How to measure the impact of research-based interventions

Shanthi Ramanathan
Simon Deeming

Measure Health Outcomes Conference
22-23 August 2017
Agenda

- Key definitions
- Why measure impact?
  - The problem, Policy shifts, Key initiatives
- Developments in Impact Assessment
- Criticisms of Impact Assessment
- HMRI FAIT
- Expressing the results
Measuring and encouraging research impact

Andrew Searles PhD
Associate Director, HMRI Health Research Economics

Simon Deeming
HMRI Health Research Economics

Presentation to NHMRC
September 2016
Agenda

- Why measure impact?
- Background
  - HMRI’s work in impact assessment
    - Framework to Assess the Impact from Translational health research
  - DOIIS – project to measure impact in MRIs
  - Review existing impact frameworks
  - Attitudes & barriers to measurement
- HMRI FAIT
- Concluding issues
Why measure impact?
Why measure?

- Basic economics .... Scarce resources
- Health expenditure increasing at an unsustainable rate

Growth rates: health expenditure versus GDP, Australia

**Health expenditure:** Tends to rise faster than national income

**Note:** Average annual growth 2002-03 to 2012-13: Health = 5.1%, GDP = 3.0%

**Source:** AIHW
Why measure?

• Health-economic imperatives:
  1. Govt. budget pressure
  2. Productivity issues for MHR (McKeon, MRFF)
     • **Efficiency**: Innovation to improve health outcomes / identify low value care
     • **Growth**: Optimise commercial innovations
  3. Encourage high value, low waste research:
     Embed translation & impact (Chalmers, Glasziou, Grimshaw, Ioannidis et al)
Why measure?

Is the spending choice returning value for money?
HMRI’s work in impact assessment

Initial focus on programs of research – subsequent expansion
Workflow ... measuring research impact

Need to measure & encourage research translation & impact 2013

Background research to FAIT: Qualitative interviews; Literature review; pilots in SROI

Department of Industry, Innovation and Science project

FAIT

Publication
  - Implementation
    - CRE IQI
  - Implementation
    - CRE Stroke rehabilitation
  - Implementation
    - NHEHLHD Pop Health

Measuring impact in MRIs

1. Gap in existing frameworks
2. Stakeholder interviews
3. Develop framework for MRIs
4. Develop a databank of metrics
5. Develop a road map of data and policy implications over time;
6. Recommendations
Key initiatives

DRIVERS
Finite Budgets, Improve Health Outcomes

Accountability,
Productivity gains

HEALTH & MEDICAL RESEARCH

HEALTH SERVICES

INITIATIVES

RESEARCH IMPACT ASSESSMENT (HMRI FAIT)

NSW REGIONAL HEALTH PARTNERS
CENTRE FOR INNOVATION IN REGIONAL HEALTH

HEALTH TECHNOLOGY ASSESSMENT (HTA-IM)

In partnership with our community

Hunter Medical Research Institute

University of Newcastle Australia

NSW Government

Health Hunter New England Local Health District
What is the role of an impact assessment framework?

From the literature:

• Identified objectives grouped into eight (8) categories:
  – Top-down Accountability
  – Transparency / Bottom-up Accountability
  – Advocacy
  – Steering
  – Value for money
  – Management / Learning & Feedback / Fund allocation
  – (Measuring/improving the) Speed of translation
  – Prospective orientation of research
<table>
<thead>
<tr>
<th>YES</th>
<th>PARTIAL</th>
<th>NO</th>
<th>POSSIBLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCOUNTABILITY - TOP DOWN</td>
<td>TRANSPARENCY/ACCOUNTABILITY - BOTTOM-UP</td>
<td>ADVOCACY</td>
<td>STEERING</td>
</tr>
<tr>
<td>BALANCED SCORECARD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAHS IMPACT FRAMEWORK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIHR IMPACT FRAMEWORK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPREHENSIVE RESEARCH METRICS LOGIC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DECISION MAKING IMPACT MODEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECONOMIC IMPACT ASSESSMENT (EIA)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXCELLENCES IN RESEARCH FOR AUSTRALIA (ERA)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HEALTH SERVICES RESEARCH IMPACT F/WORK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HMRI FAIT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITHS KLM/WHO MODEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEAN/SIX-SIGMA MODELS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATRIX SCORING SYSTEM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NHMRC MORIA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAYBACK MODEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROCESS MARKER MODEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RE-AIM MODEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESEARCH ENGAGEMENT FOR AUSTRALIA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESEARCH EXCELLENCE FRAMEWORK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESEARCH IMPACT FRAMEWORK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESEARCH PERFORMANCE EVALUATION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESEARCH UTILIZATION LADDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOCIETAL IMPACT FRAMEWORK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TELETHON KIDS INSTITUTE RIF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRANSL. RESEARCH ORGANIZ. PERF. MODEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WEISS LOGIC MODEL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Attitudes, barriers and challenges for measuring impact
Overwhelming supportive

Depends upon what is measured – grants or helping people with conditions; Traditional model > publications, leads to treadmill mechanism of research to generate grants

Cultural shift – to research that makes a difference

Translation sometimes seen (by researchers) as, "this is what we do after we do the research."

I think it’s done poorly; It’s really tricky

Strong desire for consistent approach
Insights from MRI & other interviews

• Barrier - Researcher attitudes/ownership:
  – “Funding compels that MRIs value papers, grants & PhDs; want ‘you’
    to think about translation, but unclear what the benefit is…”
  – Changing, but slowly; too little reward; ARC Discovery projects –
    Pathway to impact (75 words), UK grant applications – Pathway to
    impact second only to quality of research proposal
  – Does research translation mean as much as a paper in The Lancet?
    On our metrics it doesn't; publications easier to objectively measure
  – Can Researchers game the system?

• Barrier - Time-lags, distance between MHR & final impact
  – Basic science
Insights from MRI & other interviews

• Attribution, causation, the counterfactual…
• Administrative burden
• Academic freedom - Why can’t we just get on with it?
• Serendipitous outcomes – Potentially encourages/discourages
Insights from MRI interviews

• Progress, but tension between academia / commercialisation:
  – Example: Successful technologies, industry trials > lost careers, no academic funding to fall back on
  – Example: NHMRC grants cannot support patent application, legal advice, etc.

• Cultural change required;

• Try to sell patents to companies if can’t develop ourselves; *unsuccessful*;
  
  “marketing IP that a company hasn’t been involved in generating is a very tough gig...cannot assess the risk”
Guiding principles for impact measurement
Guiding principles for impact measurement

• Guiding principles:
  – Focus on researchers and the research process
  – A line of sight to anticipated benefit / impact
  – Process metrics - interim targets on the pathway to impact
  – A logic model that embeds users and generates outcomes from outputs along the pathway
  – Prospective implementation/orientation
  – Incentives that reflect a range of productive outputs and impacts
  – Increase likelihood of translation & impact across whole system

• Envisage a mechanism to enable researchers to optimise quality & impact
HMRI
Framework to Assess the Impact from Translational health research
FAIT
HMRI Framework for Assessing the Impact from Translational Health-research

- Social Return On Investment
- Metrics (e.g. Modified Payback model)
- Case studies (Narrative of translation)
HMRI Framework for Assessing the Impact from Translational Health-research

Domains based on Becker List, includes Clinical Implementation; HMRI databank

Metrics (e.g. Modified Payback model)

Social Return On Investment

Case studies (Narrative of translation)
HMRI Framework for Assessing the Impact from Translational Health-research

SROI, an economic metric, easily understood, can be based on actual data &/or ‘projected’ future values. Value for money

Metrics (e.g. Modified Payback model)

Social Return On Investment

Case studies (Narrative of translation)
HMRI Framework for Assessing the Impact from Translational Health Research

- **Metrics (e.g. Modified Payback model)**
- **Social Return On Investment**
- **Case studies (Narrative of translation)**

Case studies; good for complex and lengthy translation pathways, good for explaining serendipitous research outcomes.
HMRI Framework for Assessing the Impact from Translational Health-Research

Logic map supports these methods

Metrics (e.g. Narratives of translation)
Cost of this innovation = sum of resources used to obtain the above resources outcomes + the cost of using the research outcomes. This might include, for e.g., access to pooled data.
Implementation

An example from initial work with CRE Stroke Rehabilitation

How to develop customised metrics
Aims: Clinical Trials

1. **Develop a platform for rehabilitation trials** (national and global application)

2. **Increase efficiencies with rehabilitation-focused trials** (common guidelines – i.e. a common platform) Established trials will be brought under the umbrella: AVERT, VERSE, FAST INdICATE, AREISSA. New trials initiated as part of the CRE will be added (e.g. basic science: animal models, cohort study)

3. **Pooled trial data will allow novel hypotheses to be tested.** Pooling allows an increase in sample size, and hence an expanded range of hypotheses.

How will these aims be actioned, measured & create impact?
Cost of this innovation = sum of resources used to obtain the above resources outcomes + the cost of using the research outcomes. This might include, for e.g., access to pooled data.
Activities of Clinical Trials  (one of five workstreams)

**Activities**

1. Develop platform for rehab trials
2. Conduct trials (new & part of CRE + existing trials + future trials)
3. Pooling trial data
4. CC: Training
5. CC: Translation
6. CC: Economics
7. CC: E-health

**Process metrics**

1. Develop platform
2. Conduct trials
3. Identify relevant trials and pool trial results
4. Training (recruit PhDs, post docs, workshops, roundtables, grant writing workshops, Trial management course)
5. Translation: evidenced by conduct of trials, writing papers, conferences, writing guidelines etc.
7. E-health: ?
Expressing the results from FAIT
Hypothetical scorecard example for a research program to reduce unnecessary emergency department visits by residents of aged care facilities. Three years funding (2012-2015), totalling $575,000

<table>
<thead>
<tr>
<th>Domains of Benefit</th>
<th>Metric types</th>
<th>Metric</th>
<th>Metric value As at 1 July 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Advance knowledge</td>
<td>PhD completions</td>
<td>3 (per $1m funding)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Datasets deposited into repository</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Publications</td>
<td>4 (per $1m funding)</td>
</tr>
<tr>
<td></td>
<td>Clinical Implementation</td>
<td>New clinical guidelines</td>
<td>Protocols to reduce unnecessary emergency department (ED) presentations by residents of aged care facilities, reduces ED presentations in this cohort by 25% in one year</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clinical trial outcomes</td>
<td>Software developed that guides aged care staff on streaming patients for clinical treatment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Age Care decision aid software</td>
<td>QoL 9 percentage points higher in intervention aged care facilities</td>
</tr>
<tr>
<td></td>
<td>Community benefit</td>
<td>Improved quality of life (QoL) for aged care residents. Percentage point difference in QoL compared to usual care where intervention is conducted.</td>
<td>1 - Aged care guidelines for resident care 1 - Federal government guidelines for aged care facilities</td>
</tr>
<tr>
<td></td>
<td>Legislation &amp; policy</td>
<td>Citations in policy documents</td>
<td>Test region, based on opportunity cost, $230,000 p.a in cost avoided calculation based on reduction in unnecessary ED presentations</td>
</tr>
<tr>
<td></td>
<td>Economic impact</td>
<td>Cost avoided in health system</td>
<td>Cost of research</td>
</tr>
<tr>
<td></td>
<td>Social Return On Investment</td>
<td>Cost of research</td>
<td>$575,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cost of using research outcomes</td>
<td>Based on cost of additional clinical training (discounted, 10 yrs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benefit that can be converted to $ values</td>
<td>Opportunity cost of costs avoided in EDs (discounted, 10 yrs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SROI ratio</td>
<td>Dollars of benefit per dollar of cost $1.7 million / ($575k+$210k)</td>
</tr>
<tr>
<td></td>
<td>Case Studies</td>
<td></td>
<td>&lt;2.20:1 or $2.20 of benefit generated for every $1 of cost</td>
</tr>
</tbody>
</table>

The community need: In the absence of alternatives, staff from aged care facilities are acting in a rational and conservative manner by sending unwell residents to Emergency Departments (EDs). As a result, EDs receive many low acuity patients from aged care facilities who clinicians believe would be more appropriately treated in situ at their aged care facility. The unnecessary use of emergency facilities consumes resource-intensive hospital services and reduces the EDs’ capacity to meet service quality (patient care) objectives in a sustainable and efficient manner.

The research response: Researchers designed an intervention program that combined intensive training of aged care staff with a purpose-designed software program that helped aged care staff guide patients into appropriate care pathways. The research was based upon the staff and residents within twenty aged care facilities with ten recruited to participate in the intervention and ten remaining in usual care.

Research outcomes: The research process identified that many aged care staff were insufficiently computer literate to implement the system. Training was designed to address this issue. The staff’s capability to make decisions that aligned with appropriate care for their residents was improved through the training, the software and the guidelines.

Research impact: Measures of Quality of Life for the participating aged care residents were nine percentage points higher for those assessed through the new system. Actual costs (accounting measure) in the EDs did not decline because other patient requirements filled the void created. However, it is assumed that this will translate to benefits for the healthcare system in terms of higher service quality measures (patients serviced within appropriate thresholds, etc.) and/or reduced pressure upon rising ED budgets. Economists valued this benefit using opportunity cost.
Concluding issues
Concluding issues

Stage of FAIT’s development

- **Conceptual model based on a combination of proven methods**
- **Department of Industry, Innovation and Science**
- **Peer reviewed articles (1 published & 1 under review)**

- **Discussed implementation with two NHMRC Centres of Research Excellence**
- **Implementing in HNEH Population Health**
- **Ongoing development and improvement – new metrics that are associated with translation & impact**
Why measure impact?

– ↑ Health exp. slowing, but as % of GDP still ↑

HEALTH EXPENDITURE, % OF GDP

SOURCE: AIHW
Research translation

... a process of knowledge generation and transfer that enables those utilising the developed knowledge to apply it. This definition acknowledges that, once generated, knowledge flows can be multidirectional and non-sequential.

Research impact

... the demonstrable effect from the flows of knowledge between basic, patient and population-orientated research, and clinical trials, that improves human health and quality of life, and generates benefits for the economy, society, culture, national security, public policy, or the environment. (i.e. a societal perspective)
Why measure impact?
Evidence of the problem

1. Expected consequence of funding health research => generate a positive impact
2. We want less disease, better care, and improved quality of life and longevity for Australians.
3. Flow of knowledge through the translational pipeline is not optimal.
4. Effective and cost-effective findings not being fully implemented by healthcare systems and not being appropriately used by others.
5. Finite HMR budget - not being spent efficiently or effectively.
Policy shift in Australia

- **Consequence** of sub-optimal research translation is that health services and patients are not always using or receiving the most effective or cost-effective prevention or treatment.

- Message from governments and major funders (ARC, NHMRC, MRFF, Cancer Institute) is that the ability to demonstrate research impact (as opposed to academic impact) is becoming exceedingly critical.

- More and more, researchers must **facilitate** and **demonstrate** research translation & impact.
Key initiatives in Australia

- Excellence in Research for Australia (ERA)
- Advanced Health Research and Translation Centres Program (AHRTC)
- Medical Research Futures Fund (MRFF)
- ARC’s national engagement and impact assessment framework (EI)
- Centres for Innovation in Regional Health (CIRH)
Impact measurement—what’s been happening?
Impact Measurement

• **Scoping literature reviews**
  – What do existing frameworks aim to do?
  – What methods for impact assessment?

• **Qualitative**
  – Interviews with stakeholders – mainly in the Hunter
  – State & federal government views
  – Expanded to MRIs around AU
  – Attitudes to impact measurements, barriers and enablers; what is being done; what should be done
  – Broader engagements (NHMRC, ARC, MRFF, Brunel University (Payback), Karolinska Institute etc.)
What is the role of an impact assessment framework?
From the literature:

- Identified objectives grouped into eight (8) categories¹:
  - Top-down Accountability
  - Transparency / Bottom-up Accountability
  - Advocacy
  - Steering
  - Value for money
  - Management: Learning & Feedback
  - Measure /improve the speed of translation
  - Prospective orientation of a research project *****

Guiding principles for impact measurement

- Capture processes, outcomes and impacts generated across the spectrum of health research from discovery to applied science;
  - **Encourage** research translation;
- Enable the implementation of improvement processes when research translation fails;
- Utilise cost-effective data collection techniques;
- Facilitate communication on research impact.
<table>
<thead>
<tr>
<th>YES</th>
<th>PARTIAL</th>
<th>NO</th>
<th>POSSIBLE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACCOUNTABILITY - TOP DOWN</td>
<td>TRANSPARENCY/ACCOUNTABILITY - BOTTOM-UP</td>
<td>ADVOCACY</td>
<td>STEERING</td>
</tr>
<tr>
<td>BALANCED SCORECARD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAHS IMPACT FRAMEWORK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIHR IMPACT FRAMEWORK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPREHENSIVE RESEARCH METRICS LOGIC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DECISION MAKING IMPACT MODEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECONOMIC IMPACT ASSESSMENT (EIA)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXCELLENCE IN RESEARCH FOR AUSTRALIA (ERA)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HEALTH SERVICES RESEARCH IMPACT F/WORK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HMRI FAIT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITHS KLM/WHO MODEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEAN/SIX-SIGMA MODELS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATRIX SCORING SYSTEM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NHMRC MORIA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAYBACK MODEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROCESS MARKER MODEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RE-AIM MODEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESEARCH ENGAGEMENT FOR AUSTRALIA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESEARCH EXCELLENCE FRAMEWORK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESEARCH IMPACT FRAMEWORK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESEARCH PERFORMANCE EVALUATION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESEARCH UTILIZATION LADDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOCIETAL IMPACT FRAMEWORK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TELETHON KIDS INSTITUTE RIF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRANSL. RESEARCH ORGANIZ. PERF. MODEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WEISS LOGIC MODEL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This table illustrates various frameworks and models related to accountability, transparency, advocacy, steering, value for money, management, feedback, learning, allocation, speed of translation, and prospective orientation, with different levels of relevance represented by colors: green for yes, blue for partial, and red for no.
What critics of impact assessment might say

• Influence funding particularly against ‘blue sky’ research
• Causality - did the research cause the impact?
• Attribution - to what extent did the research contribute to the impact?
• Timing – some impacts take decades to materialise
1. **Favours applied rather than blue sky research**
   - Engage with other potential users along the pipeline. Basic science can utilise simulation modelling.

2. **It can be difficult to identify causality**
   - Impact assessment is not reason to abandon rigorous evaluation with appropriate study design (control group, randomisation, blinding).

3. **It may be difficult to define the extent of attribution**
   - Evidence base for attribution / scenario analysis / adjust claimed benefit in cost-benefit analysis

4. **Timing; impact may take more than a decade to materialise.**
   - Interim impacts/ longitudinal study design / follow up / simulation modelling with sensitivity analyses
HMRI

Framework to Assess the Impact from Translational health research

FAIT
HMRI Framework for Assessing the Impact from Translational Health-research Metrics (e.g. Modified Payback model) Case studies (Narrative of translation) Economic analysis
HMRI Framework for Assessing the Impact from Translational Health-research

- Domains includes:
  - Knowledge generation,
  - Clinical Implementation,
  - Government Policy,
- Economic Impact
- Community Benefit and any other suitable views of benefit:
  - Module of process and output metrics – represent translational activities and behaviours.
  - The use of process metrics is set within a performance monitoring and management framework.

Metrics (e.g. Modified Payback model)

Case studies (Narrative of translation)

Economic analysis
• Favours cost-benefit analysis, an economic metric, easily understood, can be based on actual data &/or ‘projected’ future values.
• CEA also provides information on value for money.
• Favoured by treasuries & increasingly philanthropy

Metrics (e.g. Modified Payback model)

Economic analysis

Case studies (Narrative of translation)
HMRI Framework for Assessing the Impact from Translational Health-research

Metrics (e.g. Modified Payback model)

Economic analysis

(Narrative of translation)

- Good for complex and lengthy translation pathways
- Good for explaining serendipitous research outcomes
- Brings together quantitative results and explains them in context
HMRI Framework for Assessing the Impact from Translational Health Research

Logic map supports these methods

Metrics (e.g. Modified)

(Narrative of translation)
Cost of this innovation = sum of resources used to obtain the above outcomes + the cost of using the research outcomes. This might include, for e.g., the additional cost of data collection.
Expressing the results from FAIT
<table>
<thead>
<tr>
<th>Method</th>
<th>Domain</th>
<th>Example of indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method Domain Example of indicators</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Modified Payback</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge translation</td>
<td>Number of attendees at a conference or workshop</td>
<td>Citation index for journal article</td>
</tr>
<tr>
<td>Clinical implementation</td>
<td>Increased delivery of cardiovascular risk assessments to Indigenous adults</td>
<td>Increased follow up with those at risk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduced complications</td>
</tr>
<tr>
<td>Community benefit</td>
<td>Reduced cardiovascular morbidity amongst Indigenous adults</td>
<td></td>
</tr>
<tr>
<td>Policy and legislation</td>
<td>Reduced cardiovascular mortality amongst Indigenous adults</td>
<td>Wellbeing, measures of stress, etc.</td>
</tr>
<tr>
<td>Economic impact</td>
<td>Change in localised or state-based policy regarding regular delivery of CV risk assessments for Indigenous adults</td>
<td>Reduced hospitalisations of Indigenous adults for cardiovascular problems; reduced re-admissions, shorter LOS, reduced need for at home care, able to return to work / usual duties, increased GP consults, etc.</td>
</tr>
<tr>
<td><strong>Method Metric Example of indicators</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Economic assessment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of research</td>
<td>Research budget</td>
<td></td>
</tr>
<tr>
<td>Cost of doing the CVD risk assessments and follow up</td>
<td>Estimated cost of implementation (increased GP consults, medications)</td>
<td></td>
</tr>
<tr>
<td>Benefit that can be converted into $ value</td>
<td>Projections of reduced CVD episodes, reduced hospitalisations and associated costs for the patient that can be avoided e.g. time off work</td>
<td></td>
</tr>
<tr>
<td>Cost:Benefit ratio</td>
<td>1:2.50 or for every $1 invested into the program, it delivered $2.50 of benefit.</td>
<td></td>
</tr>
<tr>
<td><strong>Case studies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narrative on community need, research response, research outcome, research impact</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Thank you

Questions?
Thank you

Questions?
Commercialisation

• Address at beginning of research cycle

  “marketing IP that a company hasn’t been involved in generating is a very tough gig…cannot assess the risk”

  [Prospective orientation; Embed end-users]

• Focus upon outcomes and utilisation

  “commercially oriented system…should be a milestone driven funding system, that says, ‘If you achieve this then you get the next bit of funding.’”

  [Outputs to Outcomes]
GUIDING PRINCIPLES FOR IMPACT MEASUREMENT

(if primary objective to optimise translation & impact)
Guiding principles for impact measurement

- A focus upon researchers and the research process
Guiding principles for impact measurement

- A focus upon researchers and the research process
- Prospective implementation/orientation
Guiding principles for impact measurement

- A focus upon researchers and the research process
- Prospective implementation/orientation
- A line of sight to the main anticipated benefits
Guiding principles for impact measurement

- A focus upon researchers and the research process
- Prospective implementation/orientation
- A line of sight to the main anticipated benefits
- Inclusion of process metrics that provide for interim targets on the pathway to these impacts
Guiding principles for impact measurement

- A focus upon researchers and the research process
- Prospective implementation/orientation
- A line of sight to the main anticipated benefits
- Inclusion of process metrics that provide for interim targets on the pathway to these impacts
- A logic model that embeds users and generates outcomes from outputs along the pathway
Guiding principles for impact measurement

• A focus upon researchers and the research process
• Prospective implementation/orientation
• A line of sight to the main anticipated benefits
• Inclusion of process metrics that provide for interim targets on the pathway to these impacts
• A logic model that embeds users and generates outcomes from outputs along the pathway
• Align incentives for researchers/research programs with optimisation of the productive outcomes from their research
Guiding principles for impact measurement

- A focus upon researchers and the research process
- Prospective implementation/orientation
- A line of sight to the main anticipated benefits
- Inclusion of process metrics that provide for interim targets on the pathway to these impacts
- A logic model that embeds users and generates outcomes from outputs along the pathway
- Align incentives for researchers/research programs with optimisation of the productive outcomes from their research
- An over-arching objective to enhance productivity by increasing probability of translation & impact across whole system
Guiding principles for impact measurement

- A focus upon researchers and the research process
- Prospective implementation/orientation
- A line of sight to the main anticipated benefits
- Inclusion of process metrics that provide for interim targets on the pathway to these impacts
- A logic model that embeds users and generates outcomes from outputs along the pathway
- Align incentives for researchers/research programs with optimisation of the productive outcomes from their research
- An over-arching objective to enhance productivity by increasing probability of translation & impact across whole system
- Envisage a mechanism to enable researchers to optimise quality & impact
EXAMPLE: HMRI FAIT

Framework to Assess the Impact from Translational health research
EXAMPLE: HMRI FAIT
FIG 1: Researcher focus; Prospective orientation

RESEARCH PROCESS – RETROSPECTIVE REVIEW

INCEPTION → APPLICATION → FUNDING → CONDUCT → OUTPUTS

OUTCOMES / INTERIM IMPACTS → FINAL IMPACTS

LESSONS LEARNT

MANAGEMENT / LEARNING & FEEDBACK / ALLOCATION

RETROSPECTIVE REVIEW

Source: Deeming et al 2016 (pending), Adaptation from Trochim et al 2011
EXAMPLE: HMRI FAIT
FIG 1: Researcher focus; Prospective orientation

RESEARCH PROCESS – RETROSPECTIVE REVIEW

INCEPTION → APPLICATION → FUNDING → CONDUCT → OUTPUTS → OUTCOMES / INTERIM IMPACTS → FINAL IMPACTS

LESSONS LEARNT

MANAGEMENT / LEARNING & FEEDBACK / ALLOCATION

RESEARCH PROCESS – PROSPECTIVE ORIENTATION (Improved speed of translation)

INCEPTION → APPLICATION → FUNDING → CONDUCT → OUTPUTS → OUTCOMES / INTERIM IMPACTS → FINAL IMPACTS

PROSPECTIVE ORIENTATION

TRANSLATION & IMPACT PLAN:
- END-USERS
- EMBEDDED INTO RESEARCH
- IMPLEMENTATION PLAN
- LAB NOTE BOOKS, etc.

LESSONS LEARNT

MANAGEMENT / LEARNING & FEEDBACK / ALLOCATION

Source: Deeming et al 2016 (pending), Adaptation from Trochim et al 2011
Cost of this research = resources used to obtain the above outcomes + the cost of using the research outcomes e.g. additional cost of clinical training

Cost can be compared against benefit
RIF METHODS

FIG 3: Metrics-based; complem. by narrative/economics

- **Metrics**
  - Actual data &/or ‘projected’ future values; SROI/CBA; CUA/CEA; VOI; Commercial market assess; Value for money

- **Economic Assessment**
  - Payback system; Becker List; HMRI databank

- **Case studies (narrative)**
  - Links & explains metrics; good for complex/lengthy translation pathways; explains serendipitous research outcomes
PROJECT:
Reducing unnecessary Emergency Department visits by residents of aged care facilities

DOMAINS OF BENEFIT

<table>
<thead>
<tr>
<th>Metric categories</th>
<th>Metric Types</th>
<th>Metric Value (as at 31 July 2015)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance Knowledge</td>
<td>PhD completions, Datasets in repository, Publications</td>
<td>3 (per $1m funding) 4 (per $1m funding)</td>
</tr>
<tr>
<td>Clinical Implementation</td>
<td>New clinical guidelines, Clinical trial outcomes, Aged care decision aid software</td>
<td>1, 1, 1</td>
</tr>
<tr>
<td>Community Benefit</td>
<td>Improved quality of life (QoL) for aged care residents, Percentage point difference in QoL compared to usual care when intervention is conducted</td>
<td>QoL 9 percentage points higher in intervention aged care facilities</td>
</tr>
<tr>
<td>Legislation &amp; Policy</td>
<td>Citations in policy documents</td>
<td>1 = Aged care guidelines for resident care, 1 = Reference by federal government guidelines for aged care facilities</td>
</tr>
<tr>
<td>Economic Impact</td>
<td>Costs avoided in health system</td>
<td>Test region based on opportunity cost, $310,000 p.a. in cost avoided calculation based on reduction in unnecessary ED presentations</td>
</tr>
</tbody>
</table>

ECONOMIC ASSESSMENT – SOCIAL RETURN ON INVESTMENT

<table>
<thead>
<tr>
<th>Metric categories</th>
<th>Metric Types</th>
<th>Metric Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of research</td>
<td>2015 $</td>
<td>$375,000</td>
</tr>
<tr>
<td>Cost of using research</td>
<td>Based on costs of additional clinical outputs, training (30s, discr.)</td>
<td>$1.7 million</td>
</tr>
<tr>
<td>Benefit – Monetary values</td>
<td>Opportunity cost of costs avoided in EDs (30s, discr.)</td>
<td>2.21 or $2.20 of benefit generated for every $1 of cost</td>
</tr>
</tbody>
</table>

CASE STUDIES

Community need: In the absence of alternatives, staff from the aged care facilities are acting in a rational and conservative manner by sending unwell residents to Emergency Departments (ED). As a result, EDs receive many low acuity patients from aged care facilities who clinicians believe would be more appropriately treated in-situ at the aged care facility. The unnecessary use of emergency facilities consumes resource intensive hospital services and reduces the ED’s capacity to meet service quality (patient care) objectives in a sustainable and efficient manner.

Research response: Researchers designed an intervention program that combined intensive training of aged care staff with a purpose-designed software program that helped aged care staff guide patients into appropriate care pathways. The research was based upon the staff and residents within 20 aged care facilities with ten recruited to participate in the intervention and ten remaining in usual care.

Research outputs: The research process identified that many aged care staff were insufficiently computer literate to implement the system. Training was designed to address this issue. The staff’s capability to make decisions that aligned with appropriate care for their residents was improved through the training, software and guidelines.

Research impact: Measures of Quality of Life for the participating aged care residents were nine percentage points higher for those assessed through the new system. Actual costs (accounting measure) in the EDs did not decline because other patients’ requirements filled the void created. However, it is assumed that this will translate to benefits for the healthcare system in terms of higher service quality measures (patients serviced within appropriate thresholds) and/or reduced pressure upon rising ED budgets. Economist valued this benefit using opportunity cost.
RIF – MRI FACILITATION METRICS

FIG 5: Measures – Facilitation of translation & impact

FACILITATE: RESEARCH PROCESS

- INCEPTION
  - END-USER ENGAGEMENT; SERVICES: CTS/BIOSTATISTICS/HEALTH ECONOMICS/BIOINFORMATICS; KNOWLEDGE/RESEARCH TRANSLATION GUIDANCE; COMMERCIALISATION TEAM

- APPLICATION
  - SEED FUNDING, PROOF OF CONCEPT STUDIES, INDUSTRY ENGAGEMENT

- FUNDING
  - LAB SPACE, EQUIPMENT, CLINICAL TRIAL SERVICES, COPRODUCTION

- CONDUCT
  - END-USER ENGAGEMENT, FUNDING TO DEV. COMMERCIAL IP, ACCESS TO COMMERCIALISATION TEAM

- OUTPUTS
  - SERVICES: BIOSTATISTICS, H.E. etc.

- OUTCOMES / INTERIM IMPACTS
  - PATIENT ENGAGEMENT & FEEDBACK SYSTEMS

- FINAL IMPACTS

FACILITATE: ENGAGEMENT & COLLABORATION

e.g. Industry/Govt./Health service engagement strategies; Coproduction facilitation; Clinician PhDs

FACILITATE: TRANSLATION & IMPACT CAPACITY

e.g. Health system data access; electronic IP lab notebooks, medical genomics platforms; health prof. research training