Clinical & Translational Research Outputs:
An Introduction to the Translational Sciences Benefits Model (TSBM)

CU-CSU Summit

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Objectives

• Understand ways to demonstrate real-world impact of research with the Translational Sciences Benefits Model (TSBM)

• Recognize the available toolkits to help apply the TSBM to research projects

• Identify the role of implementation outcomes as translational outcomes that are upstream of TSBM outputs
How do we measure research impact?

• Publications
  • High-quality journals
  • Citations by others

• Grant funding
How do we measure research impact?

- Publications
  - High-quality journals
  - Citations by others
- Grant funding

Problem:
How do we quantify the real-world impact of our research?
How do we measure research impact?

- Publications
  - High-quality journals
  - Citations by others
- Grant funding

Solution?


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**Translational Science Benefits Model**: a framework that public health and clinical scientists can use to demonstrate the impact of their work in the real world.
Overview of TSBM outputs

New clinical innovations: tools, guidelines and/or procedures

OR

Improved adoption and/or implementation in clinical settings

New community innovations: activities and/or products

OR

Improved adoption and/or implementation enhances healthcare delivery and/or community well-being

New commercial product innovations

OR

Improved financial savings/benefits

Involvement with the policy process

OR

Formal adoption of innovations into policies, legislation or governmental standards
Examples of TSBM outputs

Procedures & guidelines
- Diagnostic procedures
- Therapeutic procedures
- Guidelines

Health activities & products
- Consumer software
- Health education resources

Health care characteristics
- Accessibility
- Quality

Health promotion
- Disease prevention
- Quality of life

Commercial products
- License agreements
- Non-profit or commercial entities
- Patents

Financial savings & benefits
- Cost effectiveness
- Cost savings
- Societal & financial cost of illness

Tools & products
- Biomedical technology
- Pharmaceuticals
- Software technologies

Advisory activities
- Committee participation
- Expert testimony
- Scientific research reports

Commercial products
- License agreements
- Non-profit or commercial entities
- Patents

Health promotion
- Disease prevention
- Quality of life

Policies & legislation
- Legislation
- Policies
- Standards
How can I use the TSBM for my work?
Toolkit to show TSBM impact

Tools - Translational Science Benefits Model (wustl.edu)
Toolkit to show TSBM impact

Tools - Translational Science Benefits Model (wustl.edu)
Example TSBM “Case Study”: Proyecto EVAT

Improving Childhood Cancer Outcomes in Latin America

By ICTS and St. Jude Global
July 27, 2023

Proyecto EVAT: A multicenter implementation of pediatric early warning scores (PEWS) in resource-limited settings

Improving Childhood Cancer Outcomes in Latin America – Translational Science Benefits Model (wustl.edu)
Example TSBM “Case Study”: Proyecto EVAT

Proyecto EVAT implemented EVAT PEWS in 80 medical centers across 20 countries throughout Latin America.
Proyecto EVAT “Case Study”

**Benefits**

*Demonstrated* benefits are those that have been observed and are verifiable. *Potential* benefits are those logically expected with moderate to high confidence.

EVAT PEWS is a diagnostic system to predict deteriorating health in hospitalized pediatric cancer patients.\(^{15}\) *Demonstrated.*

EVAT PEWS was implemented in 80 low-resource hospitals, allowing for earlier detection of deteriorating health in hospitalized children who would not otherwise have access to such care. *Demonstrated.*
Proyecto EVAT “Case Study”

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<tr>
<th>Implementing EVAT PEWS resulted in yearly savings of up to 350,000 dollars.</th>
<th>Cost savings</th>
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<tbody>
<tr>
<td>Demonstrated.</td>
<td>Economic</td>
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<th>By improving pediatric cancer outcomes, Proyecto EVAT could reduce the substantial economic cost of pediatric cancer on low- and middle-income countries.</th>
<th>Societal &amp; financial cost of illness</th>
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<tbody>
<tr>
<td>Potential.</td>
<td>Economic</td>
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<th>The Instituto Mexicano del Seguro Social, a public health system in Mexico, is integrating EVAT PEWS into their national health policies.</th>
<th>Policies</th>
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<tbody>
<tr>
<td>Potential.</td>
<td>Policy</td>
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Problems with TSBM

Identifying TSBM outputs during a 1-year or 5-year grant cycle is often difficult

NIH institutes are increasingly requesting reports on TSBM outputs from grantees

• National Cancer Institute (NCI)
  • Reporting on TSBM requested of Implementation Science Centers for Cancer Control and Prevention (ISC3) - 2022
• National Institute for Digestive, Diabetes, and Kidney Diseases (NIDDK)
  • Annual reporting on TSBM requested for Centers for Diabetes Translational Research – beginning in 2023
How to address this?

Use the TSBM toolkit

Begin with the end in mind – consider up-front the TSBM outputs you want to assess

Consider both:
- Demonstrated impact
- Potential impact
How to address this?

Include reporting on the **upstream Translational Science Outcomes** that predict potential downstream TSBM impact.
Revised TSBM

The ISC3 alliance updated the classic TSBM framework to add implementation science outcomes to the other dimensions of benefit that public health and clinical scientists can use to demonstrate the impact of their work.
What are Implementation Science outcomes?
Examples of Implementation Science outcomes

www.re-aim.org
Examples of Implementation Science outcomes

E. Proctor et al., Outcomes for Implementation research, 2011
UNIVERSITY OF COLORADO GRADUATE CERTIFICATE FOR D&I SCIENCE (2019-PRESENT)

OVERVIEW

The mission of the D&I Graduate Certificate Program is to equip our graduates with the D&I research skills needed to design rigorous and innovative translational research, and to successfully compete for federal funding to carry out their proposed work.

Small class size & synchronously meet online

12 credits completed over ~2-3 years


Impact to date

• International Reach: 51 scholars from USA and Canada enrolled since 2019; 15 graduates

• Building partnerships across ISC3 centers and NIH
  • Includes guest lecturers from these organizations:
    • National Cancer Institute
    • Harvard ISC3
    • Penn ISC3 guest lecture
    • Washington University in St. Louis ISC3

• Multi-center partnerships for research/training led by Certificate students/faculty
  • Example: University of Minnesota trainee (Monden) and CU faculty (Studts) led a D&I Capacity-building workshop for Physical Medicine & Rehab researchers
Scholars represent multiple agencies and universities across the United States and Canada: see map.

Specific agencies and universities represented by students enrolled to date: AltaMed, Centers for Disease Control and Prevention’s National Institute for Occupational Safety and Health, Cincinnati Rainbow Children’s Hospital, Cleveland Clinic, Colorado School of Public Health, Colorado State University, Eastern Colorado Veterans Administration Medical Center, Kaiser Permanente Colorado, Northwell Health, University of Colorado, University of Minnesota, University of Montreal, University of New Mexico, University of North Carolina Chapel Hill, and Weill-Cornell.
SUMMARY

TSBM HELPS DEMONSTRATE THE REAL-WORLD IMPACT OF A PROJECT

• Four classic TSBM outputs:
  • Clinical
  • Community
  • Economic
  • Policy

• Assessing implementation outcomes are additional near-term ways to demonstrate project impact
THANK YOU

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