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Implementation Science Academy

Economic Evaluation in Implementation Science Action: How to Get Started (Part 2)

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Health Economics Lead, Implementation Science Academy

Sydney Health Partners

Seminar Series Learning Objectives

Support SHP IS Academy members to:

- Learn how to apply an economic lens to their own project.
- Know what economic question is relevant to their research.
- Identify what economic data they may already have access to.
- Understand what economic data to collect.

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Session Overview

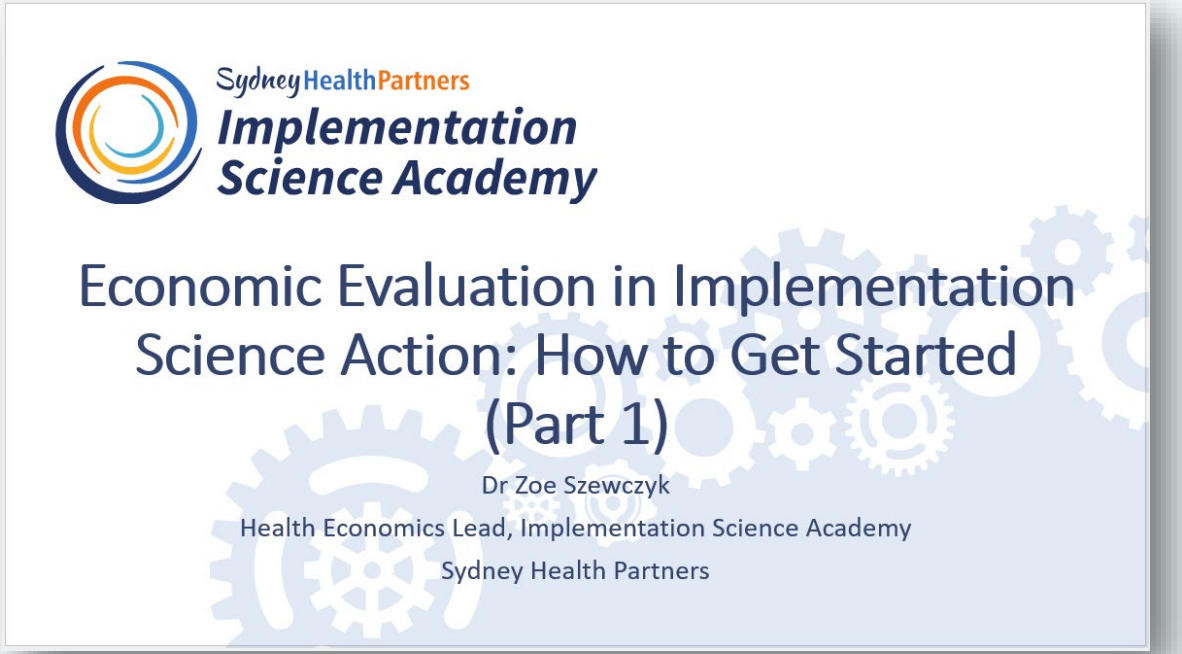
- Recap & Intro
- Logic Models in Economic Evaluation
- Resources and next steps
- Question and answer session



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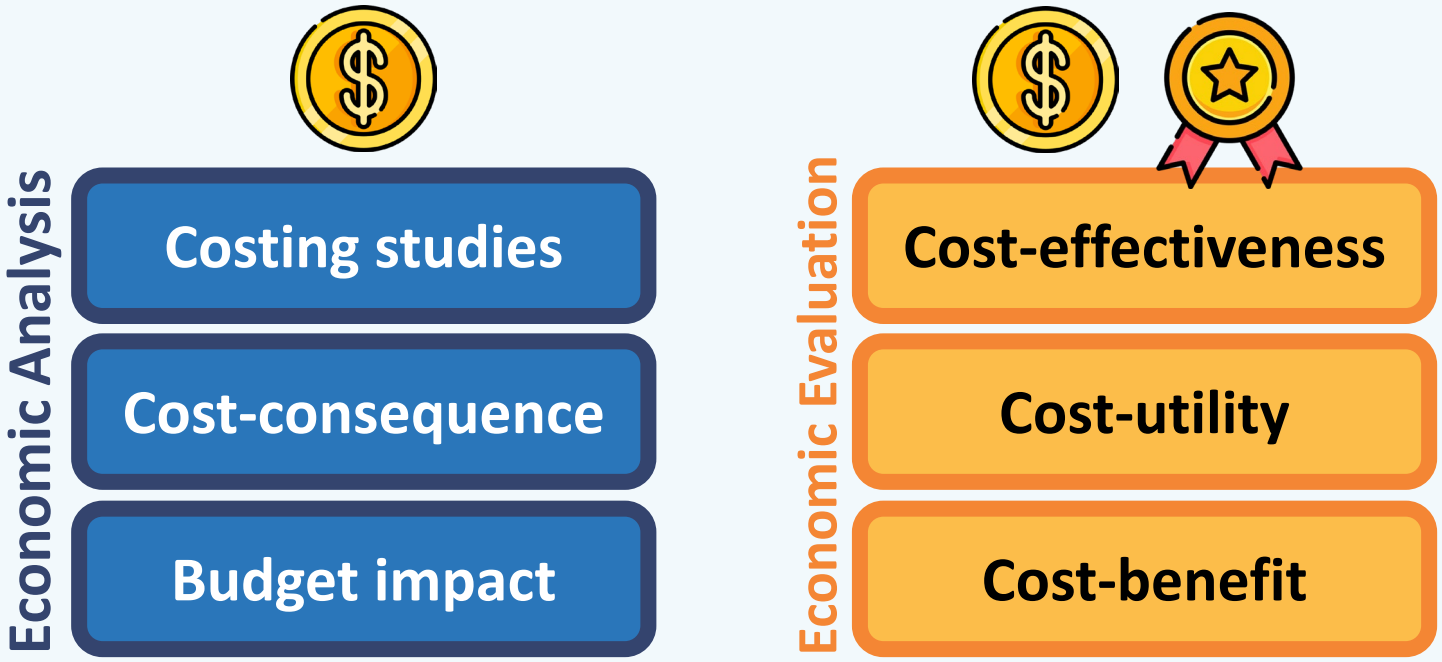
Picking up where we left off





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What is health economic evaluation?



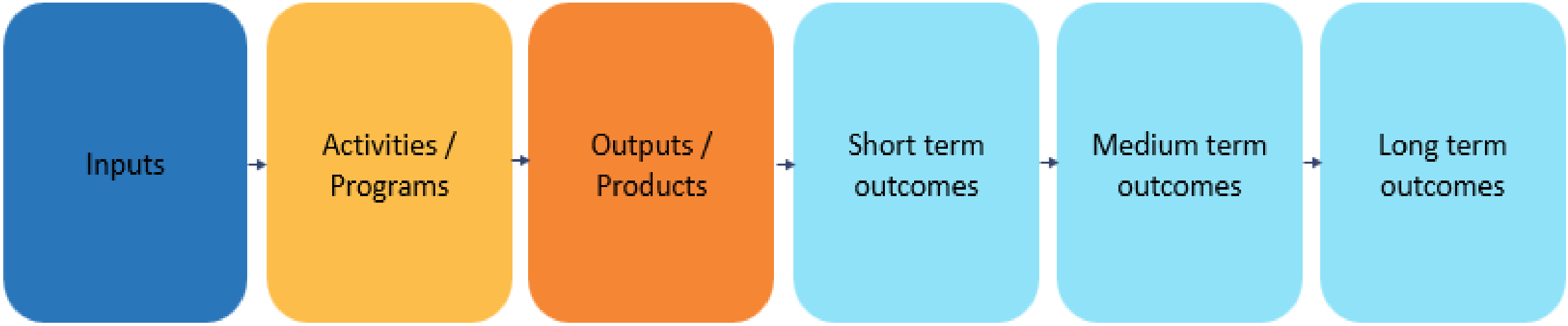
Economic evidence **supports resource allocation decisions** by identifying treatments and programs that deliver the most **value for money** while **maximizing health outcomes** within the constraints of a budget.

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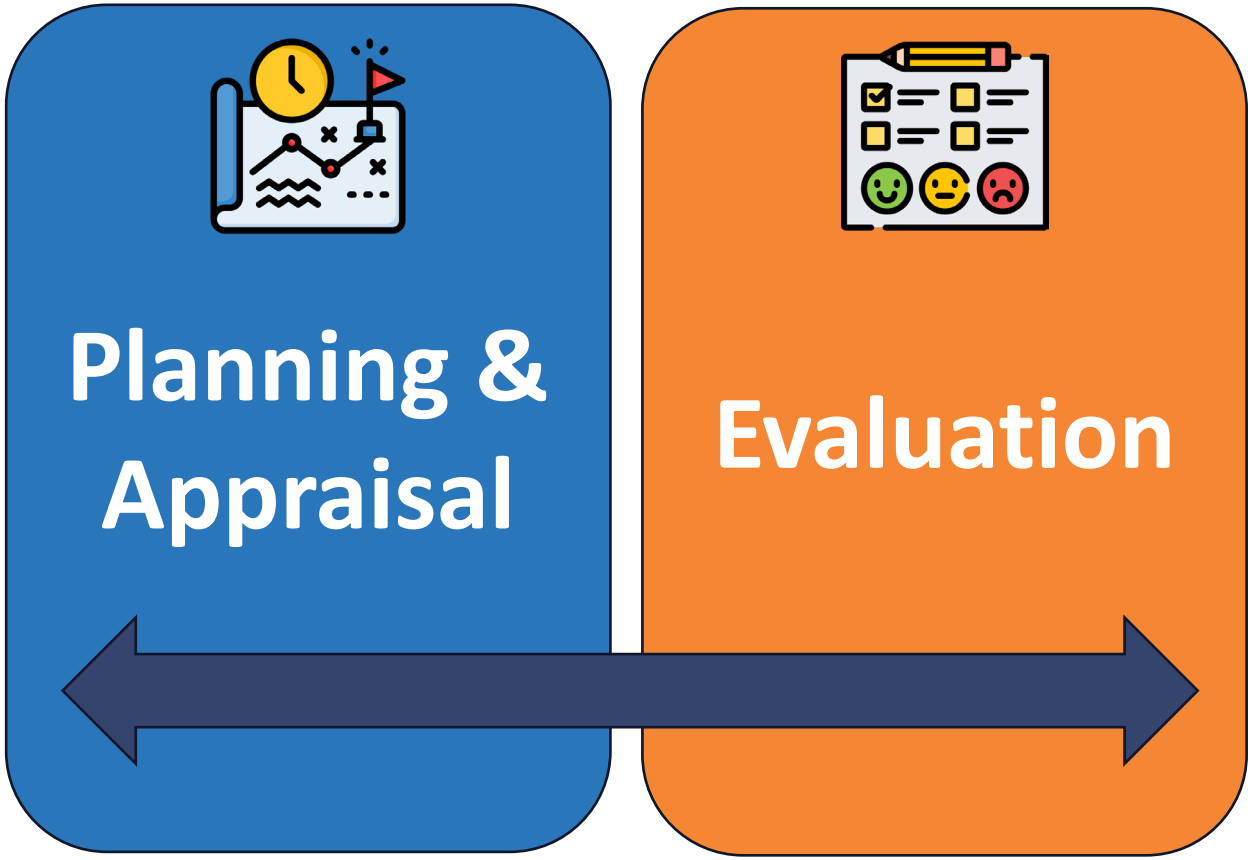
Is there a comparison of at least two alternatives?	Are both costs and consequences of the alternatives examined?	
	No	**Yes**
No	Descriptive study (costs or outcomes)	Partial evaluation (costs and outcomes)
Yes	Efficacy or effectiveness evaluation	Full economic evaluation (CEA, CUA, CBA, CMA)

What is a Logic Model

- A schematic representation of how a program or intervention is intended to work by linking activities with outputs to short- and medium-term impacts and longer-term outcomes.
- Aims to show the intended causal links for a program
- Also referred to as a program theory, program logic, logic model, theory of change, results chain, intervention logic.



When to Develop a Logic Model



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Using Logic Models for Economic Evaluation



Need

Inputs

Activities / Programs

Outputs / Products

Short term outcomes

Medium term outcomes

Long term outcomes

Economic Appraisal

Economic Evaluation

Trial based economic evaluation

Modelled economic evaluation

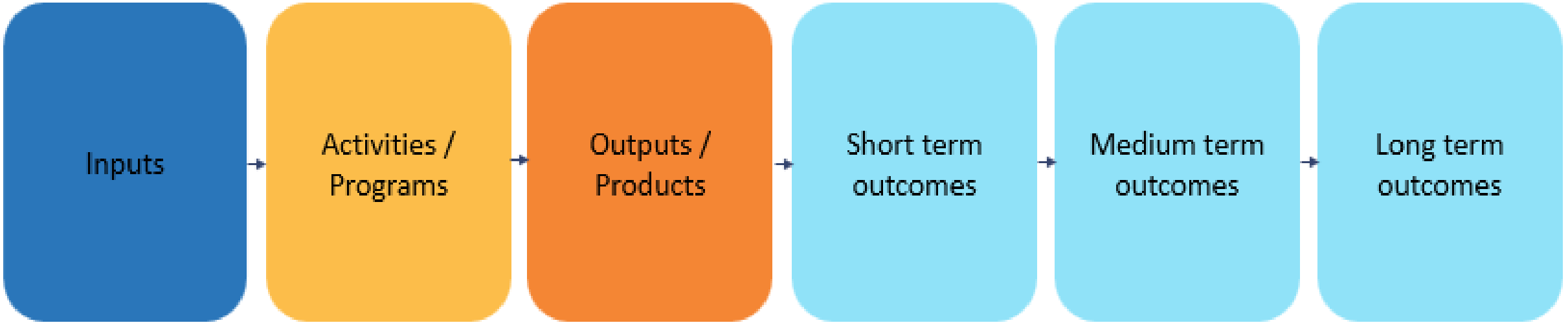
Developing a Logic Model

Step 1: Develop an Outcomes Hierarchy

- State your research question
- List all possible outcomes
- Rank and cluster outcomes
- Identify feedback loops

Step 2: Identify Outputs and Assumptions

- Identify outputs (activities and products)
- Identify assumptions
- Review with stakeholders



Inputs	What resources are needed to conduct the activities? ***Staff time, consumables, tests associated with current practice, average time on waiting list, length of stay, admission rates, mortality, cost etc.***
Activities / Programs	What activities need to be undertaken to deliver the outputs? ***Cost of developing your intervention.***
Outputs / Products	What products and services need to be delivered to achieve the short-term impacts? ***Cost of delivering your intervention.***
Short term outcomes	What short-term outcomes are required to achieve the medium-term outcomes? ***Implementation intervention costs, patient self-report health care utilisation and/or linked administrative data.***
Medium term outcomes	What medium-term outcomes need to occur before the long-term outcomes are reached? ***Linked administrative data: admissions, presentations, appointments, length of stay, adverse events, tests and medicines. Quality of life data.***
Long term outcomes	What are the long-term outcomes of the program? ***Societal, cross-sectoral outcomes valued in dollars (e.g. productivity, QALY's, DALY's, mortality).***



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Example 1

Implementing Evidence-Based Guidelines into Antenatal Clinical Care (Alcohol Cessation)

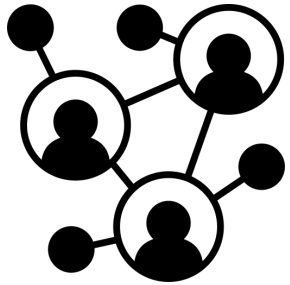
- Evidence based clinical practice guidelines recommend clinicians advise women refrain from consuming alcohol during pregnancy.
- The economic and social impact of alcohol consumption in pregnancy are well documented. Direct costs of FASD on health care, criminal justice, education and other sectors costs billions of dollars annually.
- Despite this, guidelines aren't implemented into practice.
- A phase III hybrid implementation trial was designed to assess the effectiveness and cost-effectiveness of a multi-strategy practice change intervention in three sectors of a health district in NSW, Australia.

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Inputs	Activities / Programs	Outputs / Products	Short term outcomes	Medium term outcomes	Long term outcomes
What resources are needed to conduct the activities?	What activities need to be undertaken to deliver the outputs?	What products and services need to be delivered to achieve the short-term impacts?	What short term outcomes are required to achieve the medium-term impact?	What medium term outcomes need to occur before the long-term outcomes are reached?	What are the long-term outcomes of this program?
FASD has high economic, social, and health burden.	**Cost of developing the intervention**	**Cost of delivering the intervention**	Implementation outcome: **Change in receipt of care**	Economic outcome: **Cost per patient** (including change in referrals (and uptake) to drug and alcohol services)	**Change in rates of FAS and FASD**

Inputs	Activities / Programs	Outputs / Products	Short term outcomes	Medium term outcomes	Long term outcomes
What resources are needed to conduct the activities?	What activities need to be undertaken to deliver the outputs?	What products and services need to be delivered to achieve the short-term impacts?	What short term outcomes are required to achieve the medium-term impact?	What medium term outcomes need to occur before the long-term outcomes are reached?	What are the long-term outcomes of this program?
FASD has high economic, social, and health burden. Guidelines are not routinely adhered to.	Cost to develop the intervention: - **Staff time:** academic, health service, community member, patient rep. - **Materials**: tech, infrastructure, resources, devices, etc. - **Misc:** travel, room hire, web hosting, SEO, cloud computing etc.	Cost to deliver the intervention: - Change champion - Audit and feedback - Training/education - Change in KPI's - Electronic nudges	Implementation outcome: **Change in receipt of care** Clinical outcome: **Change in patient knowledge**	Implementation outcome: **Change in referrals (and uptake) to drug and alcohol services**	**Decreased rates of FAS and FASD** ↓ Decreased health care, criminal justice, education costs. ↓ Improved quality of life. ↓ Increase productivity



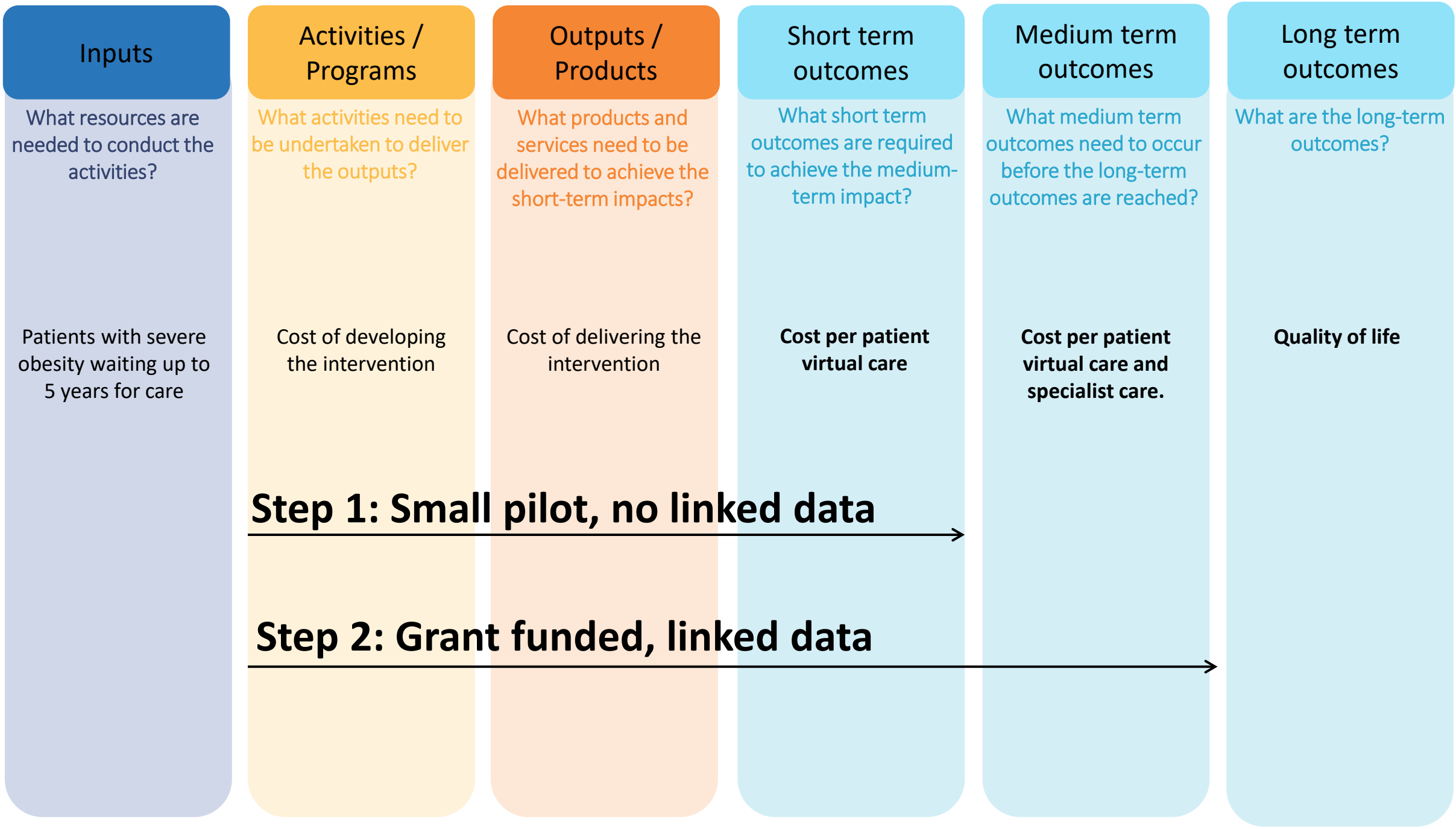


Example 2

Implementing a virtual adaptation of a weight loss program for patients with severe obesity.

- Patients with severe obesity (average BMI for this service is 50kg/m^2), have complex metabolic conditions, poor mental health and quality of life.
- Many of these patients fail 6-minute walk tests, do not leave their homes, and are not employed. They're often from disadvantaged backgrounds and have complex social and family histories.
- Waiting list for severe obesity clinic is up to 5 years, and patients are dying whilst waiting for care.
- Clinicians decided to design and implement a supplementary virtual model of care (an app) for patients on the waiting list to improve health and mortality outcomes, reduce time to first appointment, and quality of life.

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Inputs
Activities / Programs
Outputs / Products
Short term outcomes
Medium term outcomes
Long term outcomes
What resources are needed to conduct the activities?
What activities need to be undertaken to deliver the outputs?
What products and services need to be delivered to achieve the short-term impacts?
What short term outcomes are required to achieve the medium-term impact?
What medium term outcomes need to occur before the long-term outcomes are reached?
What are the long-term outcomes?
Patients with severe obesity waiting up to 5 years for care
Cost of developing the intervention
Cost of delivering the intervention
Cost per patient virtual care
Cost per patient virtual care and specialist care.
Quality of life
Step 1: Small pilot, no linked data
Step 2: Grant funded, linked data

Inputs	Activities / Programs	Outputs / Products	Short term outcomes	Medium term outcomes	Long term outcomes
What resources are needed to conduct the activities?	What activities need to be undertaken to deliver the outputs?	What products and services need to be delivered to achieve the short-term impacts?	What short term outcomes are required to achieve the medium-term impact?	What medium term outcomes need to occur before the long-term outcomes are reached?	What are the long-term outcomes?
Patients with severe obesity waiting up to 5 years for care. Service under extreme demand and under resourced. “Hire more staff” not the solution. Equity issues: disadvantaged patients with complex medical and social histories	Cost of developing the intervention: - **Labour**: staff time to develop app (research and clinician) - **Materials:** resources, advertising. - **Misc:** app development (design and software solutions), cloud storage, links to existing technologies.	Cost of delivering the intervention: - **App costs (short term, and cost to sustain)** - **Implementation intervention costs**	**Cost per patient virtual care:** - GP attendance - Allied health care - Change in medication - Cost of tests/monitoring - ED presentations - Hospital adm. **Quality of life**	**Cost per patient virtual care and specialist care:** - Short term costs, and admitted patient costs (surgery) - Specialist appointments - Readmissions or complications	**Quality of life**

Collecting cost data

Labour

- Staff time: diaries, interviews, time in motion studies, estimates (sometimes, best guesses)
- Patient time: interviews or surveys

Materials

- Receipts, invoices
- Medicines and devices: linked MBS and PBS
- Administrative datasets (using AR-DRGs)

Miscellaneous

- Travel: collect postcode data
- Infrastructure: fixed or recurring costs

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Common datasets for healthcare resources



MBS/PBS

- Federal
- Access via AIHW or Service Australia
- Prescription drugs
- GPs and specialists
- Diagnostics and allied health
- Cost per item
- Out of pocket costs



Emergency

- State and territory
- Code for each attendance
- Aggregate average cost per attendance



Admitted (acute)

- State and territory
- Procedure code (DRG)
- NWAU (sometimes)
- Aggregated average cost per separation



Non-admitted

- State and territory
- Clinic code (Tier 2)
- Aggregated average cost per clinic visit



Other

- State and territory
- Varies depending on service
- Admitted subacute, community care, mental health.

Acknowledgement: Dr Martin Howell, Leeder Centre for Health Policy Economics and Data

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Capacity Building

Academy Fellows

- Recognize health professionals and researchers with expertise in accelerating the translation of research innovations into health care improvements.
- Connect implementation science and health economics with network members.
- Create a community of implementation researchers across SHP affiliated organisations and Clinical Academic Groups.
- Facilitate networking and collaboration across SHP.

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Health Economics Fellows



Dr Marina Pinheiro



A/Prof. Alison Pearce



Dr Evelyn Lee



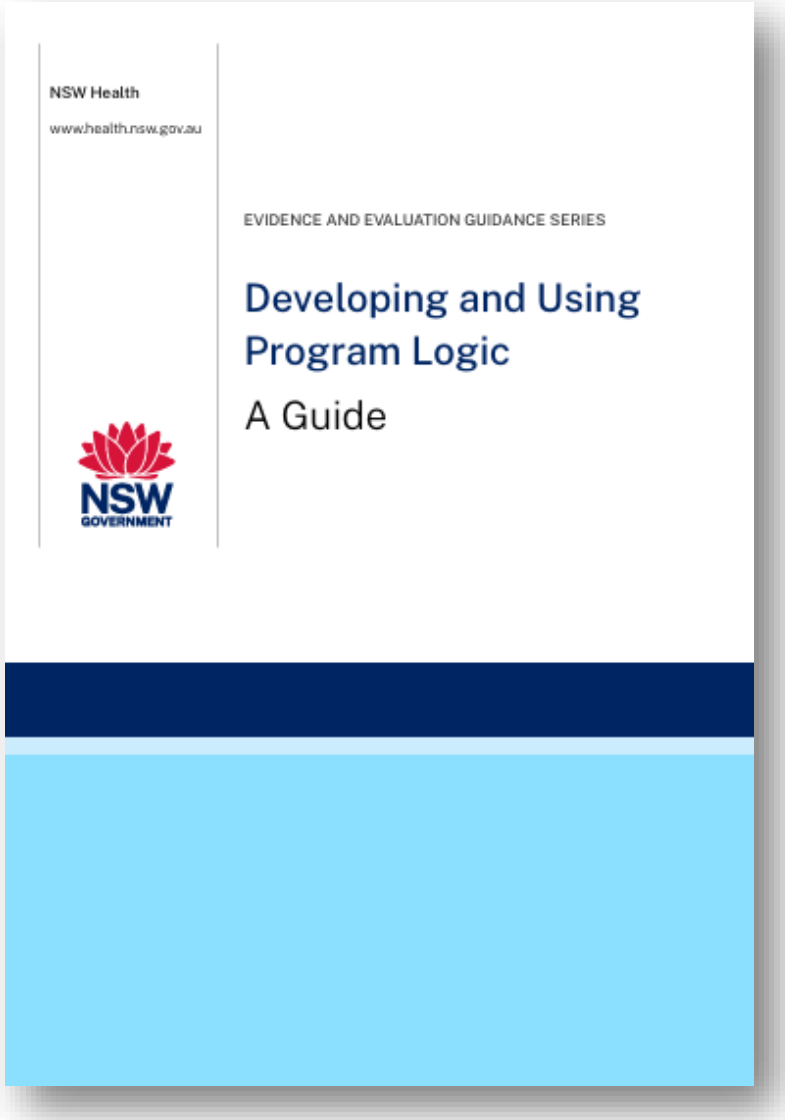
Dr Kim-Huong Nguyen



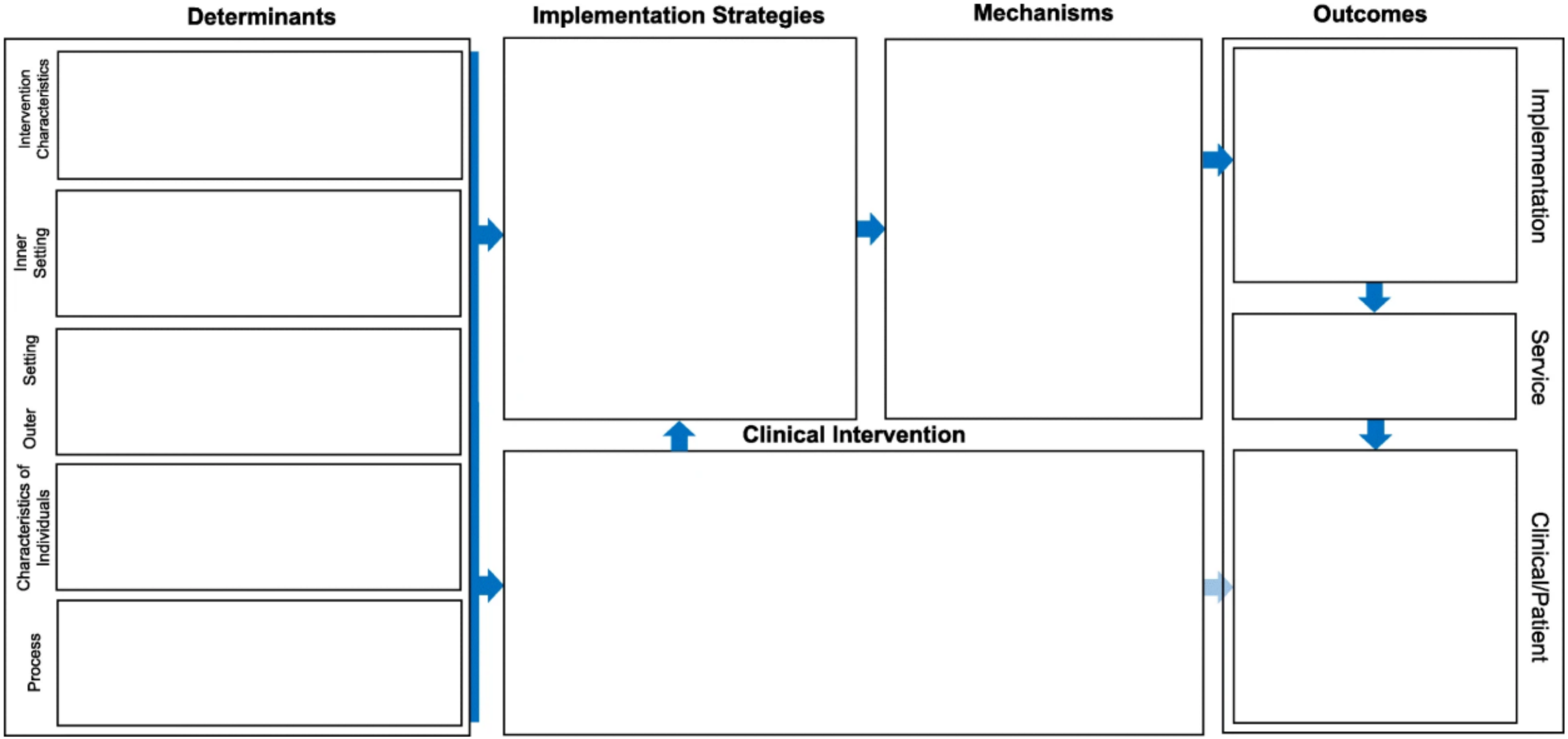
Dr Rakhee Raghunandan

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Resources



Centre for Epidemiology and Evidence. **Developing and Using Program Logic: A Guide**. Evidence and Evaluation Guidance Series, Population and Public Health Division. Sydney: NSW Ministry of Health; 2023.

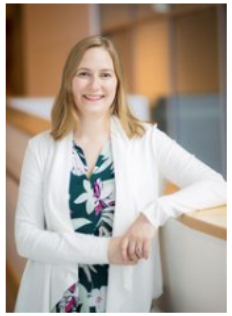


Smith, J.D., Li, D.H. & Rafferty, M.R. The Implementation Research Logic Model: a method for planning, executing, reporting, and synthesizing implementation projects. *Implementation Sci* **15**, 84 (2020). https://doi.org/10.1186/s13012-020-01041-8

Resources: Tools

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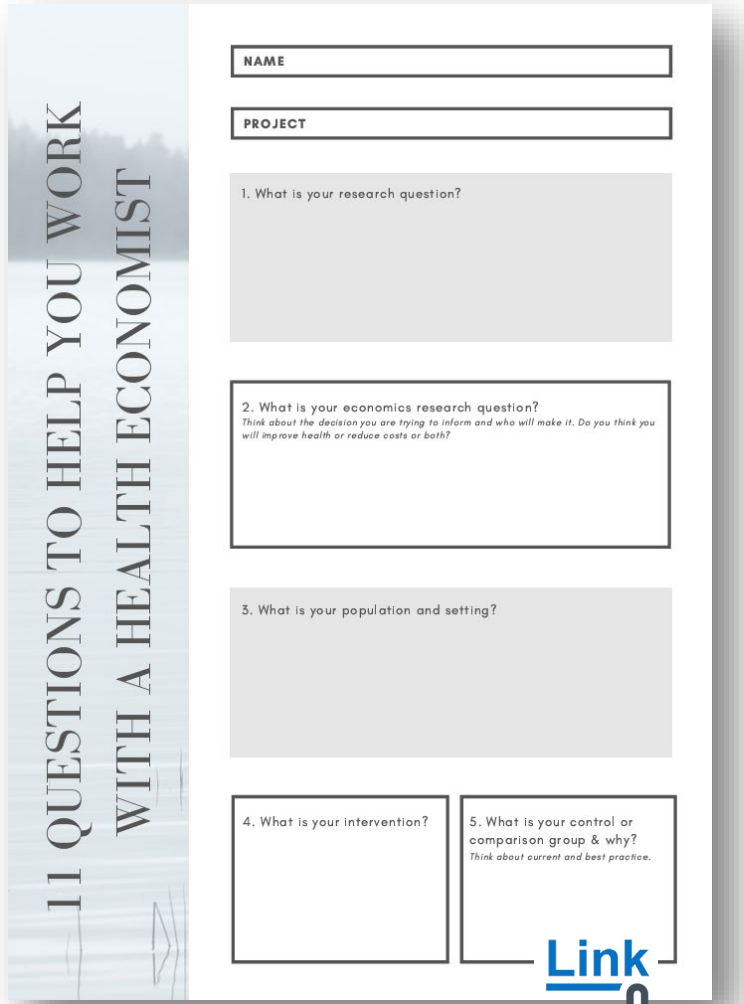
Websites
Professional website
Twitter

Biographical details

Alison is a health economist interested in the various costs of cancer. Her research aims to use health services research and health economics to improve cancer care by providing relevant, reliable information for decision making.

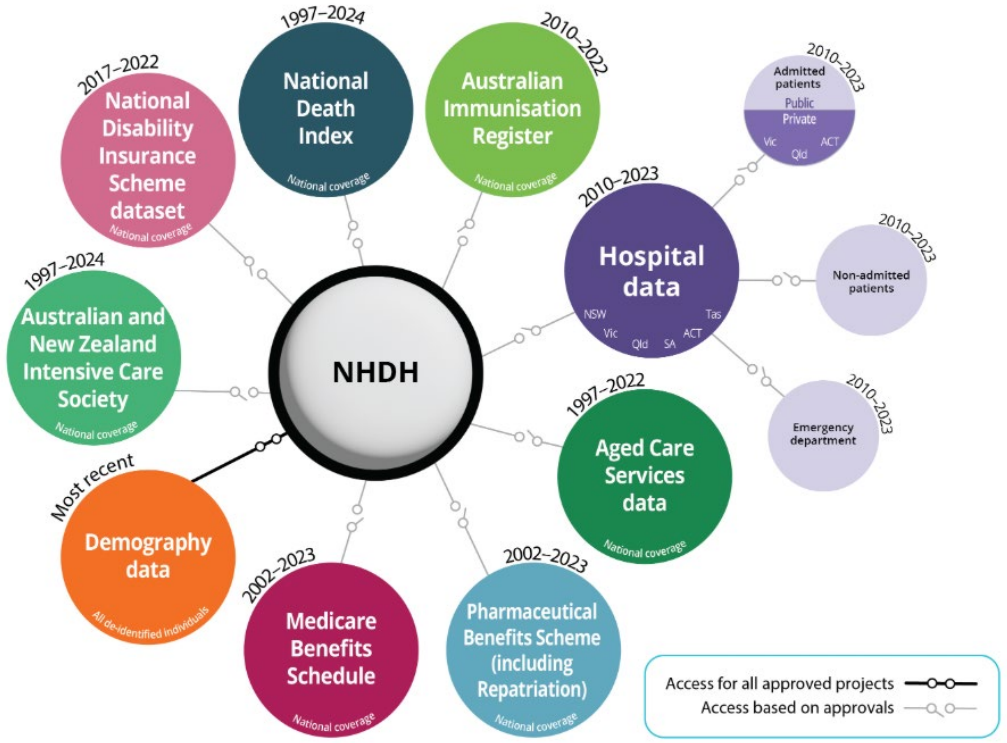
show more

Alison created this free tool!



National Health Data Hub

Figure 1: Data in the National Health Data Hub



https://www.aihw.gov.au/reports-data/nhdh/data

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Capacity & Capability

A/PROF LEANNE HASSETT

Link



Innovation

DR MITCHELL SARKIES

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Collaboration & Partnerships

A/PROF HEATHER SHEPHERD

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