



Rural Telehealth Evaluation Center  
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# Rural Telehealth Evaluation Center & Spotlight on the Telehealth Technology- Enabled Learning Program Evaluation

11/9/2023



# About the Rural Telehealth Evaluation Center (RTEC)

- Established September 1, 2020, through Health Resources & Services Administration (HRSA) Cooperative Agreement
- Tasked with conducting evaluation and research on telehealth programs, utilization, and policy
- Housed at the University of Arkansas for Medical Sciences (UAMS) within the Institute of Digital Health and Innovation (IDHI)
- Tasked with conducting 5 projects annually for 5 years
  - As well as the multi-year program evaluations of the Telehealth Broadband Pilot Program and the Telehealth Technology-Enabled Learning Program



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## About RTEC: RTEC Leaders



### Hari Eswaran, PhD

**Director, RTEC**

Director of Research and Evaluation, Institute for Digital Health  
and Innovation

**Director of the South Central Telehealth Resource Center**

**Professor** in Obstetrics and Gynecology, Biomedical Informatics  
*University of Arkansas for Medical Sciences*



### Corey Hayes, PharmD, PhD, MPH

**Deputy Director, RTEC**

Associate Professor of Biomedical Informatics, Psychiatry, and Pharmacy  
Practice

*University of Arkansas for Medical Sciences*

**Research Health Scientist**

VA HSR&D Center for Mental Health and Outcomes Research  
*Central Arkansas Veterans Healthcare System*



## About RTEC: RTEC Staff



**KaSheena  
Winston, MS**

Research Project  
Manager



**Mir M. Ali, PhD**

Senior Data Analyst



**Nahiyan Bin  
Noor, MS**

Intermediate Data  
Analyst



**Hannah C. McCoy,  
BA, CRS**

Research Associate



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# About RTEC: RTEC Current and Former Students



**Ruchira Mahashabde, PhD**

College of Pharmacy  
UAMS



**Catherine C. Shoults, PhD**

College of Medicine  
UAMS



**Michelle Hernandez, PharmD**

College of Pharmacy  
UAMS



**Ambrish Pandit, PhD**

College of Pharmacy  
UAMS



**Betul Cengil, MS**

College of Engineering  
University of Arkansas



**Grishma KC**

College of Pharmacy  
UAMS



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# About RTEC: Current and Former Project Leads (1)



**Mahip Acharya,  
PhD**

Assistant Professor  
UAMS



**M. Katy Allison,  
PhD, MPH**

Assistant Professor  
UAMS



**Cari A. Bogulski,  
PhD**

Assistant Professor  
UAMS



**Burak Eksioglu,  
PhD**

Professor  
University of Arkansas



**Sandra Eksioglu,  
PhD**

Professor  
University of Arkansas



**Laura Gressler,  
PhD**

Assistant Professor  
UAMS



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## About RTEC: Current and Former Project Leads (2)



**Saleema Karim,  
PhD**

Associate Professor  
Virginia Commonwealth  
University



**Kanna Lewis,  
PhD**

Assistant Professor  
UAMS



**George Pro, PhD**

Assistant Professor  
UAMS



**Lu Shi, PhD**

Professor  
Clemson University



**J. Mick Tilford,  
PhD**

Professor  
UAMS



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# About RTEC Projects: Scoping Reviews

	Title	Project Year(s)
1	Current state of telehealth remote patient monitoring	1
2	Summary of telehealth definitions: A scoping review	1
3	Assessment of pregnancy-related telehealth interventions in the United States: A 10-year scoping review	2



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# About RTEC Projects: Secondary Data Analyses

	Title	Primary Data Set(s)	Project Year
1	Association of telehealth technology and financial performance in rural hospitals	AHA Survey	1
2	An evaluation of remote patient monitoring (RPM) utilization on a national level	National Medicare	2
3	An evaluation of rural/urban telehealth during the COVID-19 pandemic: Impact on utilization and spending through a health equity lens	National Medicare	2
4	Did state-level emergency initiatives to facilitate telehealth help reduce the urban-rural disparity in healthcare utilization?	NHIS	2
5	The effect of telehealth implementation on hospital financial performance: An urban/ rural hospital comparison	AHA Survey	2
6	Assessing the impact of telehealth delivery on adherence to medications for opioid use disorder	MarketScan	3
7	Financial performance of low-resource hospitals adopting telemedicine during the COVID-19 pandemic	AHA Survey	3
8	Prenatal opioid use disorder treatment delivered through telehealth and punitive and reporting state policies	IQVIA Pharmedics® Plus	3
9	Facility- and state-level characteristics associated with telehealth adoption and service integration in specialty substance use disorder and mental health facilities in the US	NMHSS, N-SSATS	3
10	The effect of prenatal telehealth use for mental health screening on mental health-related emergency department visits and hospitalizations	IQVIA Pharmedics® Plus, TriNetX	4
11	An analysis of resource utilization at telehealth providers in the U.S.	Epic Cosmos	4
12	The relationship between health equity, digital health literacy, and use of digital health services	HINTS	4
13	Budget impact and cost-effectiveness of remote patient monitoring (RPM) services for hypertension management in older adults	National Medicare	4
14	Differential impact of audio vs. audiovisual vs. in-person healthcare visits on quality of care by race/ethnicity, rural/urban, and socioeconomic status among patients with mental health disorders	Epic Cosmos	4



# About RTEC Projects: Publications (1)



JAMA Network Open

**This Issue** | Views **1,912** | Citations **0** | Altmetric **14**

**Research Letter** | Obstetrics and Gynecology

April 4, 2023

## Trends in Telehealth Visits During Pregnancy, 2018 to 2021

Mahip Acharya, PhD<sup>1</sup>; Mir M. Ali, PhD<sup>1</sup>; Corey J. Hayes, PharmD, PhD, MPH<sup>2,3</sup>; Cari A. Bogulski, PhD<sup>2</sup>; Everett F. Magann, MD<sup>4</sup>; Hari Eswaran, PhD<sup>1,4</sup>

▼ [Author Affiliations](#) | [Article Information](#)

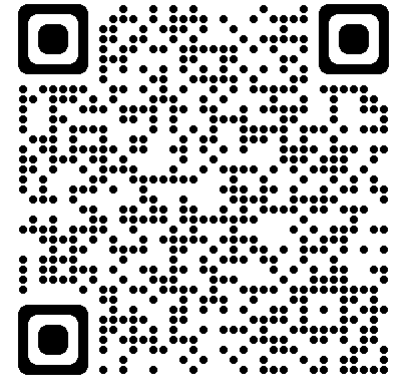
<sup>1</sup>Institute for Digital Health & Innovation, University of Arkansas for Medical Sciences, Little Rock

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<sup>3</sup>Center for Mental Healthcare and Outcomes Research, Central Arkansas Veterans Healthcare Systems, North Little Rock

<sup>4</sup>Department of Obstetrics and Gynecology, University of Arkansas for Medical Sciences, Little Rock

JAMA Netw Open. 2023;6(4):e236630. doi:10.1001/jamanetworkopen.2023.6630







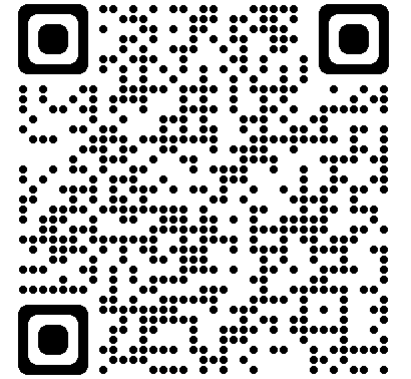
# About RTEC Projects: Publications (2)

🏠 [Telemedicine and e-Health](#) > [Vol. 29, No. 3](#) > [Original Research](#)

## Utilization of Remote Patient Monitoring Within the United States Health Care System: A Scoping Review

Corey J. Hayes  , Leah Dawson, Hannah McCoy, Michelle Hernandez, Jennifer Andersen, Mir M. Ali, Cari A. Bogulski, and Hari Eswaran

Published Online: 10 Mar 2023 | <https://doi.org/10.1089/tmj.2022.0111>






# About RTEC Projects: Publications (3)

Journal of Telemedicine and Telecare

[International  
Society for  
Telemedicine...](#)

Impact Factor: **4.7**  
5-Year Impact Factor: **5.6**

 Restricted access | Research article | First published online April 5, 2023

## Association between broadband capacity and telehealth utilization among Medicare Fee-for-service beneficiaries during the COVID-19 pandemic

[Amrish A Pandit](#) , [Ruchira V Mahashabde](#), [Clare C Brown](#), [Mahip Acharya](#), [Catherine C Shoults](#) , [Hari Eswaran](#), and [Corey J Hayes](#)  

[View all authors and affiliations](#)

[OnlineFirst](#) | <https://doi.org/10.1177/1357633X231166026>





# About RTEC Projects: Publications (4)

JHMHP

JOURNAL OF HOSPITAL MANAGEMENT AND HEALTH POLICY  
AN OPEN ACCESS JOURNAL FOR DISSEMINATION OF ADVANCES IN HOSPITAL MANAGEMENT AND HEALTHCARE POLICY

0.6  
CiteScore

[Home](#) [Journal Info](#) [For Authors](#) [For Reviewers](#) [Ethics and Policies](#) [Special Contents](#) [Archives](#) [Online First](#)

[Home](#) / [Vol 7 \(September 30, 2023\)](#) / [Financial performance of rural hospitals persistently lacking or having telehealth technology](#)

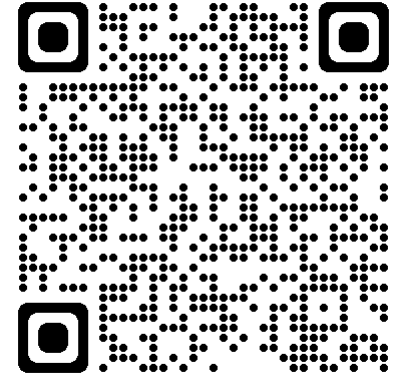
Original Article



## Financial performance of rural hospitals persistently lacking or having telehealth technology

Saleema A. Karim<sup>1^</sup>, J. Mick Tilford<sup>2^</sup>, Cari A. Bogulski<sup>3,4^</sup>, Maysam Rabbani<sup>4,5^</sup>, Corey J. Hayes<sup>3,4,6^</sup>, Hari Eswaran<sup>4^</sup>

<sup>1</sup>Department of Health Administration, College of Health Professions, Virginia Commonwealth University, Richmond, VA, USA; <sup>2</sup>Department of Health Policy and Management, College of Public Health, University of Arkansas for Medical Sciences, Little Rock, AR, USA; <sup>3</sup>Department of Biomedical Informatics, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, AR, USA; <sup>4</sup>Institute for Digital Health and Innovation, University of Arkansas for Medical Sciences, Little Rock, AR, USA; <sup>5</sup>Feliciano School of Business, Montclair State University, Montclair, NJ, USA; <sup>6</sup>Center for Mental Healthcare and Outcomes Researcher, Central Arkansas Veterans Healthcare System, Little Rock, AR, USA





# About RTEC Projects: Program Evaluations

Title	Project Year(s)
1 Objective program examination and gap analysis of Telehealth Resource Centers	1
2 Telehealth Broadband Pilot Program Evaluation	1-3
3 Summative examination of the Licensure Portability Program	1
4 Telehealth Technology-Enabled Learning Program: Evaluation and dissemination	3-5





# What is the Telehealth Technology-Enabled Learning Program?

## Objectives of the TTELP Program:

- Identify and expand current and new learning community programs with a focus on one, or more, of the following diseases: infectious diseases (such as COVID-19, including COVID-19 “long haulers” or HIV/AIDS), mental health, substance use disorders, prenatal and maternal health, chronic diseases, and pediatric care
- Develop freely accessible tools and resources to support learning community program’s planning and implementation
- Identify and address healthcare disparities for rural, frontier, and underserved populations
- Implement cost-effective learning community programs to serve presented in rural populations

The cooperative agreement supports 9 awardees over a Period of Performance 9/30/2021 – 9/29/2026

Award Recipient
Community Health Center, Inc.
American Academy of Pediatrics
University of Kansas Medical Center Research Institute, Inc.
Medical Care Development, Inc.
JSI Research and Training Institute, Inc.
President and Fellows of Harvard College
University of New Mexico
Oregon Health & Science University
Puerto Rico Science, Technology & Research Trust



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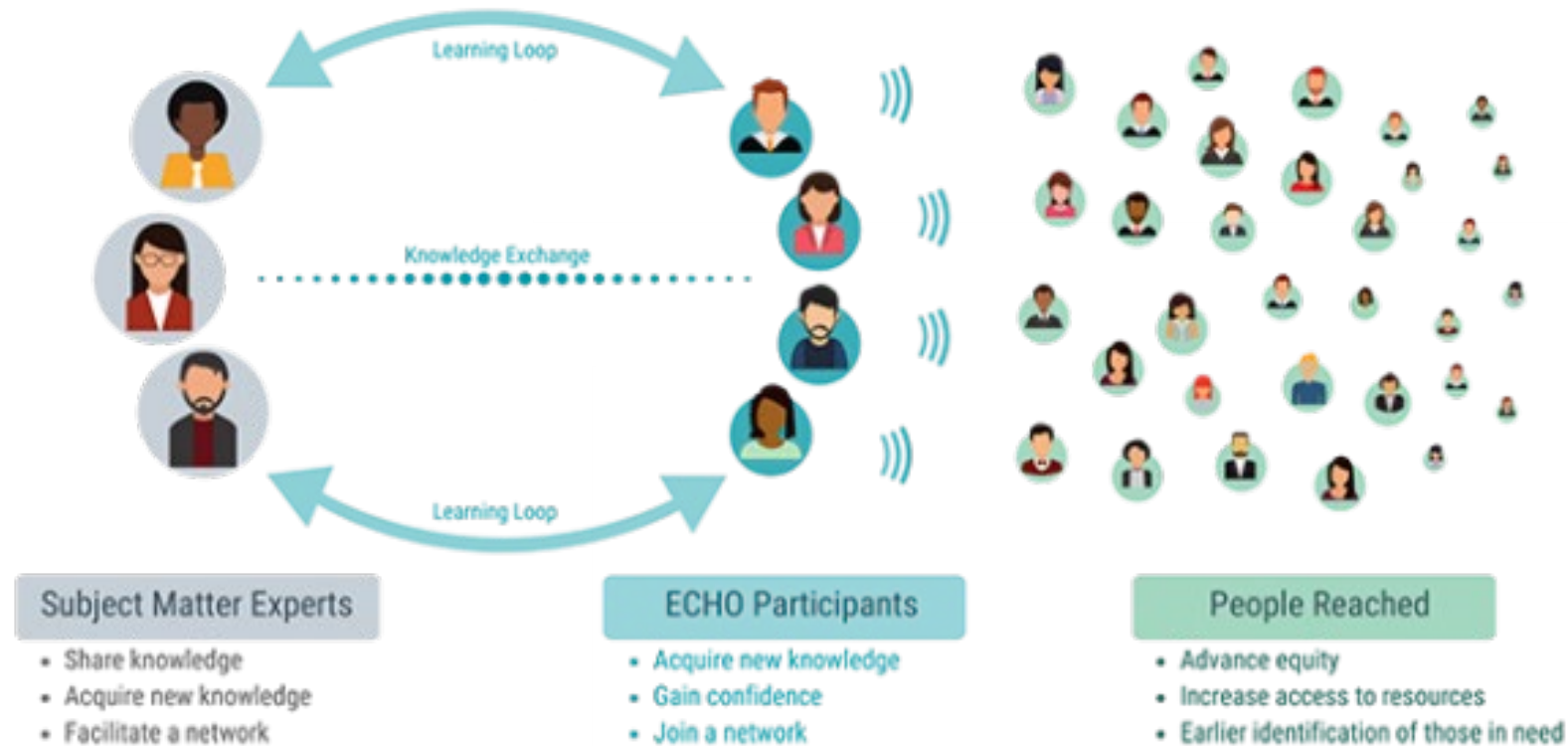
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# What is Project ECHO?

## MOVING KNOWLEDGE, NOT PEOPLE





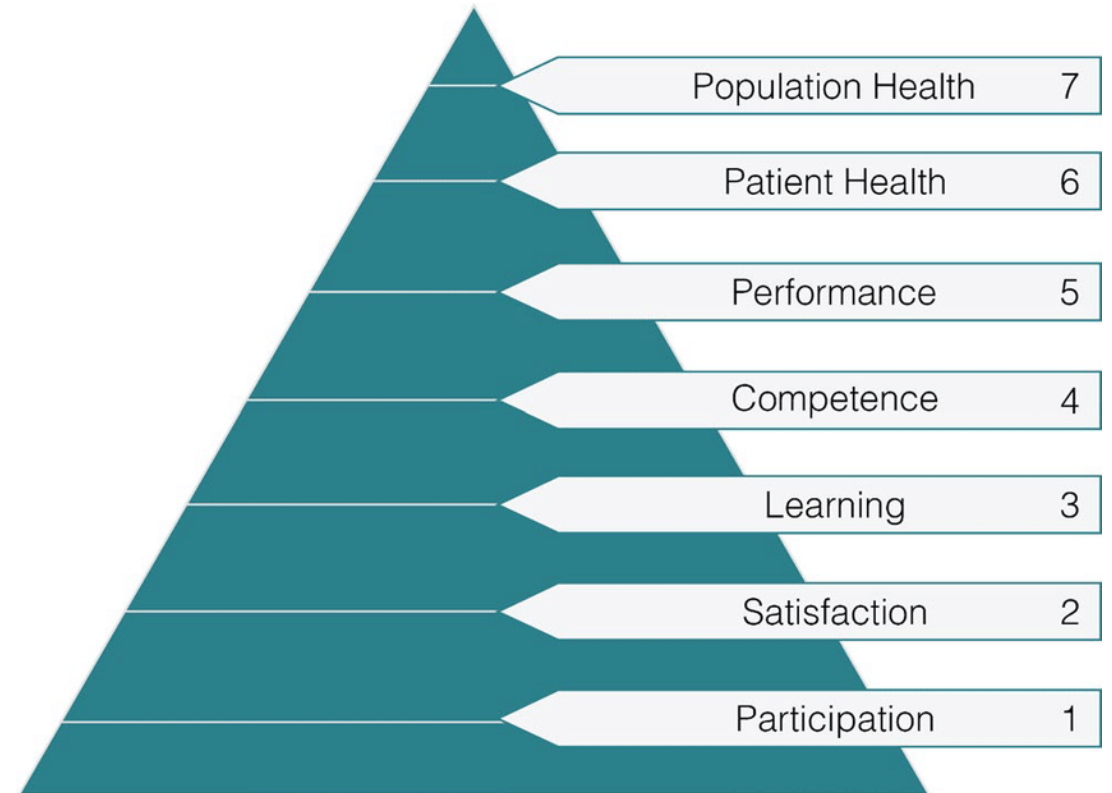


# TTELP Evaluation Project

The RE-AIM Framework guides our overarching evaluation of the TTELP program



The Moore's Framework guides our evaluation of Project ECHO



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## TTELP Evaluation: Early Results (Years 1 & 2)

Topic of Project ECHO	Number of grantees
Long COVID	5
Behavioral Health	9
Primary Care & Chronic Disease Management	7
Pediatric Care	3
Infectious Disease	4





## TTELP Evaluation: Early Results (Years 1 & 2)

### Implementation

- To date, the 9 TTELP grantees have completed 31 ECHO cohorts (plus have 4 ongoing ECHO-like series)
  - 4 Long COVID cohorts
  - 20 behavioral health cohorts
  - 11 primary care and chronic diseases management cohorts
  - 12 pediatric care cohorts
  - 3 infectious disease cohorts
- Held 394 ECHO and ECHO-like learning sessions
  - 53 ECHO learning sessions on Long COVID
  - 195 ECHO learning sessions on behavioral health
  - 170 ECHO learning sessions on primary care and chronic diseases management
  - 62 ECHO learning sessions on pediatric care
  - 52 ECHO learning sessions on infectious disease





## TTELP Evaluation: Early Results (Years 1 & 2)

### Implementation

- 98.1% of respondents have reported overall satisfaction with ECHO participation immediately following participation
  - 94.4% of respondents reported satisfaction with the curriculum or content/topic
  - 98.6% reported satisfaction with ECHO and ECHO-like telementoring format and delivery
  - 97.6% reported that learning objectives were met



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## TTELP Evaluation: Early Results (Years 1 & 2)

### Reach & Adoption

- 6,102 individuals have participated in TTELP telementoring activities
  - 3,841 participants of ECHO and ECHO-like telementoring
  - 437 participants of webinars
  - 373 participants of individual consultations
  - 1,451 participants of online curricula
- These participants represented a total of 744 organizations
- ECHO participants included 2,996 individuals practicing in urban settings (65.8%) and 1,318 individuals practicing in rural settings (29%)



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# TTELP Evaluation: Early Results (Years 1 & 2)

## Effectiveness

- To date, **64%** of respondents reported an increase in knowledge immediately following ECHO and ECHO-like telementoring participation
- **73%** reported an increase in clinical confidence immediately following ECHO and ECHO-like telementoring participation,
- Immediately following ECHO participation, **80.8%** reported intention to apply or use information learned in ECHO

## Maintenance

- **62.9%** sustained their increase in knowledge 1-6-months following ECHO participation
- **69.1%** sustained their increase in clinical confidence 1-6-months following ECHO participation
- 1-6-months following ECHO and ECHO-like telementoring participation, **80.4%** reported actual use of best practices learned in ECHO, **66.8%** reported changes in clinical decisions-making, and **92.1%** reported sharing knowledge/resources learned in ECHO



# Questions?



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