Data Access and Management Challenges/ Lessons Learned

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NIH PRAGMATIC TRIALS COLLABORATORY
Rethinking Clinical Trials®

Session Goals

- Highlight resources and previous work/discussion from NIH Collaboratory
- Hear from trial investigators about challenges with data access, planning for data management, & data sharing
- Review methods for addressing issues related to data security, privacy, & approval for data use

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2023 NIH Data Management and Sharing Policy

The NIH has issued a Data Management and Sharing (DMS) policy, effective January 25, 2023, to promote the sharing of scientific data. There are multiple benefits to sharing scientific data, and ultimately this will facilitate the development of treatments and products that improve human health.

Under the DMS policy, NIH intramural investigators wi

- Prospectively plan for the managing and sharin
- Submit a DMS plan
- Comply with the approved plan

This page summarizes the requirements for data man
investigators, and provides links to guidance for comp

Journal Editors Propose New Requirements for Data Sharing

On January 20, 2016, the International Committee of Medical Journal Editors (ICMJE) published an editorial in 14 major medical journals in which they propose that clinical researchers must agree to share the deidentified data set used to generate results (including tables, figures, and appendices or supplementary material) as a condition of publication in one of their member journals no later that six months after publication. By changing the requirements for manuscripts they will consider for publication, they aim to ensure reproducibility (independent confirmation of results), foster data sharing, and enhance transparency. To meet the new requirements, authors will need to include a plan for data sharing as a component of clinical trial registration that includes where the data will be stored and a mechanism for sharing the data.

Evolving Standards for Data Reporting and Sharing

As early as 2003, the National Institutes of Health published a data sharing policy for research funded through the agency, stipulating that "Data should be made as widely and freely available as possible while safeguarding the privacy of participants, and protecting confidential and proprietary data." Under this policy, federally funded studies receiving over $500,000 per year were required to have a data sharing plan that describes how data will be shared, that shared data be available in a usable form for some extended period of time, and that the least restrictive method for sharing of research data is used.

In 2007, Congress enacted the Food and Drug Administration Amendments Act. Section 801 of the Act requires study sponsors to report certain kinds of clinical trial data within a specified inter
is made available to the public. Importantly, this requirement applied to an
trial" (typically, an interventional clinical trial), regardless of whether it was
or supported by industry or academic funding. However, recent academic a
demonstrated that overall compliance with FDAAA requirements is relative

In 2015, the Institute of Medicine (now the National Academy of Medicine)
responsible sharing of clinical trial data to strengthen the evidence base, al
additional analyses. In addition, these efforts are being complemented by
to clinical trial data and improving results reporting, including the Yale Univ
joint Duke Clinical Research Institute/Bristol-Myers Squibb Supporting Ope
initiative (SOAR), and the international AllTrials project.

Viewpoint

JAMA Network

August 28, 2018

Data Enclaves for Sharing Information Derived From Clinical and Administrative Data

Richard Platt, MD, MS[1]; Tracy Lieu, MD, MPH[2]

» Author Affiliations

JAMA. 2018;320(8):753-754. doi:10.1001/jama.2018.9342

Annals of Internal Medicine — EDITORIAL

Sharing Clinical Trial Data: A Proposal From the International Committee of Medical Journal Editors

The International Committee of Medical Journal Editors (ICMJE) believes that there is an ethical obligation to responsibly share data generated by interventional clinical trials because participants have put themselves at risk. In a growing consensus, many funders around the world–foundations, government agencies, and industry–now mandate data sharing. Here we outline ICMJE's proposed requirements to help meet this obligation. We encourage feedback on the proposed requirements. Anyone can provide feedback at www.icmje.org by 18 April 2016.

The ICMJE defines a clinical trial as any research project that prospectively assigns people or a group of people to an intervention, with or without concurrent comparison or control groups, to study the cause-and-effect relationship between a health-related intervention and a health outcome. Further details may be found in the *Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals* at www.icmje.org.

As a condition of consideration for publication of a clinical trial report in our member journals, the ICMJE proposes to require authors to share with others the deidentified individual-patient data (IPD) underlying the results presented in the article (including tables, figures, and appendices or supplementary material) no later than 6 months after publication. The data underlying the results are defined as the IPD required to reproduce the article's findings, including necessary metadata. This requirement will go into effect for clinical trials that begin to enroll participants beginning 1 year after the ICMJE adopts its data-sharing requirements.*

Enabling responsible data sharing is a major endeavor that will affect the fabric of how clinical trials are planned and conducted and how their data are used. By changing the requirements of the manuscripts we will consider for publication in our journals, editors can help foster this endeavor. As editors, our direct influence is logically, and practically, limited to those data underpinning the results and analyses we publish in our journals.

The ICMJE also proposes to require that authors include a plan for data sharing as a component of clinical trial registration. This plan must include where the researchers will house the data and, if not in a public repository, the mechanism by which they will provide others access to the data, as well as other data-sharing plan elements outlined in the 2015 Institute of Medicine Report (e.g., whether data will be freely available to anyone upon request or only after application to and approval by a learned intermediary, whether a data use agreement will be required) (1). ClinicalTrials.gov has added an element to its registration platform to collect data-sharing plans. We encourage other trial registries to similarly incorporate mechanisms for the registration of data-sharing plans. Trialists who want to publish in ICMJE member journals (or nonmember journals that choose to follow these recommendations) should choose a registry that includes a data-sharing plan element as a specified registry item or allows for its entry as a free-text statement in a miscellaneous registry field. As a condition of consideration for publication in our member journals, authors will be required to include a description of the data-sharing plan in the submitted manuscript. Authors may choose to share the deidentified IPD underlying the results presented in the article under less restrictive, but not more restrictive, conditions than were indicated in the registered data-sharing plan.

ICMJE already requires the prospective registration of all clinical trials prior to enrollment of the first participant. This requirement aims, in part, to prevent selective publication and selective reporting of research outcomes, and to prevent unnecessary duplication of research effort. Including a commitment to a data-sharing plan is a logical addition to trial registration that will further each of these goals. Prospective trial registration currently includes documenting the planned primary and major secondary end points to be assessed, which enables identification of incomplete reporting as well as post hoc analyses. Declaring the plan for sharing data prior to their collection will further enhance transparency in the conduct and reporting of clinical trials by exposing when data availability following trial completion differs from prior commitments.

Sharing clinical trial data, including deidentified IPD, requires planning to ensure appropriate ethics committee or institutional review board approval and the informed consent of study participants. Accordingly, we will defer these requirements for 1 year to allow investigators, trial sponsors, and regulatory bodies time to plan for their implementation.

Just as the confidentiality of trial participants must be protected (through the deidentification of IPD), and the needs of those reasonably requesting data met (through the provision of useable data), the reasonable rights of investigators and trial sponsors must also be protected. ICMJE proposes the following to safeguard these rights. First, ICMJE editors will not consider the deposition of data in a registry to constitute prior publication. Second, authors of secondary analyses using these shared data must attest that their use was in accordance with the terms (if any) agreed to upon their receipt. Third, they must reference the source of the

This article was published at www.annals.org on 26 January 2016.
* The ICMJE plans to adopt data-sharing requirements after considering feedback received to the proposals made here.

https://rethinkingclinicaltrials.org/news/journal-editors-propose-new-requirements-for-data-sharing/

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Closeout Data and Resource Sharing Checklist

Purpose

As part of the NIH Pragmatic Trials Collaboratory's commitment to sharing, all Collaboratory trials are expected to share data and resources, such as protocols, phenotypes, videos, training materials, consent documents, and recruitment materials. We recommend that elements of a final data sharing package include the items listed in the checklist below. If an element will not be included in the data sharing package, please provide a brief explanation for the omission. Resources can be housed in the NIH Collaboratory Knowledge Repository (KR), in a repository (i.e., GitHub), or on a study website. We will link to the materials from the Living Textbook. To request posting of materials to the KR, contact nih-collaboratory@dm.duke.edu.

Note: There will **not** be a dedicated space on the NIH Collaboratory website for posting analytic datasets; rather, we will post a hyperlink to the data sharing repository chosen by each trial. In the Data Sharing Information Document, the EHR Core provides a partial list of existing data sharing platforms. The accompanying Data Sharing Information Document also contains information on data sharing requirements for the NIH Pragmatic Trials Collaboratory, NIH, and medical journals; information on data sharing mechanisms and platforms; and examples from Collaboratory Trials.

Prepared by: The NIH Collaboratory Coordinating Center
Version: February 28, 2024

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Data and Resource Sharing Checklist

Background

All NIH Collaboratory Trials will be expected to review this checklist as part of the onboarding process so they understand what will be expected. They will complete the checklist at closeout.

As part of the NIH Pragmatic Trials Collaboratory's commitment to sharing, all of its trials are expected to share data and resources, such as protocols, phenotypes, videos, training materials, consent documents, and recruitment materials. We recommend that elements of a final data sharing package include the items listed in the checklist below. If an element will not be included in the data sharing package, please provide a brief explanation for the omission. Resources can be housed in the NIH Collaboratory Knowledge Repository (KR), on a repository (eg, GitHub), or on a study website. We will link to the materials from the Living Textbook on each trial's webpage and through a separate Data and Resource Sharing section. To request posting of materials to the KR, contact nih-collaboratory@dm.duke.edu.

Note: There will **not** be a dedicated space on the NIH Collaboratory website for posting analytic datasets; rather, we will post a hyperlink to the data sharing repository chosen by each trial. In the Data Sharing Information Document, the EHR Core provides a partial list of existing data sharing platforms. The accompanying Data Sharing Information Document also contains information on data sharing requirements for the NIH Pragmatic Trials Collaboratory, NIH, and medical journals; information on data sharing mechanisms and platforms; and examples from NIH Collaboratory Trials.

Data and Resource Sharing Checklist for Plan Development – Part 1

Data and Resource Sharing Checklist
1. Trial information
Trial name and acronym:
Checklist completed by:
Date:
Link to ClinicalTrials.gov registration:
Link to trial website:

Prepared by: NIH Collaboratory Coordinating Center
Version: March 26, 2024

https://dcricollab.dcri.duke.edu/sites/NIHKR/KR/Onboarding%20Data%20and%20Resource%20Sharing%20Informational%20Document.pdf

https://dcricollab.dcri.duke.edu/sites/NIHKR/KR/Closeout%20Data%20and%20Resource%20Sharing%20Checklist%20(pdf).pdf

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Design

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- Assessing Feasibility
- Acquiring Real-World Data
- Assessing Fitness-for-Use of Real-World Data
- Study Startup

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- Monitoring Intervention Fidelity and Adaptations
- Patient-Reported Outcomes
- Clinical Decision Support

Dissemination

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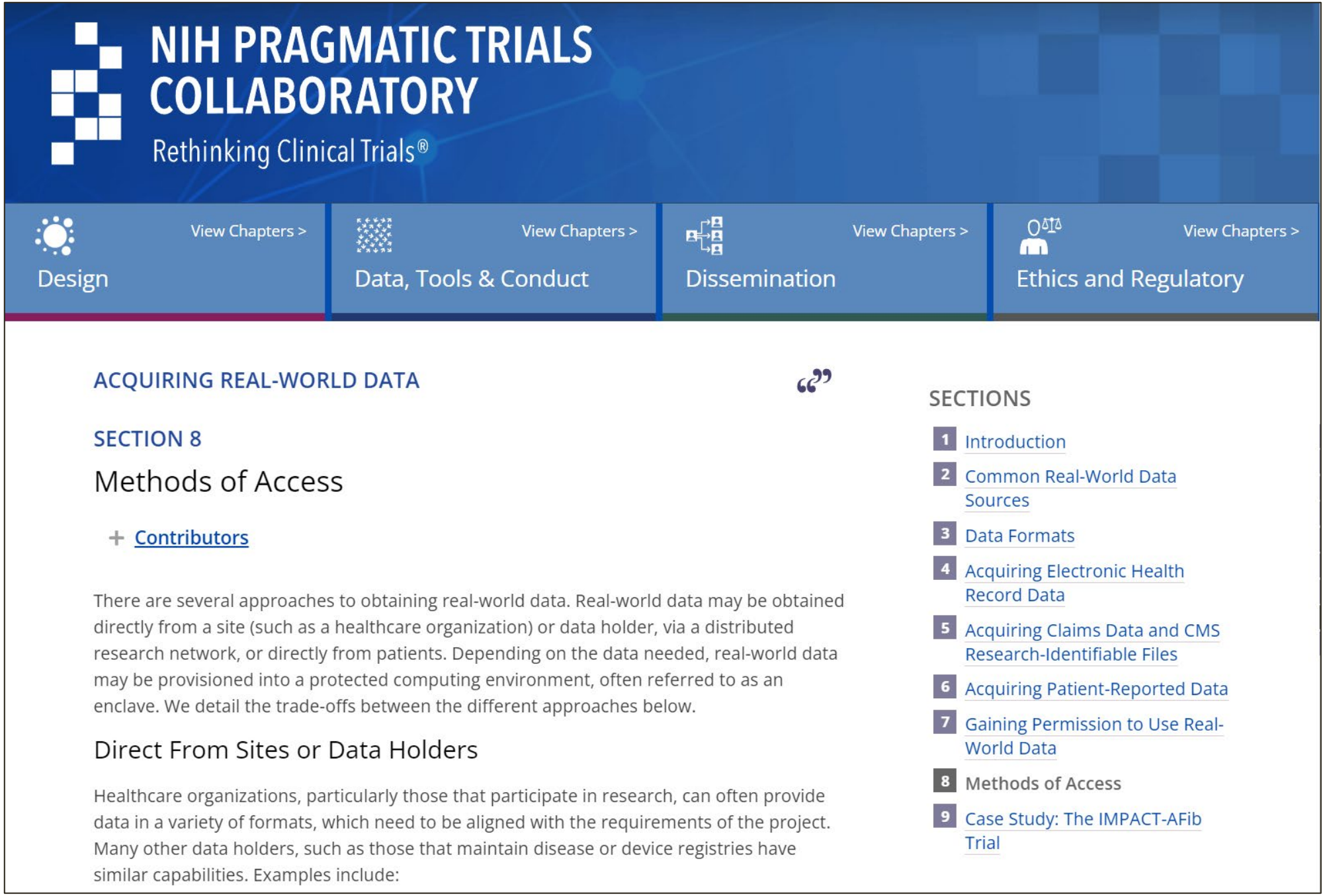
- Mobile Health
- Electronic Health Records–Based Phenotyping
- Navigating the Unknown

Ethics and Regulatory

View Chapters >

https://rethinkingclinicaltrials.org/welcome-to-rethinking-clinical-trials/



https://rethinkingclinicaltrials.org/chapters/conduct/acquiring-real-world-data/methods-of-access/

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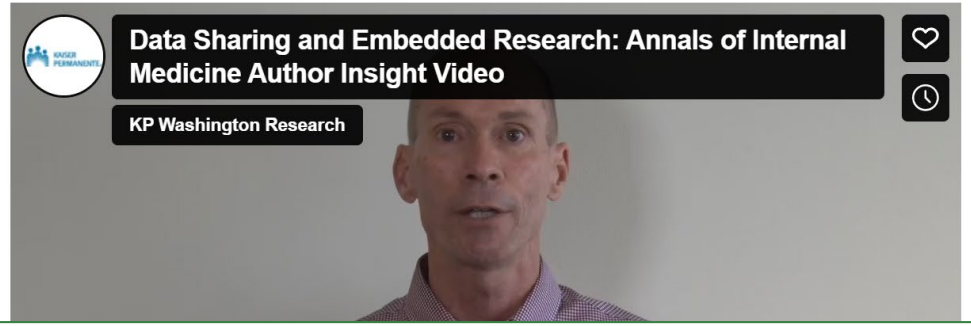
DATA SHARING AND EMBEDDED RESEARCH

SECTION 1

Introduction

+ Contributors

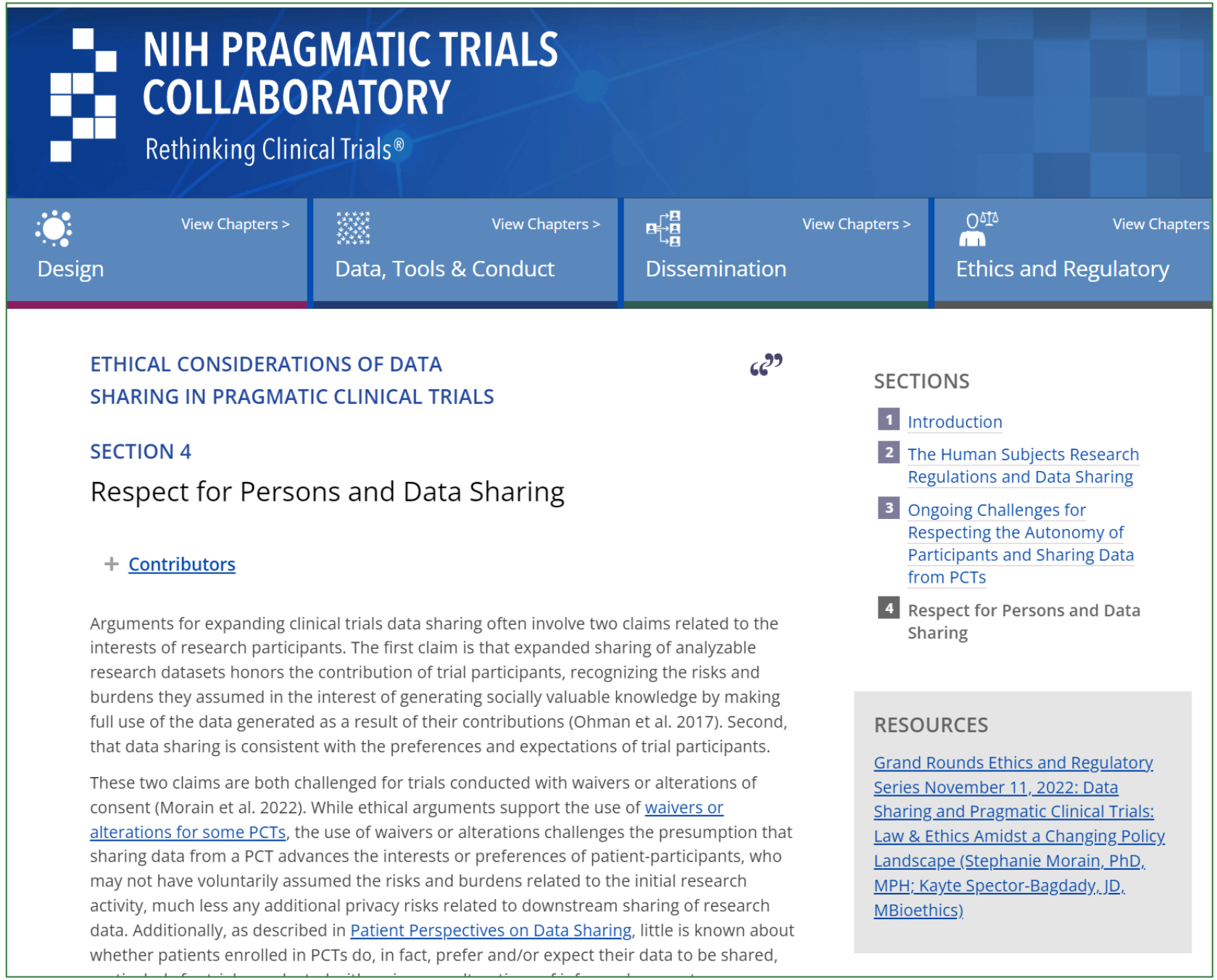
The contributors to this chapter initially wrote an opinion piece for *Annals of Internal Medicine* (Simon et al. 2017) on data sharing. In this chapter, we expand on the ideas presented there and frame them using lessons learned from the Collaboratory.



SECTIONS

RESOURCES

https://rethinkingclinicaltrials.org/chapters/dissemination/data-share-top/data-sharing-and-embedded-research-introduction/



https://rethinkingclinicaltrials.org/chapters/ethics-and-regulatory/ethical-considerations-of-data-sharing-in-pragmatic-clinical-trials/respect-for-persons-and-data-sharing/

Grand Rounds

Clinical Trial Data Sharing: Perspectives from Participants and PCORI, July 2018
Michelle M. Mello, JD, PhD, Steven Goodman, MD, MHS, PhD

Assessing and Reducing Risk of Re-identification When Sharing Sensitive Research Datasets, Sept. 2018
Greg Simon, MD, MPH, Deven McGraw, JD, MPH, Khaled El Emam, PhD

Preparing for Clinical Trial Data Sharing and Re-use: The New Reality for Researchers, September 2019
Rebecca Li, PhD, Frank Rockhold, PhD

Data Sharing and Pragmatic Clinical Trials: Law & Ethics Amidst a Changing Policy Landscape, Nov. 2022
Stephanie Morain, PhD, MPH; Kayte Spector-Bagdady, JD, Mbioethics

The Yale Open Data Access (YODA) Project: 10 Years of Clinical Trial Data Sharing, April, 2024
Joseph S. Ross, MD, MHS

Panelists

- Richard Skolasky, ScD
  - Advancing Rural Back Pain Outcomes through Rehabilitation Telehealth (ARBOR-Telehealth)
- Ed Vasilevskis, MD
  - Behavioral Economic and Staffing Strategies to Increase Adoption of the ABCDEF Bundle in the ICU (BEST-ICU)

Advancing Rural Back Pain Outcomes through Rehabilitation Telehealth (ARBOR-Telehealth)

MPIs: Richard L. Skolasky, ScD; Kevin McLaughlin, DPT

Funded by National Institute of Arthritis and Musculoskeletal and Skin Diseases (UG3AR083838)

Overview

Low Back Pain (LBP)

- Most common cause of disability in the US
- Largest driver of US healthcare spending growth
- Number one reason for opioid prescriptions

Physical Therapy (PT)

- First line treatment
- Cost-effective in reducing disability and pain
- Decreased risk of opioid use
- 7-13% of patients attend PT
  - Barriers surrounding travel, missed work time, etc.

Overview

Rural Communities

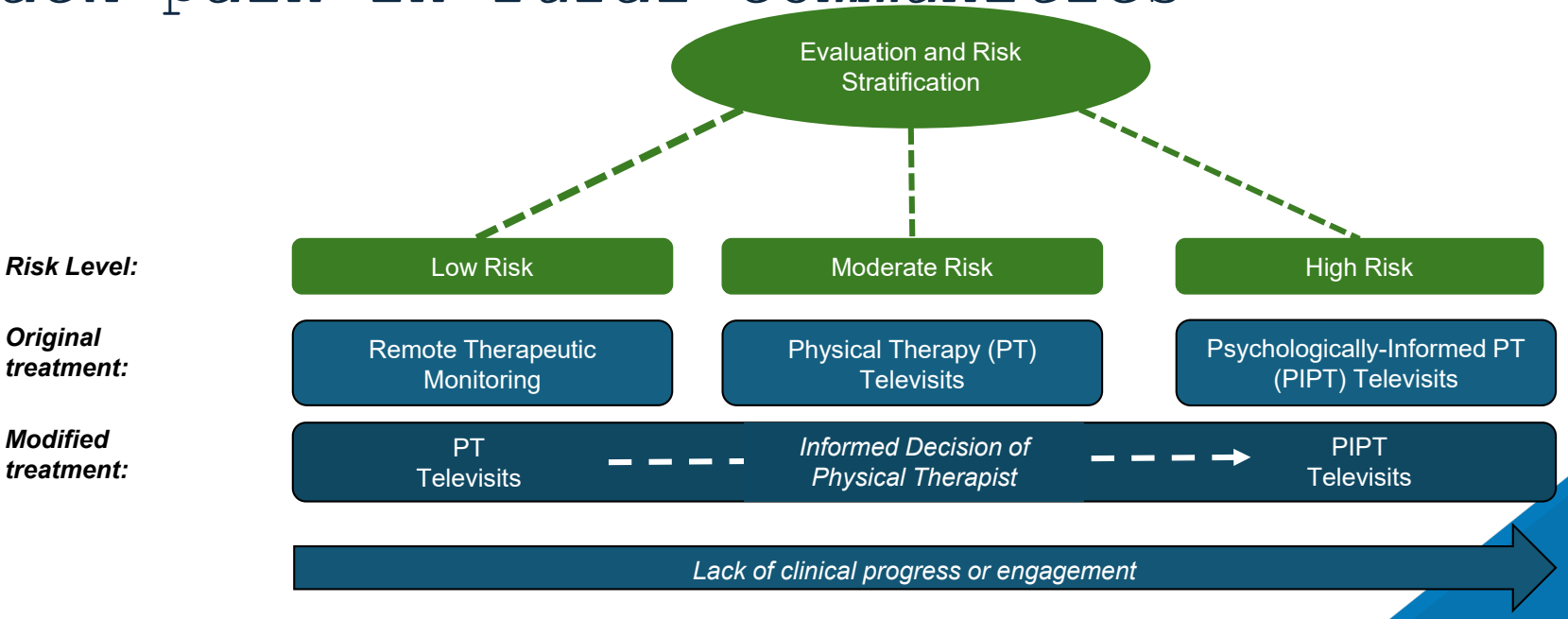
- 40% fewer therapists per capita
  - Longer distance to travel
- Fewer patients attend PT within 30 days of onset
- Higher rates of opioid use

Telehealth

- PT provided by televisits for first time during pandemic
- Reimbursed by CMS and most commercial insurances
- New code for remote therapeutic monitoring (RTM)
  - Asynchronous telerehabilitation using

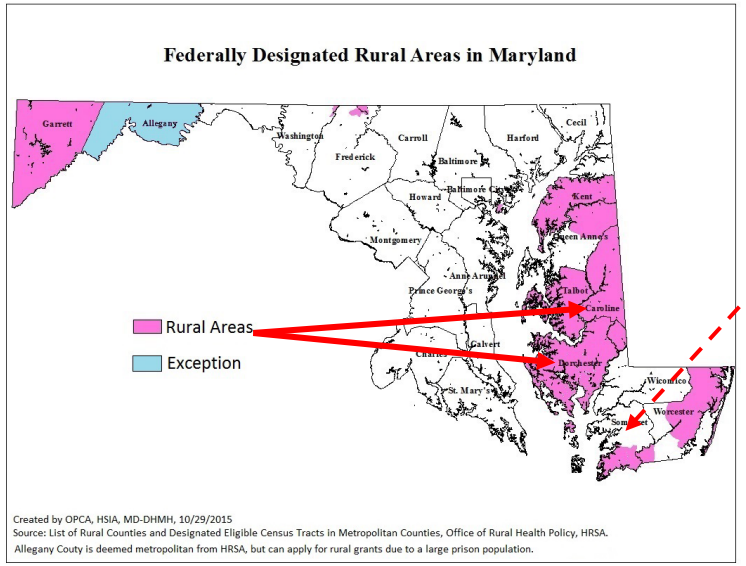
Overall Objective

- To compare the effectiveness of a risk-informed telerehabilitation model to patient education to improve outcomes in patients with chronic low back pain in rural communities



Study Design

- Randomized clinical trial
  - RiSC Telerehabilitation
    - Delivered by TidalHealth
  - Patient Education
    - Delivered via website
- Patients
  - 434 with chronic LBP
    - No spine surgery past 12m
    - Primary care office visit
  - 8 weeks active treatment
  - 12 months follow-up



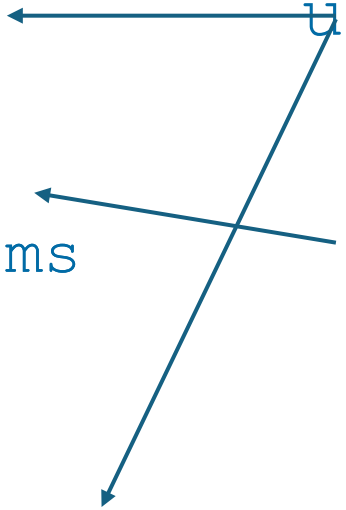
Nearest PT Clinic

Caroline County, MD
- *33,593 (pop'n est. 2023 Census)*
- *80.7% White, 13.8% Black, 8.9% Hispanic*
- *17.7% Age 65+ years*

Dorchester County, MD
- *32,897 (pop'n est. 2023 Census)*
- *66.4% White, 29.2% Black, 6.4% Hispanic*
- *23.1% Age 65+ years*

Data Access & Management

- Acquiring "real world data"
  - Electronic health records
  - Administrative claims
  - Patient-reported outcomes
  - Patient-generated health data
  - Medical and device registries
  - Environmental factors
  - Social determinants of health
- Assessing "Fit for use"
  - *Secondary source* – data collected for purposes other than research
  - *Primary source* – data collected solely for research purposes



Potential Facilitators – Data Access

Recruitment Strategy

- Electronic Health Record (EHR)
  - Recruitment
  - Intervention adherence
  - Fidelity assessment
  - Healthcare use
- Web-based education
  - Intervention adherence

Assessment Strategy

- REDCap Platform
  - Telephone-based collection
  - E-mail reminder
  - *Use participant preferred methods*
  - *Postcard and other reminders of upcoming assessments*

Potential Facilitators – Data Access

Treatment Strategy

- Web-based education
  - Intervention adherence
- Risk-informed PT
  - EHR documentation

Potential Barriers – Data Access

Recruitment Strategy

- EHR-based strategy
  - Technical challenges of sFTP transfer on monthly/daily basis
  - Epic programming team at partner institution

Assessment Strategy

- EHR-based strategy
  - Secondary use of data collected for administrative needs
- REDCap platform
  - Facility with older patients

Data Sharing

- *What is your current data sharing plan*
  - All de-identified individual level data, with supporting documentation, will be made publicly available in compliance with NIH, Collaboratory, and institutional guidelines
- *Do you foresee any obstacles?*
  - We may be limited in sharing data on an un-restricted access registry from the UG3 phase, as this data will be collected under a waiver of informed consent (this will not be an obstacle in the UH3 Clinical Trial, as we will obtain informed consent from all participants)
- *What information did the IRB require about how the data would be shared beyond the study in order to waive informed consent, if applicable?*
  - We will be applying for a waiver of informed consent in order to conduct Model Recruitment (identifying likely eligible patients seen in the past 12 months from the EHR and performing data check on a random sample of 250 patients via medical chart abstraction)

Potential Facilitations – Data Sharing

Institutional Support

- Sheridan Libraries
  - Dedicated team to support data sharing plan and implementation

NIH Collaboratory

- Working group
  - Shared expertise and support

Institutional Review Board

- Type of information disclosed
  - Limit to essential information to address research questions
- Consent
  - Informed consent to contain broad data sharing language
- Risk of breach in data security

Potential Barriers – Data Sharing

Technical Structures

- Public Archive
  - Data obtainable for any use
  - De-identification
- Private Archive
  - Data obtained by authorized users
    - Honest broker
  - Agreement regarding protection and use of transferred data

Institutional Review Board

- Waiver of consent
  - To collect potentially eligible patients
- Informed consent
  - Screening, baseline, follow-up
  - Healthcare use
- *Need to establish a firewall between these datasets*

Study Team

- Johns Hopkins
  - Richard L. Skolasky, Sc.D. (MPI)
  - Kevin McLaughlin, D.P.T. (MPI)
  - Elizabeth Colantuoni, Ph.D.
  - Stephen Wegener, Ph.D.
  - Tricia Kirkhart
- MedStar Health Research Institute
  - Kisha Ali, Ph.D.
- TidalHealth
  - Robert Joyner, Ph.D.
  - Jill Stone, D.P.T.
  - M. Patricia Chance, CRRC
  - Terri Hochmuth, D.N.P., M.S.N.-Ed, R.N.
- Maryland Rural Health Association
  - Jonathan Dayton, Director

Department of Medicine
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SCHOOL OF MEDICINE AND PUBLIC HEALTH

Behavioral Economic Strategies To Increase Adoption of the ABCDEF Bundle in the Intensive Care Unit

Co-PI: Eduard Vasilevskis MD MPH
Professor of Medicine
University of Wisconsin – Madison

Co-PI: Michele Balas PhD, RN, CCRN-K, FCCM, FAAN
Associate Dean of Research
University of Nebraska Medical Center

Disclosures

- Research support:
  - NHLBI/NINR NIH (1 UG3 HL165740-01A1)

BEST-ICU Study Background

Assess, prevent, & manage pain

Both SATs & SBTs

Choice of analgesia & Sedation

Delirium: Assess, prevent, & manage

Early exercise & mobility

Family engagement

Study Aims

- Compare the effectiveness of *real-time audit & feedback & RN implementation* facilitator on ABCDEF bundle adoption (**primary study outcome**) and **secondary outcomes**

- Identify & describe key stakeholders' experiences with, & perspectives on, the acceptability & impact on work intensity of real-time audit & feedback & RN implementation facilitator

Implementation Strategies: Intervention Arm 1 Real-Time Audit & Feedback

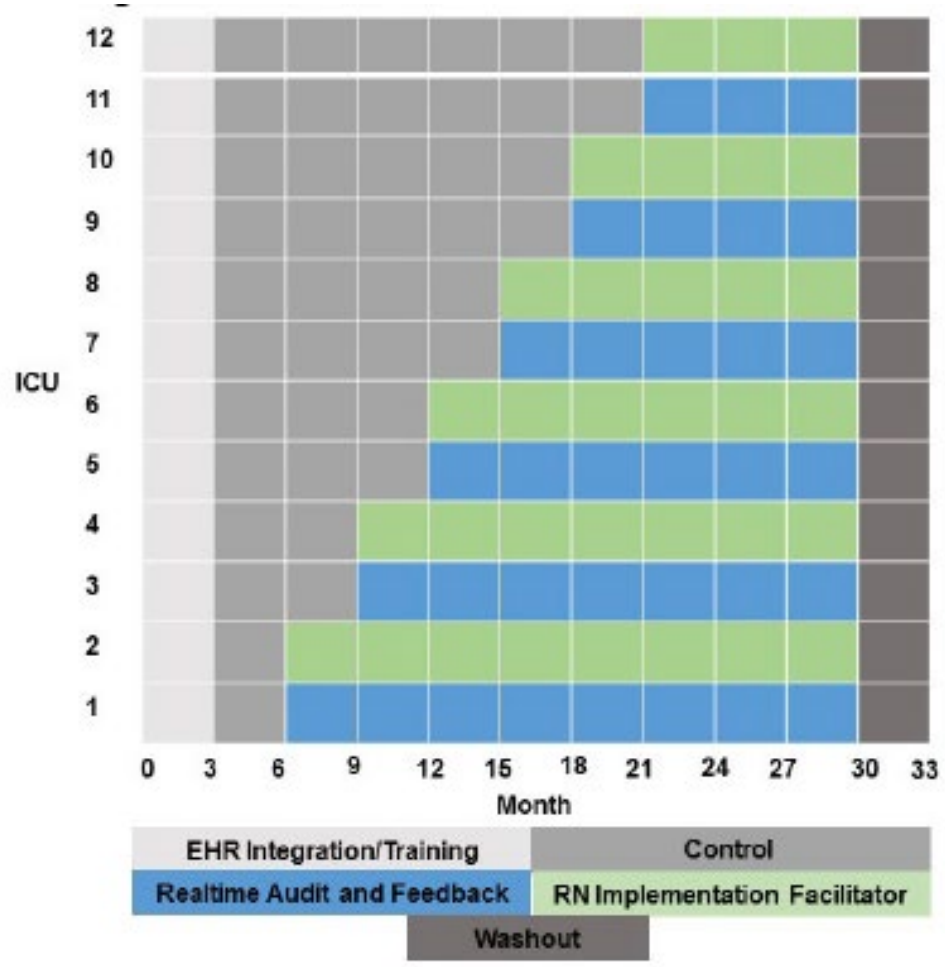
- Real-time A&F via a centrally placed visual display
- Dashboard created using EPIC® flowsheets, procedures, application reports, activity & navigator records, etc.

Implementation Strategies: Intervention Arm 2 RN Implementation Facilitator

- **Practical clinical facilitator**: Acts as extra support to carry out the functions of the ABCDEF bundle
- **Coordinator**: Coordinate ABCDEF practices across specialties
- **Champion**: Promote clinician behavior change
- **Coach**: Facilitate training of bundle elements to team members

Study Design & Randomization

- **3-arm, pragmatic, stepped-wedge, cluster randomized hybrid type III effectiveness-implementation trial**
- Unit of Randomization: ICU
- Block randomization: Hospital as block
- Constrained covariate matching
- Randomized to strategy A or B, & matched pairs will be randomly assigned to one of six wedges



Informatics / EHR: BEST-ICU

Dashboard Development

- **Goal:** Develop real-time audit and feedback dashboard that utilizes EPIC flowsheet data of each ABCDEF bundle element

- **Challenges**
  - Different starting lines
  - ABCDEF policy variability
    - e.g. independence vs. dependence of spontaneous awakening trial from spontaneous breathing trial
  - EPIC® build variability
    - “Foundation” vs not
  - Workflows
    - Entry of Data
    - Data consumption and visualization

Dashboard Development

- **Solutions**
  - Identify and address bundle process and policy gaps by site
  - Standardize definitions for bundle process elements:
    - Safety screen criteria
    - Pass / failure criteria
    - Ensure independence of each of the process elements
  - Engagement of EPIC developers and clinicians from each site
  - Collaborative, weekly, work group to share definitions, code, and ideas
    - Allow to build to site-specific EPIC system
  - Use of test environment
  - Engagement of clinicians from each site to provide input on workflows

Example of Dashboard at Completion

Department	Room and Bed	A (Pain) Completed	B (SAT) Complete	B (SBT) Complete	C (Sedation) Completed	D (Delirium) Completed	E (Mobility) Completed	F (Family) Completed
CVICU	4337 7	🟢	🟢	🟢	🟢	🟢	🟢	🔴
CVICU	4372 19	🟡	🟢	🟢	🟡	🟢	⊗	🔴
CVICU	4335 5	🟢	🟢	🟢	🟡	🟡	🟢	🔴
CVICU	4361 14	🟢	🟢	🟢	🟡	🟢	🟢	🔴
CVICU	4371 18	🟢	🟢	🟢	🟡	🟢	🟢	🔴
CVICU	4362 15	🟢	🟢	🟢	🟡	🟡	🟢	🔴
CVICU	4336 6	🟡	🟢	🟢	🟡	🟢	⊗	🔴

Data Acquisition and Sharing: BEST-ICU

Data Acquisition and Sharing

Goal: Collaborating sites utilize existing certified PCORnet datamart to track all clinical processes and outcomes for Study Aims 1 and 2

Challenges

- Develop data repository for all 3 sites and gain necessary approvals
- University vs. Health-System
- Standardize data definitions / data dictionary
- Identify existing data-element gaps in site-specific PCORnet datamarts
  - Many ICU elements not part of existing PCORnet.
- Variability in set-specific resources and requirements for development work
- Variablity site-specific PCORnet timelines for approvals, data-reporting

Data Acquisition and Sharing

Solutions

- Engagement of clinical, operational, and legal leadership from University and Health System
- PCORnet expertise / data analyst / bioinformatics
- Regular (weekly to biweekly) meetings to address approvals, data definitions, timing
- Stage data development
  - Phase 1 (Must need to initiate study)
  - Phase 2 (Will need to accomplish all secondary data analyses)

DISCUSSION
Data Access & Management

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Discussion Topics

- Other challenges, approaches, suggestions
  - data access
  - planning for data management
  - data sharing
- Methods for addressing
  - data security & privacy
  - approval for data use

Questions

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