [The Dissemination and Implementation Science: What is it and Why is it Critical to Translational Science](#) webcast hosted by the Clinical Directors Network

### **Newsletter, Journal Clubs, and Webinars**

- University of Wisconsin-Madison [Dissemination & Implementation Launchpad](#) that provides events, opportunities, and helpful D&I resources
- [European Implementation Collaborative](#) builds links and exchange learning about implementation science and practice within Europe and beyond
- Consortium for Implementation Science [Newsletter](#)

- UK Implementation Society [Implementation Science & Practice Journal Club](#)
- National Cancer Institute monthly Implementation Science [webinars](#) and [newsletter](#) (sign up at the bottom of the page)
- [VA QUERI/Health Services Research & Development Cyberseminars](#)
- [VA QUERI Implementation Research Group](#)

## Books

- [The Handbook on Implementation Science](#), by Nilsen & Birken
- [Implementation Science 3.0](#), by Albers, Shlonsky, & Mildon
- [Dissemination and Implementation Research in Health: Translating Science to Practice](#), by Brownson, Colditz, & Proctor
- [Advancing the Science of Implementation across the Cancer Continuum](#), by Chambers, Vinson, & Norton

## Other Recommended Readings

- [An introduction to implementation science for the non-specialist](#) (Bauer et al., 2015)
- [The QUERI Roadmap for Implementation and Quality Improvement](#) (Goodrich et al., 2020)
- [Making sense of implementation theories, models, and frameworks: Implementation science](#) (Nilson, 2015)
- [Ten years of implementation outcomes research: a scoping review](#) (Proctor et al., 2023)



## Seed

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### **Promote education in implementation science and practice.**

Additional seminars and research capacity-building opportunities to support successful implementation research funding for U-M investigators

### **Journals**

- [Implementation Science](#)
- [Implementation Science Communications](#)
- [Implementation Research and Practice](#)
- [Implementation Science section of Frontiers in Health Services](#)





## Spread

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**Build capacity to integrate implementation science in clinical, system, and community-based research.**

Leverage and expand capacity of existing research and policy initiatives to promote implementation research especially for under-represented groups

### **Conferences**

- [Annual Conference on the Science of Dissemination and Implementation in Health](#) and the [Annual Research Meeting](#) hosted by Academy Health
- [The Society for Implementation Research Collaboration \(SIRC\) Conference](#), dedicated to facilitating communication and collaboration between implementation research teams, researchers, and community providers
- [Global Implementation Conference](#) hosted by the Global Implementation Society
- The [Global Symposium on Health Systems Research](#), hosted by Health System Global every two years

## APPLIED PRACTITIONER RESOURCES

The following resources are for individuals who conduct applied implementation or quality improvement projects, including selecting and using implementation strategies.

**Intended audience: site investigators working at a clinical site interested in learning more about implementation strategies and measurement.**



### Spark

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**Leverage U-M talent to promote implementation science learning opportunities.**

The following provides a list of learning opportunities in implementation science, including directed readings, existing webinars, and methods training.

#### Online Resources

- NIH's [Implementation Science at a Glance](#) show how the use of implementation science can support the effective adoption of evidence-based interventions through summaries of key theories, methods, and models
- National Implementation Research Network's [Active Implementation Hub](#) is a free, online learning environment for used by any stakeholder involved in active implementation
- The TDR [Implementation Research Toolkit](#) designed to help conduct implementation research project through a standard process
- provides an introduction to those new to implementation science
- [Dissemination and Implementation Models Webtool](#) is an interactive, online resource designed to help researchers and practitioners navigate D&I models
  - A helpful [workshop overview](#) and [handout](#) for using the Webtool
- The Patient-Centered Outcomes Research Institute (PCORI) Dissemination and Implementation [Framework](#) and [Toolkit](#) designed to facilitate strategic planning for activities to increase awareness of evidence and promote its integration into practice

#### U-M Resources

- Department of Learning Health Sciences Courses
  - [LHS 621: Implementation Science in Health I](#) (3 credit courses), taught by Dr. Gretchen Piatt, and in-person by Dr. John Donnelly & Dr. Rama Mwenesi Musali

- [LHS 721: Implementation Science in Health II](#) (3 credit course) taught by Dr. Amy Kilbourne
- School of Public Health Courses
  - [HMP 650: Implementation Science in Public Health](#) (3 credit course) taught by Dr. Shawna Smith
- Implementation Science MOOC (add when available)

## Examples of Other Certificate Programs (For those not at U-M)

- University of Florida College of Medicine - [Graduate Certificate in Implementation Science](#)
- University of Colorado Adult & Child Consortium for Health Outcomes Research & Delivery Science - [Dissemination and Implementation \(D&I\) Science Graduate Certificate Program](#)
- University of California San Francisco - Online Certificate in Implementation Science
- [Washington University School of Medicine in St. Louis – Graduate Certificate in Dissemination and Implementation](#)
- University of Maryland Graduate School – Implementation and Dissemination Science Graduate Certificate
- Indiana University School of Medicine – Graduate Certificate in Innovation and Implementation Science

## Additional Training Programs

- The QUERI learning hubs offer more in-depth training in using implementation strategies in research and practice
  - [Adaption](#)
  - [Design for Dissemination & Implementation \(D4DI\)](#)
  - [Evidence-Based Quality Improvement \(EBQI\)](#)
  - [Implementation Facilitation \(IF\)](#)
  - [Learn. Engage. Act. Process. \(LEAP\)](#)
  - [Leading Healthcare Improvement \(LHI\)](#)
  - [Teamwork Training Hub](#)
- UC San Diego [Dissemination and Implementation Science Center](#) that provides [resources](#), training, and education

- UC San Diego's Costing [Annotated Bibliography of Key Economic Analysis Resources](#), especially relevant for Implementation Science
- UC San Francisco [Implementation Science Mini-Course](#), a self-directed, online brief introduction to the field of implementation science
- [Training Institute for Dissemination and Implementation Research in Cancer \(TIDIRC\) Facilitated Course](#), hosted by the National Cancer Institute Division of Cancer Control and Population Sciences
- The [Implementation Research Institute \(IRI\) at Washington University in St. Louis](#) is a competitive interdisciplinary training program in mental health implementation science, supported by the NIMH and the VA
- The [High IRI Institute](#) at Washington University in St. Louis is the HIV, Infectious Diseases, and Global Health Implementation Research Institute, which focuses on the intersection between dissemination & implementation science and infectious diseases.
- The [Institute for Implementation Science Scholars \(IS-2\)](#), a mentored training program for investigators at Washington University interested in applying D&I methods and strategies

## Frameworks Examples

- **E**xploration, **P**reparation, **I**mplementation, **S**ustainment (EPIS) Implementation Framework
- **R**each, **E**ffectiveness, **A**doption, **I**mplementation, and **M**aintenance (RE-AIM)
- **C**onsolidated **F**ramework for **I**mplementation **R**esearch (CFIR)
- [Theoretical Domains Frameworks \(TDR\)](#)
- **P**ractical, **R**obust **I**mplementation and **S**ustainability **M**odel (PRISM)
- [Active Implementation Frameworks \(AIFs\)](#)
- [Promoting Action on Research Implementation in Health Services \(PARIHS\)](#)
- [Replicating Effective Programs \(REP\) Framework](#)
- [Dynamic Sustainability Framework](#)

## Measurement, Methodology, and Research Design

- [Compilation of Outcomes in Implementation Science](#) (Lewis et al., 2015)
- [Complication of Implementation Strategies](#) (Powell et al., 2015)
- [Innovations in Mixed Methods Evaluation](#) (Palinkas, Mendon, & Hamilton, 2019)

- [Qualitative and Mixed Methods Research in Dissemination and Implementation Science](#) (Southam-Gerow & Dorsey, 2014)
- [MOST and SMART Adaptive Designs](#) (Collins, Murphy, & Strecher, 2007)
- [Stepped Wedge Design](#) (Hemming et al., 2015)



## Seed

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### **Promote education in implementation science and practice.**

Additional seminars and research capacity-building opportunities to support successful implementation research funding for U-M investigators.

### **Additional U-M Resources**

- [U-M Mixed Methods Program](#), promotes mixed methods research and scholarship across academic disciplines through education, training, consulting, and mentoring with the support of the Department of Family Medicine at U-M
- [Michigan Institute for Clinical & Health Research \(MICHHR\)](#), enables and enhances clinical and translational research at U-M, by being a catalytic partner that educates, funds, connects & supports research teams
  - [Research Development Consultations](#)
  - [Participant Recruitment & Retention Consultation](#)
- [Michigan Program on Value Enhancement \(MPrOVE\)](#), brings together experts across the U-M health system to identify, design, and rigorously and rapidly evaluate specific projects focused on improvement quality and demonstrating the value of clinical services
- The **Dissemination and Implementation** Incubator Seminar, a robust early-career investigator network ([incubatorgroup@umich.edu](mailto:incubatorgroup@umich.edu))



## Spread

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### **Build capacity to integrate implementation science in clinical, system, and community-based research.**

Leverage and expand capacity of existing research and policy initiatives to promote implementation research especially for under-represented groups.

## U-M Resources

- U-M [Clinical Trials Support Units \(CTSUs\)](#) ensure the timely and efficient activation and execution of clinical trials at Michigan Medicine
- The [Quality Department](#), a central resource for the University of Michigan Health System- provides analytic support, performance improvement and project resources
- [Collaborative Quality Initiatives \(CQIs\)](#), coordinating centers which seek to address some of the common, complex, and costly areas of surgical and medical care

## Conferences

- [Annual Conference on the Science of Dissemination and Implementation in Health](#) and the [Annual Research Meeting](#) hosted by Academy Health
- [The Society for Implementation Research Collaboration \(SIRC\) Conference](#), dedicated to facilitating communication and collaboration between implementation research teams, researchers, and community providers
- [Global Implementation Conference](#) hosted by the Global Implementation Society
- The [Global Symposium on Health Systems Research](#), hosted by Health System Global every two years

## Grant Science Preparation

- [U-M Implementation Science Network](#) consultation on dissemination and implementation research study design: UM-ISN faculty will work with investigators or provide referral to an implementation scientist to help investigators design an appropriate dissemination and implementation research plan for the study's objectives, including but not limited to specific aim development, types of methods, sampling design, data collection and analysis plans.
- [U-M Mentored Research Academy: R01 Boot Camp](#), multifaceted program designed to help faculty members receive their first R01 grants from the NIH
- [Research Networks at IHPI](#), smaller research “networks” where grant presentations feedback opportunities may be possible

- U-M ISN Consultations for investigators, basic scientists, and investigators seeking guidance on implementation strategies, measurement, conducting hybrid trials, and referrals for training and mentorship
- [MICHHR's Grant Editing](#) for investigators, basic scientists, and early career investigators
- [Everything You Wanted to Know About Logic Models But Were Afraid to Ask](#)
- [Ten key ingredients to writing implementation research grant proposals](#), written by Proctor et al., 2012

## EXPERT RESOURCES

The following resources provide guidance on how to effectively select, apply and test dissemination and implementation theory and methods to implementation research, including creating or designing implementation strategies. **Intended audience: career investigator interested in or conducting hybrid trials.**

### Spark

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**Leverage U-M talent to promote implementation science learning opportunities.**

The following provides a list of learning opportunities in implementation science, including directed readings, existing webinars, and methods training.

#### Online Resources

- The [Consortium for Implementation Science](#), a joint endeavor between UNC Gillings School of Public Health and RTI International

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# FUNDING OPPORTUNITIES

## U-M Resources

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### MICHR

The Michigan Institute for Clinical & Health Research runs a Pilot Grant Program for bench-to-bedside and bedside-to-practice translational research.

- MICHR Dissemination & Implementation (D&I) Catalyst Implementation Science Network Pilot Grant: supports small-scaled pilot projects which examine dissemination or implementation of an effective practice to inform the design of a larger, competitive application for further funding such as a hybrid implementation trial.
- Statewide Building Capacity for Research and Action (SBCRA) Grant: supports projects which strengthen the capacity of the community to engage in, and benefit from translational research.
- Promoting Academics & Community Engagement (PACE) Dissemination Grant: supports community-academic partnerships in sharing Community-Engaged Research (CEnR) results back to the community.
- MICHR Predoctoral T32 Training Program: The new MICHR Predoctoral T32 training program is an experiential research training program that provides translational science training.
- MICHR Clinical and Translational Science Pilot Award: The Clinical and Translational Science Pilot Award aims to support new and innovative research projects relevant to clinical & translational science (CTS)
- MICHR K12 Award: The new MICHR K12 is a two-year award that provides protected research time, mentorship, and competency-based career development for translational scholars with a doctoral degree in a clinical or health focus.

### U-M Medical School Competition Space

Use this tool to apply for open funding opportunities, including:

- Bridging Support
- External Limited Submissions
- Pilot Grants

### Research Development Support

The Office of Research maintains a list of internal and external funding opportunities.

### M-Library Research Funding Guide

The University of Michigan Library has compiled resources for internal and extending funding, grant writing preparation and training, and research collaboration.

# National Institutes of Health Funding Opportunities

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## **PAR-22-106 Dissemination and Implementation Research in Health (R03 Clinical Trial Not Allowed)**

The purpose of this Funding Opportunity Announcement (FOA) is to support studies that will identify, develop, and/or test strategies for overcoming barriers to the adoption, adaptation, integration, scale-up, and sustainability of evidence-based interventions, practices, programs, tools, treatments, guidelines, and policies. Studies that promote equitable dissemination and implementation of evidence-based interventions among underrepresented communities are encouraged. Conversely, there is a benefit in understanding circumstances that create a need to stop or reduce (“de-implement”) the use of practices that are ineffective, unproven, low-value, or harmful. In addition, studies to advance dissemination and implementation research methods and measures are encouraged. Applications that focus on re-implementation of evidence-based health services (e.g. cancer screening) that may have dropped off amidst the ongoing COVID pandemic are encouraged.

## **PAR-22-109 Dissemination and Implementation Research in Health (R21 Clinical Trial Optional)**

The purpose of this Funding Opportunity Announcement (FOA) is to support studies that will identify, develop, and/or test strategies for overcoming barriers to the adoption, adaptation, integration, scale-up, and sustainability of evidence-based interventions, practices, programs, tools, treatments, guidelines, and policies. Studies that promote equitable dissemination and implementation of evidence-based interventions among underrepresented communities are encouraged. Conversely, there is a benefit in understanding circumstances that create a need to stop or reduce (“de-implement”) the use of practices that are ineffective, unproven, low-value, or harmful. In addition, studies to advance dissemination and implementation research methods and measures are encouraged. Applications that focus on re-implementation of evidence-based health services (e.g. cancer screening) that may have dropped off amidst the ongoing COVID pandemic are encouraged.

## **PAR-23-177 Awards Supporting Cutting-Edge Technologies for Translational Science (ASCETTS) (R21 Clinical Trials Not Allowed)**

The National Center for Advancing Translational Sciences (NCATS) invites applications for the Awards Supporting Cutting-Edge Technologies for Translational Science (ASCETTS) Notice of Funding Opportunity (NOFO) to foster investigator-initiated development of highly innovative technologies to address barriers, limitations, or bottlenecks in translational science – particularly for therapeutic development. This program will support the early-stage proof of concept, high-risk and potentially high-reward studies for feasibility and exploratory technology development, which can transform or significantly improve the efficiency of therapeutic development to achieve NCATS ultimate goals - more treatments to all people more quickly. The research proposed should be for the development of technology that can break new ground or extend present technology toward new directions or novel applications. With this initiative, we expect to support the development and/or prototyping of new technologies that will lead to improved efficiency in the therapeutic development pipeline.

## U-M EXISTING INITIATIVES

- The U-M [Dissemination & Implementation \(D&I\) Catalyst Implementation Science Network \(ISN\)](#) connects researchers to promote more innovative dissemination and implementation research to ultimately close the gap between science and practice, and improve care in our health systems and communities.
- U-M Medical School's [Department of Learning Health Sciences \(LHS\)](#), the first of its kind in the nation focused on embedding principles of implementation science into health system performance goals. LHS also has a robust array for training, coursework, and degree programs in learning health systems, including two courses in implementation science.
- [Institute for Healthcare Policy and Innovation \(IHPI\)](#), e.g., [Michigan Program on Value Enhancement- MPrOVE](#), which identifies, implements, and evaluates specific projects focused on improving quality and demonstrating the value of clinical services at [Michigan Medicine](#), as well as other [Statewide initiatives](#), e.g., Healthy Michigan, U-M [Quality Improvement Collaboratives](#), Opioid Connections initiative, and a robust early-career investigator network, the [Dissemination and Implementation Incubator](#)
- [U-M School of Public Health's Health Management and Policy](#) centers, including the [Center for Value-Based Insurance Design](#) and [Griffith Leadership Center](#) which focus on leadership and policy implementation strategies
- [U-M School of Social Work Inter-Professional Collaboration implementation \(ICI\)](#) which focuses on practitioners delivering evidence-based services to high-risk populations, and the [Treatment, Innovation, and Dissemination Lab \(TIDL\)](#) which promotes technology-driven implementation studies
- [U-M Institute for Social Research \(ISR\) Data Science for Dynamic Intervention Decision-Making Lab](#), the first of its kind to focus on adaptive and sequential multiple assignment randomized implementation trial designs
- [U-M Center for Healthcare Outcomes and Policy \(CHOP\)](#), which implements innovative large-scale quality improvement interventions, and the [Michigan-BCBS Quality Improvement Collaboratives](#) and [Michigan Value Collaborative](#) which provide infrastructure to accelerate strong quality improvement practices in Michigan hospitals.
- U-M Department of Pediatrics [Susan B. Meister Child Health Evaluation and Research Center](#) (CHEAR)

- [U-M Injury Prevention Center](#) and Opioid Connections network that focus on public health impacts through implementation and dissemination of EBPs
- U-M School of Nursing, including the [Michigan Center for Improving Patient and Population Health \(CIPPH\)](#)
- [VA Quality Enhancement Research Initiative \(QUERI\)](#) national program headquarters at U-M including the [Center for Evaluation and Implementation Resources \(CEIR\)](#) and the regional QUERI centers led by U-M investigators
- [VA Quality Enhancement Research Initiative \(QUERI\) Implementation Resource Group \(IRG\)](#) is a national learning collaborative that showcases state-of-the-art implementation science topics. The IRG provides a forum for sharing best practices and lessons learned in the field of implementation science.
- [VA Center for Clinical Management Research \(CCMR\)](#) which has led groundbreaking studies in novel methods to improve healthcare value through de-implementation of ineffective treatments, and development of implementation strategies that combine systems engineering and public health approaches.
- U-M training programs such as the [National Clinician Scholars Program](#), the NIH-funded training program “[Training to Advance Care through Implementation Science in Cardiac and Lung Illnesses \(TACTICAL\)](#),” (K12HL138039, T. Iwashyna, A. Sales, Co-Directors), the NHLBI K12 postdoctoral and early career faculty training program in implementation science methods, the [School of Nursing-National Cancer Institute T32 training program](#) and the [U-M Mixed Methods Program](#)

MICHIGAN INSTITUTE FOR CLINICAL & HEALTH RESEARCH (MICHR)  
Dissemination & Implementation Science Catalyst  
UM-Implementation Science Network  
1600 Huron Parkway, Building 400 Ann Arbor, MI 48109

For more information or to be added to the ISN mailing list, email:  
[MICHR-UMISN@umich.edu](mailto:MICHR-UMISN@umich.edu)

CITE IT

Please help us continue our support for clinical and translational  
research by citing our grant number in relevant publications:  
UM1TR004404