



**A Report from the Federal Partners
Meeting of the NIH P2P Workshop:
Improving Rural Health Through
Telehealth-Guided Provider-to-Provider
Communication**



National Institutes of Health
Office of Disease Prevention

**A Report from the Federal Partners Meeting of the National Institutes of Health
Pathways to Prevention Workshop: Improving Rural Health Through Telehealth-Guided
Provider-to-Provider Communication**

June 22–23, 2022

Sponsored by:

Centers for Disease Control and Prevention
Health Resources and Services Administration
National Center for Advancing Translational Sciences
National Heart, Lung, and Blood Institute
National Institutes of Health Office of Disease Prevention

Introduction

The Pathways to Prevention (P2P) program of the National Institutes of Health (NIH) Office of Disease Prevention (ODP) promotes the use of evidence-based practices to address complex public health issues by identifying research gaps and needs in specific topic areas. The goals of the P2P workshops are to synthesize and interpret the current evidence, identify research gaps, shape a research agenda, and develop an action plan. On October 12–14, 2021, the NIH convened the P2P Workshop: Improving Rural Health Through Telehealth-Guided Provider-to-Provider Communication. This workshop was co-sponsored by the Centers for Disease Control and Prevention (CDC), Health Resources and Services Administration (HRSA), National Center for Advancing Translational Sciences (NCATS), National Heart, Lung, and Blood Institute (NHLBI), and National Institutes of Health (NIH) Office of Disease Prevention (ODP). Members of the workshop’s independent panel developed recommendations for moving the field forward, which are included in the P2P workshop independent panel report.¹ A link to this report, as well as links to other reports generated from this workshop, are found on the [ODP website](#).

As the penultimate step in the P2P program process, the ODP convened a meeting on June 22–23, 2022 with representatives from federal government agencies (from now on referred as the Federal Partners) to identify strategies to address and implement the recommendations in the P2P workshop independent panel report. This document summarizes the discussions and highlights potential action items identified during the Federal Partners Meeting. While many agencies have important roles for further federal collaborations, the discussion was limited to invited representatives of agencies and offices who attended (see Appendix A for the list of attendees).

Background

Many rural communities across the nation face chronic challenges in accessing and sustaining health care services, with increased labor shortages among the health professions workforce adding significantly as a contributing factor. Year after year more rural than urban locations are federally designated as health professions shortage areas, particularly in communities with higher proportions of minorities such as American Indians and Alaska Natives.¹ While sparse populations and low patient volumes make the local availability of specialists and high-level

hospital care less feasible, the absence of these and other services for rural populations is concerning given the significantly higher rates of chronic health conditions and higher proportion of older residents.² Aware of these trends, federal and state policy makers have, over time, initiated policies and financial investments designed to bolster rural health care infrastructure. One promising strategy to facilitate access to care is the use of telehealth technology. Rural provider-to-provider telehealth (RPPT) encompasses consultations, mentoring, and continuing education, among other services. A key component of this infrastructure is telehealth-guided collaboration between health care providers; typically connecting rural-based generalist providers with urban-based specialists across an array of disciplines—including medicine, nursing, pharmacy, and behavioral health—and addressing health problems ranging from care for people with Hepatitis C to trauma, geriatric pharmacology, and maternal morbidity.

P2P Workshop Key Questions

The workshop sought to address the following four key questions:

1. What is the uptake of different types of provider-to-provider telehealth in rural areas?
2. What is the effectiveness of provider-to-provider telehealth for rural patients?
3. What strategies are effective and what are the barriers and facilitators to implementation and sustainability of provider-to-provider telehealth in rural areas?
4. What are the methodological weaknesses of studies of provider-to-provider telehealth for rural patients and what improvements in study design (e.g., focus on relevant comparisons and outcomes) might increase the impact of future research?

Systematic Evidence Review

A systematic evidence review of the scientific literature,³ guided by the key questions above, was conducted by the Oregon Health and Science University's Evidence-based Practice Center through a contract with the Agency for Healthcare Research and Quality (AHRQ) to facilitate the workshop discussion. The purpose of the systematic evidence review was to assess the use, effectiveness, and implementation of RPPT for the provision of health care services to rural populations. Key findings from the review include:

- Limited research from regional and national surveys and claims data suggest that telehealth for provider-to provider communication is used to different extents across specific clinical care uses such as psychiatry, emergency, and stroke care. Use was increasing even before the COVID-19 pandemic.
- Telehealth to support direct patient care may provide benefits for:
 - Inpatient care
 - Neonatal care in rural hospitals
 - Outpatient management of depression and diabetes
 - Emergency care for stroke/heart attack/chest pain as well as trauma.
- Evidence on other uses, outcomes, or populations was insufficient to support conclusions.
- No studies reported harms or unexpected negative outcomes for provider-to-provider telehealth.

- Use of telehealth for provider education and mentoring, including programs like Project ECHO (Extension for Community Healthcare Outcomes) that use video for instruction and collaboration, may improve patient outcomes, change provider behavior, and increase provider knowledge and confidence in treating specific conditions.
- Inadequate provider time, technology, and other resources, as well lack of understanding of the rural context and long-term commitments to telehealth are barriers to broader implementation of RPPT.
- Effectiveness and implementation studies frequently employed less rigorous designs, had small sample sizes, and often did not minimize bias through design or analyses.

Limitations of the systematic evidence review included:

- The heterogeneity of the research on RPPT including studies spread across settings, incorporating many different clinical uses, and evaluating telehealth in terms of different outcomes makes it difficult to support strong conclusions.
- It was often unclear if the goal of telehealth was to provide care that is as good as care provided without telehealth or if the investment in telehealth requires that outcomes be better.
- Overall, research on telehealth in general was often not based on a clear model of how telehealth was expected to affect outcomes.
- There was no agreement on which outcomes, across clinical outcomes, resource use, costs, and potential harms, are most important.

NIH Portfolio Review

NIH conducted a review of research projects related to RPPT awarded from 2017–2021. The review included awarded NIH primary and administrative projects including new, competing, and continuing awards. RPPT was broadly defined as any form of interactive support using telecommunications technology provided to health care professionals while they are caring for rural patients and populations. The following keyword search terms were used to identify abstracts on telehealth—rural health, telehealth, telemedicine, health information technology, eHealth, virtual health, digital health, and tribal communities. Reviewers read through abstracts on rural telehealth to identify projects related to RPPT.

Results of the NIH grant portfolio revealed 286 awarded grants for rural telehealth. Of those, 50 grants focused on RPPT were awarded to 27 states for a total of \$54 million. The highest level of funding was in 2019 with 16 projects totaling \$30.5 million. Over the 5 years, 20% of the grants were focused on opioid use disorders, 18% on cancer, and 10% on pediatric care. The results of the NIH portfolio review were presented at the P2P workshop.

P2P Workshop Independent Panel Report

A unique feature of every P2P workshop is the involvement of a multidisciplinary independent panel comprised of non-federal representatives who have certified that they hold no scientific or personal conflicts with the subject matter of the P2P workshop for which they have volunteered their service. Panel members were nominated by the federal scientists who

planned the workshop in conjunction with the ODP and they were vetted for potential conflicts of interest. Panel members were charged with assessing, deliberating on, and writing the P2P workshop independent panel report that (1) summarized the key findings and research needs outlined in the systematic evidence review and discussed at the workshop; and (2) developed a set of recommendations to catalyze future research and collaborations to move the field forward. The P2P workshop independent panel report included recommendations related to the key questions (See Appendix B).

Federal Partners Meeting

The ODP convened the Federal Partners meeting on June 22–23, 2022 to strategize how to implement the recommendations contained in the P2P workshop independent panel report. The objectives of the Federal Partners Meeting were to (1) assess current federal initiatives, resources, and potential partnerships relevant to the topic area; (2) identify and prioritize actionable items outlined in the P2P workshop independent panel report to address research gaps (e.g., future meetings or funding opportunity announcements); (3) contribute to the workshop’s momentum to develop a federal action plan that will guide next steps, advance the research field, and set the stage for future collaborations; and (4) discuss ways the findings in the workshop independent panel report and systematic evidence review report can be applied to agencies’ prevention programs and strategies.

Representatives from the CDC, HRSA, and NIH led the discussion of federal agency research needs and opportunities, panel recommendations, and next steps for federal action and the field.

Summary of Discussion of P2P Workshop Independent Panel Recommendations Related to Key Questions

The P2P planning process for the topic of RPPT began in mid-2019 prior to the COVID-19 pandemic. Many Federal Partners agreed that the importance of research and information about telehealth was elevated as the demand for telehealth services increased during the pandemic and several agencies expanded work related to telehealth as a result. For example, while telehealth has been an area of focus within HRSA’s Federal Office of Rural Health Policy for the past 30 years, the scope was recently broadened from rural only as the Office for the Advancement of Telehealth (OAT) was repositioned outside the Federal Office of Rural Health Policy as a separate unit of HRSA. The Indian Health Service (IHS) also increased access to telehealth in general and RPPT specifically. While the advances in telehealth emerged out of necessity in response to COVID-19 stay-at-home orders and other factors, Federal Partners expected that many of the changes will be sustained and RPPT will remain a priority.

1. Key Question #1: What is the uptake of different types of provider-to-provider telehealth in rural areas?

1a. Discussion Summary

Workshop Independent Panel Recommendation #1.1: Develop a consistent definition of different types of RPPT that can be applied across programs, providers, and organizations. The definition should include broad examples of telehealth modalities including synchronous and asynchronous, as the latter (store and forward, audio only, email, and texting) may be more important to rural settings. An HRSA-funded Telehealth Resource Center could serve as the convener of key stakeholders (including federal/state government and the private sector) to develop a consensus-based definition of RPPT.

Federal Partners stated that experience from similar past efforts suggests obtaining consensus for a single operational definition for RPPT is not an easy goal. Similarly, different agencies have created various definitions of rural for their specific programs. For example, the Federal Office of Rural Health Policy, located in HRSA, indicated that it uses a definition that accounts for rural areas at the county and census tract level. Other federal agencies identify rural areas within counties or census tracts based on population thresholds and other geographic factors, depending on what is best for the task. HRSA's OAT acknowledges there are multiple terms for the use of electronic communications in health care besides "telehealth." Other agencies such as the U.S. Department of Agriculture (USDA) use different definitions, some of which are set in statute. Definitions differ based on context, purpose, goals, statutory language, use for implementation, and considerations of for whom or why definitions were created.

- Federal Partners indicated that different definitions for rural and telehealth exist and having more than one standard definition may be appropriate. The Rural Health Information Hub's [Am I Rural](#) tool provides a mechanism for grantees to understand which of the six active definitions of rural to use to meet federal program eligibility criteria.
- HRSA's OAT recently posted a [literature search](#) that describes various terms and definitions used in relation to context. This updated a [2014 study](#) of how federal agencies described or defined telehealth.
- IHS stated that definitions for telehealth would need to include the option of audio-only since 75% of their telehealth is provided in that mode.
- Notices of Funding Opportunities (NOFOs) should make clear which definitions are being used and set expectations that definitions meet national standards, are used consistently, and are documented in research publications.

Workshop Independent Panel Recommendation #1.2: Engage payors and providers in future research to leverage billing data and help capture unbilled RPPT.

Workshop Independent Panel Recommendation #1.3: Once uptake across rural areas has been quantified, expand research to examine (1) the effect of hospital and practice consolidation on uptake; (2) whether RPPT improves adoption of value-based purchasing (VBP), or VBP and other business models encourage uptake; and (3) if smaller hospitals or providers are left out of partnerships, integrated systems, accountable care organization (ACO) networks, or other value-based models of care.

Federal Partners highlighted the importance of leveraging billing data and capturing unbilled RPPT.

- Two Centers for Medicare and Medicaid Services (CMS) resources were shared to describe how to access CMS open data—[Research Statistics Data and Systems](#) and [Research Data Assistance Center \(ResDAC\)](#).
- The CMS Center for Medicare and Medicaid Innovation (CMMI) may provide opportunities to test how aspects of telehealth may move from unbillable to billable or how models may be integrated to capture RPPT services since CMS is able to waive certain regulations as a part of a pilot.
- [AHRQ's Medical Expenditure Panel Survey \(MEPS\)](#), which implemented a telehealth module in spring 2021, will have data available in 2023.
- IHS agreed that it is currently difficult to track RPPT since it is not captured in the electronic health record (EHR) and expressed interest in collaborating on these efforts. Currently, 40-50% of the budget is through third-party payers and IHS serves as a payer of last resort. IHS is discussing equitable rates for telehealth.
- CDC also indicated that understanding billing practices and business models that encourage uptake is relevant to the agency's programming and activities.

Workshop Independent Panel Recommendation #1.4: Examine the extent to which lack of reliable broadband affects uptake.

Federal Partners indicated that uptake of telehealth is dependent on providers' capabilities including adequate telecommunications bandwidth and technology. NHLBI shared that despite the significant improvements in technology development over the past 20 years, 24 million individuals do not have access to broadband in the United States, with 86% of those individuals living in rural areas. Furthermore, the increased volume during COVID-19 reduced the adequacy of previously functioning broadband networks. Federal Partners stated that broadband internet access is a significant contributing factor to health disparities.

- The USDA supports broadband access through project funding and indicated that rural areas with less reliable broadband are less likely to take advantage of the Community Facilities Direct Loan and Grant Program to support telehealth infrastructure.

- The Department of Veterans Affairs (VA) launched a bandwidth upgrade initiative from 2018–2021 in all clinics and stated the need for regular review/upgrades to ensure that bandwidth meets volume use.
- The Department of Commerce National Telecommunication and Information Association is funded approximately \$48B for [High-Speed Internet for All](#).
- The Federal Communications Commissions (FCC) is funding over \$600M for RPPT and conducting sophisticated mapping to determine service gaps.
- National Cancer Institute (NCI) indicated that examining the extent to which broadband affects the uptake of telehealth is a long-term goal within the funding opportunity Notice of Special Interest (NOSI): Telehealth in Cancer Care, which is establishing an evidence-base for telehealth and cancer-related care with a focus on health disparities for rural populations.
- Federal Partners discussed partnering with telehealth vendors who survey their customers to explore bandwidth needs.
- The Office of the Assistant Secretary for Planning and Evaluation (ASPE) will soon release an important tool for mapping broadband allowing researchers the ability to examine the relationship between broadband access and health equity.
- The Office of the National Coordinator for Health Information Technology (ONC) recommended that any funding for infrastructure provides an opportunity to support the use of national standards for information technology and shared the language to include in NOFOs.

Workshop Independent Panel Recommendation #1.5: Establish a national and/or regional database of models for the uptake of RPPT and needed infrastructure..

Federal Partners concurred with the need for a database of RPPT models. In 2020, HRSA OAT launched [Telehealth.hhs.gov](https://telehealth.hhs.gov), which currently serves as a resource for the dissemination of telehealth tools, best practices, funding, events, and tip sheets. Federal Partners are invited to send additional telehealth resources for dissemination through this website.

- USDA’s Community Facilities and Emergency Rural Health Care grants provide a number of success stories to draw upon for models and examples of how to utilize available funding; a database may be helpful for USDA applicants in need of ideas for cost-sharing/matching requirements.
- CDC has included questions on telehealth in the following CDC surveys:
 - [Household Pulse Survey](#), in partnership with the Census Bureau, is a 20-minute online survey designed to complement the ability of the federal statistical system to rapidly respond and provide relevant information about the impact of the COVID-19 pandemic in the United States.
 - [National Health Interview Survey](#) collects data through personal household interviews on a broad range of health topics to track health status, health care access, and progress toward achieving national health objectives.

- [National Ambulatory Medical Care Survey](#) is designed to meet the need for objective, reliable information about the provision and use of ambulatory medical care services in the United States.
- [National Post-acute and Long-term Care Study](#) provides survey data on the residential care community and adult day services sectors, and administrative data on the home health, nursing home, hospice, inpatient rehabilitation, and long-term care hospital to monitor trends in the supply, provision, and use of the major sectors of paid, regulated, long-term care services sectors.
- [National Electronic Health Records Survey](#) is an annual survey of non-federally employed, office-based physicians practicing in the United States (excluding those in the specialties of anesthesiology, radiology, and pathology).

1b. Prioritized Activities for Workshop Key Question 1

- **Short-term**
 - HRSA will share papers describing RPPT-related definitions.
 - HRSA will engage CMS on possible pilots to explore reimbursement issues for RPPT.
 - Federal Partners will explore how to capture baseline data on telehealth in broadband underserved areas in advance of upcoming large-scale broadband initiatives.
 - Federal Partners will send HRSA telehealth resources to disseminate through [Telehealth.hhs.gov](https://telehealth.hhs.gov).
- **Medium-term**
 - Federal Partners will consider creating guidance for including clear definitions for RPPT terms in research and programmatic NOFOs.
 - Federal Partners will promote efforts to examine the extent to which lack of reliable broadband affects uptake of RPPT.
- **Long-term**
 - Federal Partners will develop guidance on use of various RPPT-related definitions depending on context.

2. Key Question #2: What is the effectiveness of provider-to-provider telehealth for rural patients?

2a. Discussion Summary

Workshop Independent Panel Recommendation #2.1: Conduct comparative evaluation studies of provider-to-provider telehealth services in various settings to identify factors and processes that facilitate or hinder patient outcomes and experiences. Standardize organizational elements (e.g., technology, infrastructure, engagement processes) and outcomes (e.g., transfers, length of stay, episode cost of care, readmissions) across multiple sites to assess impact.

Discussions related to Recommendation 2.1 revealed that many of the Federal Partners funded Project ECHO or similar RPPT models including the CDC, HRSA, NIH, USDA, IHS, and AHRQ. For example:

- In 2020, HRSA awarded 3,850 grants that mentioned telehealth, valued at over \$1B, including awards to two Telehealth Centers of Excellence that aimed to build evidence on the effectiveness of telehealth to inform the Telehealth Network Grant Program, which is disseminating evidence-based programs and strategies (HRSA includes Project ECHO or Project ECHO-like grants in its count of telehealth grants).
- The [ASPE Report to Congress: Current State of Technology-Enabled Collaborative Learning and Capacity Building Models \(2019\)](#) reviews Project ECHO hubs and provides case studies on Project ECHO and ECHO-like models.
- CDC's [Epilepsy Program Project ECHO Epilepsy/Neurology](#) (2019–2021) included 164 primary care physicians, and evaluation results indicated improvements in providers' knowledge and confidence in treating patients with neurological conditions.
- USDA funds emergency room health care providers to develop dedicated telehealth space, acquire telehealth equipment, and implement Project ECHO.
- [AHRQ's ECHO National Nursing Home COVID-19 Action Network](#) established 99 training centers and provided training and mentorship to more than 9,000 nursing homes and 31,000 nursing home staff nationwide.
- The 2020 [HHS Telemedicine Hack](#) provides resources to enhance ambulatory providers' telemedicine implementation.

Federal Partners stated that it may be possible to answer questions on RPPT effectiveness and scalability by sharing metrics and other relevant evaluation efforts across agencies.

- HRSA shared that while one Telehealth Research Center created metrics for all grantees to measure outcomes, others have not standardized metrics across programs. HRSA Telehealth Research Centers may be able to share Office of Management and Budget-cleared measures for RPPT.
- NCI's funding opportunity—NOSI: Telehealth in Cancer Care—is establishing an evidence-base for telehealth and cancer-related care including a focus on health disparities for rural populations.

- Through a collaboration between CMS, the National Quality Forum, and the Measure Applications Partnership Coordinating Committee, a pilot process was developed for [Measure Set Review](#), which creates criteria for evaluating measures within federal programs. The report includes [consensus-based performance measures](#) for rural health care providers.
- AHRQ's Comparison of Asynchronous Telepsychiatry project compares different models of psychiatric consultation in skilled nursing facilities in a 12-month randomized controlled trial.
- AHRQ's Assessing the Significance and Impact of Utilizing a Novel Telemedicine Application in the Delivery of Community-Based Palliative Care in a Rural Seriously Ill Population project tested a novel telemedicine application that incorporates a virtual pharmacist into the delivery of patient-centered palliative care. Pharmacists assessed each patient's medication list, identified drug interactions, and provided tele-counsel to providers or patients when requested.
- AHRQ's Anesthesiology Control Tower: Feedback Alerts to Supplement Treatment (ACTFAST) project developed and tested algorithms to predict postoperative adverse outcomes in anesthesiology. Expert clinicians located outside of the operating room provided attending anesthesiologists with real-time decision support through the use of personal communication devices.

Workshop Independent Panel Recommendation #2.2: Assess the types of RPPT community, state, and health system partnerships that are associated with improved patient and provider outcomes.

Workshop Independent Panel Recommendation #2.3: Evaluate processes through which RPPT partnerships are established and sustained to guide widespread dissemination, especially in underserved communities.

Federal Partners concurred with the need to examine the impact of partnerships on outcomes and discussed a wide variety of partners to engage including:

- [American Hospital Association](#) (AHA) conducts some annual surveys of all hospitals in the United States, which include telehealth questions. It is also possible to partner with the AHA to add questions on selected priority topics such as telehealth infrastructure and use.
- [AHRQ's ECHO National Nursing Home COVID-19 Action Network](#) is focused on delivering training and may have opportunities for research.
- [CMS' Community Health Access and Rural Transformation \(CHART\) model](#) leverages innovative financial arrangements as well as operational and regulatory flexibilities to transform their health care delivery systems and may provide an opportunity to work with communities to assess the impact of partnerships.
- CDC's [Epilepsy Program Project ECHO Epilepsy/Neurology](#) (2019–2021), which works directly with state/local health departments and non-profits, provides some potential to understand the types of partnerships associated with outcomes.

- IHS emphasized the importance of engaging tribal governments because IHS is not the only health provider for Indian country.
- HRSA-supported academic institutions that have Telehealth Research Centers are potential partners.
- VA's Telehealth Research Programs may also be engaged with for this work.
- Health systems that serve primarily rural populations (e.g., Sanford Health, Intermountain Healthcare, and others) may serve as important partners.
- The Department of Transportation is collecting data from the delivery of paramedicine and may be a potential partner.

Recommendations #2.4: Evaluate whether RPPT impacts rural provider recruitment/retention.

Federal Partners stated that RPPT can help providers, especially those in rural areas, receive the support that they need to address the diverse and varied conditions that they treat. Experiences during COVID-19 suggest that providers may be more inclined to seek out support in a telehealth setting. Partnerships with provider organizations (described under Key Question #3) may provide opportunities for further research in this area.

2b. Prioritized Activities for Workshop Key Question 2

- **Short-term**
 - AHRQ and NIH may collaborate and include other agencies, including ONC to share research findings from existing initiatives (including Project ECHO) across agencies to answer questions on RPPT effectiveness and scalability.
 - HRSA will plan for an upcoming Federated Telephone Cooperative (FedTel) meeting to discuss available datasets and determine priority research questions to assess RPPT effectiveness.
 - ODP will include AHRQ grants in the ODP portfolio analysis.
- **Medium-term**
 - HRSA and NCI may share measures for RPPT.
 - Federal Partners may generate new funding opportunities to promote an understanding of RPPT effectiveness and scalability.
- **Long-term**
 - Federal Partners may connect with the array of identified partners to explore opportunities for assessing the impact of partnerships on outcomes.

3. Key Question #3: What strategies are effective and what are the barriers and facilitators to implementation and sustainability of provider-to-provider telehealth in rural areas?

3a. Discussion Summary

Workshop Independent Panel Recommendation #3.1: Engage providers in shaping and evaluating RPPT to better meet community and population needs. Specifically, update several existing telehealth training programs for online delivery to health care workers. Use a standardized curriculum for these training programs. Develop a resource center with staff members to work with each telehealth site to tailor their particular situation, community resources, and partners (e.g., hospital, clinics, health department, home health, emergency medical services (EMS)/rescue, nursing homes).

Several Federal Partners fund training programs and workforce development. The level of guidance on the development of those programs varies.

- HRSA's Bureau of Health Workforce funds hundreds of training programs and much of what they are funding for RPPT is related to the Project ECHO model. HRSA's Telehealth Resource Centers have almost weekly training offerings through one of the 14 centers, and a few include Continuing Medical Education (CME) credits.
- IHS developed a toolkit tailored to the IHS EHR and provided training to federal and tribal partners. Outside CME credits are provided for telehealth trainings.
- The [TRAIN Learning Network](#) offers a number of telehealth trainings; some with CMEs. In partnership with HRSA's Telehealth Research Centers, the network provided large-scale training and follow-up support during the pandemic with a 10-week session reaching 1,700 live participants (i.e., the [HHS Telemedicine Hack](#)), which may offer a model to replicate.
- [AHRQ's ECHO National Nursing Home COVID-19 Action Network](#) (mentioned above) conducted more than 5,000 sessions. Approximately, 85% of the nursing homes reported making changes as a result of the training. AHRQ believes that the network is a scalable practice improvement solution.
- The VA's training program on conducting telehealth visits, which is focused on fellows and residents, was adopted by the Department of Defense and the American Association of Medical Colleges.

Federal Partners indicated the value of engaging providers and suggested potential partnerships with the following associations to explore the possibility of adding telehealth questions to existing surveys and other potential collaborations:

- American College of Physicians' [Council of Subspecialty Societies](#) may serve as a mechanism to reach multiple subspecialties at one time
- American Academy of Pediatrics' [Pediatric Research in Office Settings](#)
- [American Academy of Family Physicians](#)
- [Association of Schools and Programs of Public Health](#)
- [American College of Emergency Physicians](#)

- [National Rural Health Association](#)
- [American Medical Informatics Association](#)
- [Association of American Medical Colleges](#)
- [American College of Obstetricians and Gynecologists](#)
- Medical schools that focus on rural health

Federal Partners expressed interest in offering support to create NOFOs focused on the development of quality improvement standards for telehealth and the development of interprofessional education (IPE) modules that may be used by academic programs or for Board or other professional licensure or recertification.

Workshop Independent Panel Recommendation #3.2: Study the impact of leveraging infrastructure resources (via [Practice-Based Research Networks](#) [PBRNs] or the Center for Translational and Science Awards [CTSA] Program) and implementing strategies (e.g., open source electronic medical records and cell phone connectivity) to reduce known barriers to facilitate RPPT sustainability.

The Federal Partners stated that there are nearly 200 AHRQ primary care PBRNs that may be potential collaborators for generating studies to understand the impact of leveraging infrastructure resources. Further, two of the 61 NIH-funded CTSA program centers are focused on Project ECHO. Federal Partners discussed that both PBRNs and CTSA program centers have extensive networks that may provide fertile ground for research.

Workshop Independent Panel Recommendation #3.3: Ensure that studies capture and assess the impact of environmental factors (e.g., telehealth parity laws, state licensure requirements) and health system factors (e.g., multi-site integrated health systems, regional health system providers, large telehealth companies) that may facilitate RPPT sustainability.

Federal Partners concurred with the importance of examining environmental and health system factors that facilitate RPPT sustainability and discussed the following:

- HRSA's [Licensure Portability Program](#) provides funding for state licensing boards to develop and implement state policies that reduce statutory and regulatory barriers to telemedicine. While licensure requirements are relevant for hiring, they may not be relevant for RPPT since it is not patient care. Further exploration is needed.
- Since 2018, the VA is permitted to provide telehealth services across state lines and that has contributed to a tremendous increase in telehealth uptake. It may be possible to examine uptake prior to and after the passing of the licensure legislation.

Workshop Independent Panel Recommendation #3.4: Examine socio-cultural factors (e.g., understanding of the rural context, interpersonal trust amongst providers) that may facilitate uptake, outcomes, and sustainability.

Federal Partners highlighted the importance of examining socio-cultural factors and discussed exploring the following partnerships and collaborations to further work in this area:

- HRSA, IHS, and Department of Health and Human Service's (HHS) Office of Minority Health (OMH) expressed interest in collaborating to form a learning collaborative among professional associations such as the [National Hispanic Medical Association](#), [National Council of Asian Pacific Islander Physicians](#), [Black Healthcare and Medical Association](#), and others to explore socio-cultural factors that may facilitate RPPT uptake, outcomes, and sustainability.
- CDC is linking health data to social determinants of health and community context through a number of activities including the [PLACES: Local Data for Better Health](#) project that provides modeled small area estimates of 29 health indicators for all U.S. counties, including census tracts and ZIP code tabulation areas.
- AHRQ's [Social Determinants of Health Database](#) provides county-level percentages of households with computers and smartphones as well as percentages of households with access to any type of broadband.
- The Census Bureau's [Enhancing Health Data](#) program may provide diverse data sources on health such as variables related to social determinants of health.
- Federal Partners discussed the possibility of connecting with the CDC's [Consortium for Data Modernization](#), which provides diverse perspectives on the priorities and strategies for modernizing public health data and surveillance.

3b. Prioritized Activities for Workshop Key Question 3

- **Short-term**
 - HRSA will plan for an upcoming FedTel meeting to examine the full array of RPPT-related training programs offered by federal agencies.
 - OMH, HRSA, and IHS will collaborate on next steps to form a learning collaborative of professional associations of underserved groups to explore socio-cultural factors that facilitate RPPT.
- **Medium-term**
 - Federal Partners will explore potential provider partnerships and the possibility of adding telehealth questions to existing national provider surveys.
 - Federal Partners will explore partnering with PBRNs and CTSA program centers to shape and evaluate RPPT.
 - AHRQ may consider collaborations with the Census Bureau to examine socio-cultural factors that facilitate RPPT.

- **Long-term**
 - Federal Partners will explore creating NOFOs for the development of quality improvement standards for telehealth and IPE modules that may be used by academic programs or for Board recertification.
 - Federal Partners will explore whether licensure requirements are relevant for facilitating RPPT.

4. Key Question #4: What are the methodological weaknesses of studies of provider-to-provider telehealth for rural patients and what improvements in study design (e.g., focus on relevant comparisons and outcomes) might increase the impact of future research?

4a. Discussion Summary

Workshop Independent Panel Recommendation #4.1: Consider use of conceptual frameworks with appropriately defined elements and alternative study designs (e.g., observational, multisite, regional, longitudinal with baseline data) when more rigorous designs like randomized controlled trials (RCTs) are infeasible. Use statistical approaches (e.g., propensity score, regression-based matching, and instrumental variables) to minimize selection bias and try to address confounding effects. Analyses augmented by sensitivity analyses can provide insights into the variability of model estimates and results associated with specific types of bias.

The Federal Partners stated that a logic model illustrating the resources required to implement a program as well as the activities and outputs of a program would be helpful to prioritize research questions. CDC offered resources for logic models and applying [systems thinking](#) in evaluation design to identify the components that matter most.

- An upcoming [FedTel: Cross Federal work group on telehealth meeting](#) (co-chaired by HRSA and National Aeronautics and Space Administration [NASA] staff) may be used to initiate further discussions about priority questions, available datasets, and next steps.
 - Prioritizing research questions will guide the selection of outcomes.
 - Available data will guide the selection of appropriate methods (see discussion of Recommendations #4.2 and 4.3 below).
- When determining priorities, Federal Partners will consider upcoming policy changes or current trends such as the increasing wide-scale dissemination of broadband.

Workshop Independent Panel Recommendation #4.2: Use qualitative and mixed methods that engage rural patients and providers to understand attitudes, constraints, and behaviors that affect RPPT implementation. Minimize limitations of qualitative studies (e.g., small sample sizes, selection bias) by using well-designed sampling procedures and employing mixed methodologies to triangulate qualitative and quantitative results.

Workshop Independent Panel Recommendation #4.3: Adopt appropriate methods to characterize and model the institutional context (e.g., provider/hospital resources, capacity, network relationships, broadband) and geographic/community context of RPPT implementation. Consider using multilevel, spatial, and panel methods to account for the complex covariance structures associated with contextual effects.

The Federal Partners indicated that appropriate methods need to be matched to the type of available data. Large data resources were discussed including clinical tools such as EHRs, which may have data quality issues since they are not designed specifically for research. The following data resources were identified during the discussion.

- HRSA’s [Health Center Program Uniform Data System \(UDS\)](#), which is the system that awardees are required to use to report core information on health center care delivery, which includes a number of telehealth questions. Health center level data is only available annually, which is limiting in this rapidly changing environment. However, core information may be useful for future RPPT research. Adding new questions to the UDS has a several year lead time before information becomes available.
- Several of the CDC’s national surveys that include telehealth questions (described under Recommendation #1.5) may offer opportunities to consolidate across data sets.
- CMS may contribute patient level data; however, provider-to-patient telehealth data is easier to provide than RPPT.
 - Many patients only experience care once, so comparison groups and propensity scoring are needed.
 - Data may be purchased through the [Virtual Research Data Center \(VRDC\)](#) or by partnering with someone at CMS.
- NIH’s [National COVID Cohort Collaborative \(N3C\)](#) is a partnership that supports CTSA program hubs, the National Center for Data to Health, and the Institutional Development Award Networks for Clinical and Translational Research to use clinical data to answer research questions related to addressing the pandemic.
- The VA also has datasets that may be leveraged.
- Multiple agencies may be able to share research findings from existing initiatives (including Project ECHO) to answer questions on RPPT effectiveness and scalability (described under Recommendation #2.1).
- Census Bureau’s [American Community Survey](#) may be a data source.
- [AHRQ’s MEPS](#), which implemented a telehealth module in spring 2021, will have data available in 2023.

Federal partners stated that multilevel modeling and other complex designs will be needed.

- One suggestion from the Food and Drug Administration (FDA) was to include pragmatic control groups and allow cross over as needed in a manner similar to [Real World Evidence](#) (RWE) trials.
- While physician notes in EHRs are underutilized, machine learning may make future analyses more feasible.

4b. Prioritized Activities for Workshop Key Question 4

- **Short-term**
 - HRSA will plan to discuss available datasets, determine priority research questions, and strategize on next steps at an upcoming/future FedTel meeting.

5. Next Steps and Concluding Remarks

ODP anticipates that the P2P workshop independent panel report and systematic evidence review will be published in tandem and widely disseminated following journal publication. This report will be posted on the ODP website and widely disseminated once it is finalized. Federal Partners were asked to further disseminate the publications and share any follow-up agency activities that develop in support of the panel's recommendations.

ODP described the importance of assessing the impact of the P2P program. Impact assessments for the P2P program focus on capturing whether the reports have promoted investments, the impact on the science, promotion of new partnerships and collaborations, and the reach of the efforts including representation from professional and community groups.

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APPENDIX A

NATIONAL INSTITUTES OF HEALTH PATHWAYS TO PREVENTION (P2P) PROGRAM: IMPROVING RURAL HEALTH THROUGH TELEHEALTH-GUIDED PROVIDER-TO-PROVIDER COMMUNICATION FEDERAL PARTNERS MEETING ROSTER

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APPENDIX B
NATIONAL INSTITUTES OF HEALTH PATHWAYS TO PREVENTION (P2P) PROGRAM:
IMPROVING RURAL HEALTH THROUGH TELEHEALTH-GUIDED PROVIDER-TO-PROVIDER
COMMUNICATION
WORKSHOP INDEPENDENT PANEL RECOMMENDATIONS

Recommendations for Key Question #1: What is the uptake of different types of provider-to-provider telehealth in rural areas?

1. Develop a consistent definition of different types of RPPT that can be applied across programs, providers, and organizations. The definition should include broad examples of telehealth modalities including synchronous and asynchronous, as the latter (store and forward, audio only, email, and texting) may be more important to rural settings. An HRSA-funded Telehealth Resource Center could serve as the convener of key stakeholders (including federal/state government and the private sector) to develop a consensus-based definition of RPPT.
2. Engage payors and providers in future research to leverage billing data and help capture unbilled RPPT.
3. Once uptake across rural areas has been quantified, expand research to examine (1) the effect of hospital and practice consolidation on uptake, (2) whether RPPT improves adoption of value-based purchasing (VBP), or VBP and other business models encourage uptake, and (3) if smaller hospitals or providers are left out of partnerships, integrated systems, ACO networks, or other value-based models of care.
4. Examine the extent to which lack of reliable broadband affects uptake.
5. Establish a national and/or regional database of models for the uptake of RPPT and needed infrastructure.

Recommendations for Key Question #2: What is the effectiveness of provider-to-provider telehealth for rural patients?

1. Conduct comparative evaluation studies of provider-to-provider telehealth services in various settings to identify factors and processes that facilitate or hinder patient outcomes and experiences. Standardize organizational elements (e.g., technology, infrastructure, engagement processes) and outcomes (e.g., transfers, length of stay, episode cost of care, readmissions) across multiple sites to assess impact.
2. Assess the types of RPPT community, state, and health system partnerships that are associated with improved patient and provider outcomes.
3. Evaluate processes through which RPPT partnerships are established and sustained to guide widespread dissemination, especially in underserved communities.
4. Evaluate whether RPPT impacts rural provider recruitment/retention.

Recommendations for Key Question #3: What strategies are effective and what are the barriers and facilitators to implementation and sustainability of provider-to-provider telehealth in rural areas?

1. Engage providers in shaping and evaluating RPPT to better meet community and population needs. Specifically, update several existing telehealth training programs for online delivery to health care workers. Use a standardized curriculum for these training programs. Develop a resource center with staff members to work with each telehealth site to tailor their particular situation, community resources, and partners (e.g., hospital, clinics, health department, home health, EMS/rescue, nursing homes).
2. Study the impact of leveraging infrastructure resources (via Practice-Based Research Networks (PBRN) or the Center for Translational and Science Awards (CTSA) Program) and implementing strategies (e.g., open source Electronic Medical Records and cell phone connectivity) to reduce known barriers to facilitate RPPT sustainability.
3. Ensure that studies capture and assess the impact of environmental factors (e.g., telehealth parity laws, state licensure requirements) and health system factors (e.g., multisite integrated health systems, regional health system providers, large telehealth companies) that may facilitate RPPT sustainability.
4. Examine socio-cultural factors (e.g., understanding of the rural context, interpersonal trust amongst providers) that may facilitate uptake, outcomes, and sustainability.

Recommendations for Key Question #4: What are the methodological weaknesses of studies of provider-to-provider telehealth for rural patients and what improvements in study design (e.g., focus on relevant comparisons and outcomes) might increase the impact of future research?

1. Consider use of conceptual frameworks with appropriately defined elements and alternative study designs (e.g., observational, multisite, regional, longitudinal with baseline data) when more rigorous designs like RCTs are infeasible. Use statistical approaches (e.g., propensity score, regression-based matching, and instrumental variables) to minimize selection bias and address confounding effects. Analyses augmented by sensitivity analyses can provide insights into the variability of model estimates and results associated with specific types of bias.
2. Use qualitative and mixed methods that engage rural patients and providers to understand attitudes, constraints, and behaviors that affect RPPT implementation. Minimize limitations of qualitative studies (e.g., small sample sizes, selection bias) by using well-designed sampling procedures and employing mixed methodologies to triangulate qualitative and quantitative results.
3. Adopt appropriate methods to characterize and model the institutional context (e.g., provider/hospital resources, capacity, network relationships, broadband) and geographic/community context of RPPT implementation. Consider using multilevel, spatial, and panel methods to account for the complex covariance structures associated with contextual effects.



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