

Rethinking evaluation for public health improvement: Learning health systems for prevention

Prof Luke Wolfenden
Luke.wolfenden@health.nsw.gov.au



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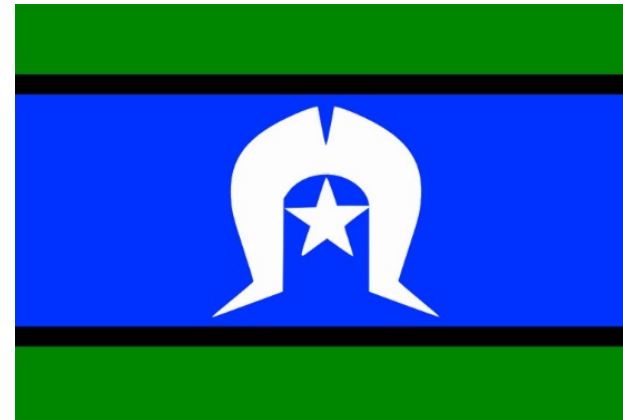
@LukeWolfenden
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Acknowledgement of Country

I would like to Acknowledge the original custodians of this land and pay my respects to the Elders both past, present and future.



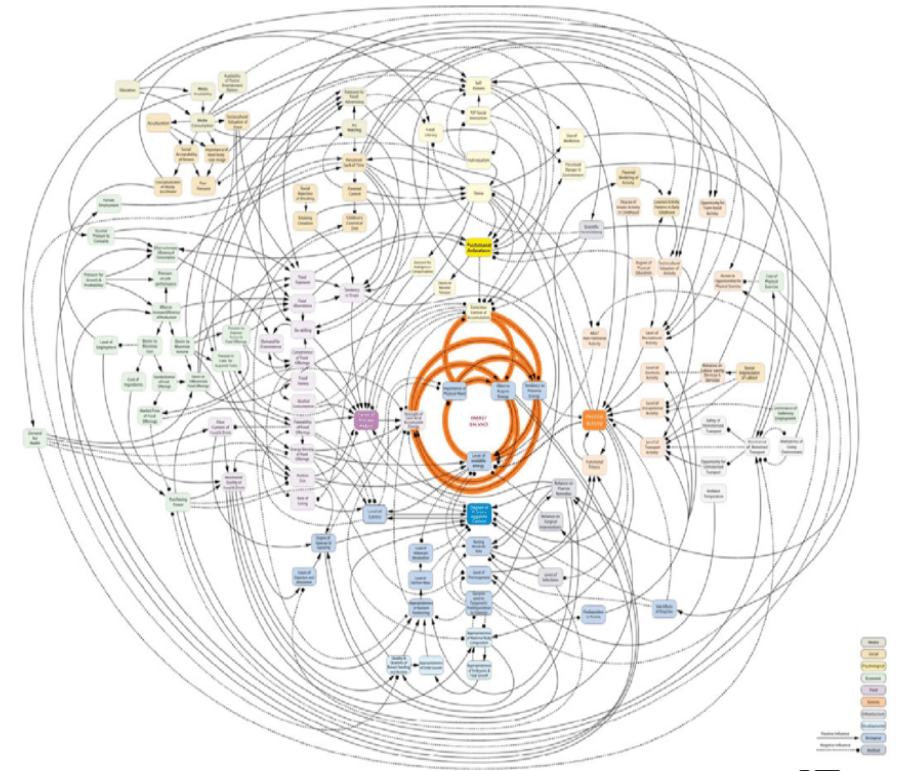
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Population health interventions

- Aetiology of chronic disease and risk factors are complex
- Evaluations of population health programs suggest many have no beneficial effects in the real world
- Often this is attributable to:
 - Poor 'fit' of the intervention
 - Lack of an effective implementation strategy



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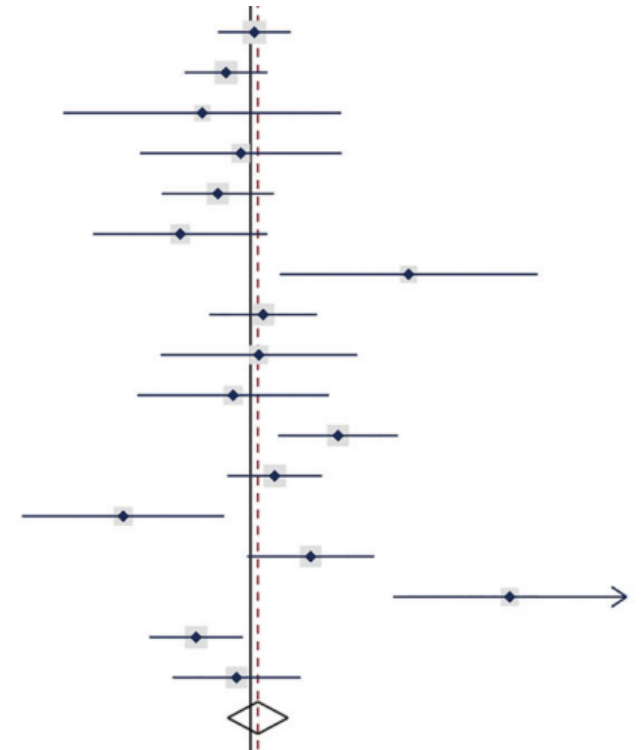
Finch M, et al. Effectiveness of centre based-childcare interventions in increasing child physical activity: a systematic review and meta-analysis for policy makers and practitioners. *Obesity Reviews* 2016. Yoong SL et al. Exploring the impact of pragmatic and explanatory study designs on outcomes of systematic reviews of public health interventions: a case study. *J Pub Health*. 2014;36 170-176



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Population health interventions

- Selection of effective interventions, and implementation strategies is a considerable challenge
- Effects heterogeneous
- Rigid interpretations of the evidence-base leave public health policy makers few options to address wicked problems
- Difficult to identify what works for whom in what context.



Love et al, Obesity Reviews, 2018



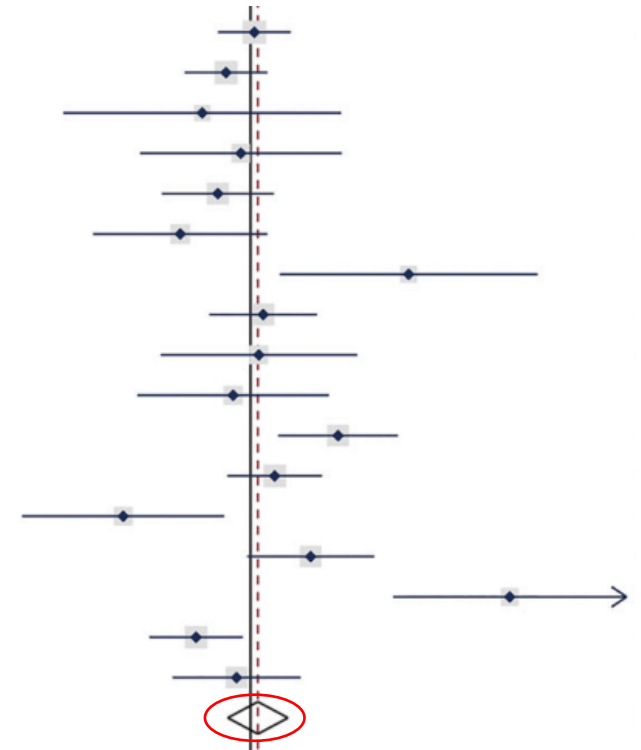
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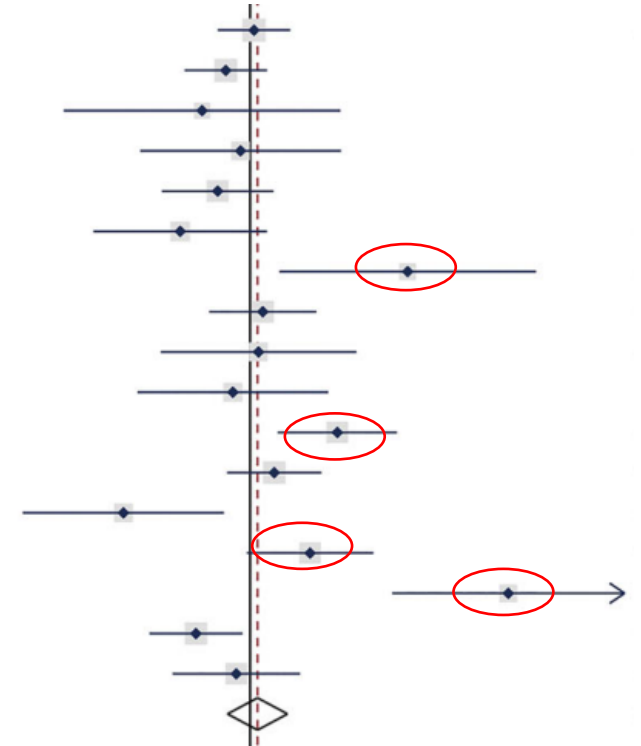
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Current methods of evidence generation are tremendously inefficient in informing practice

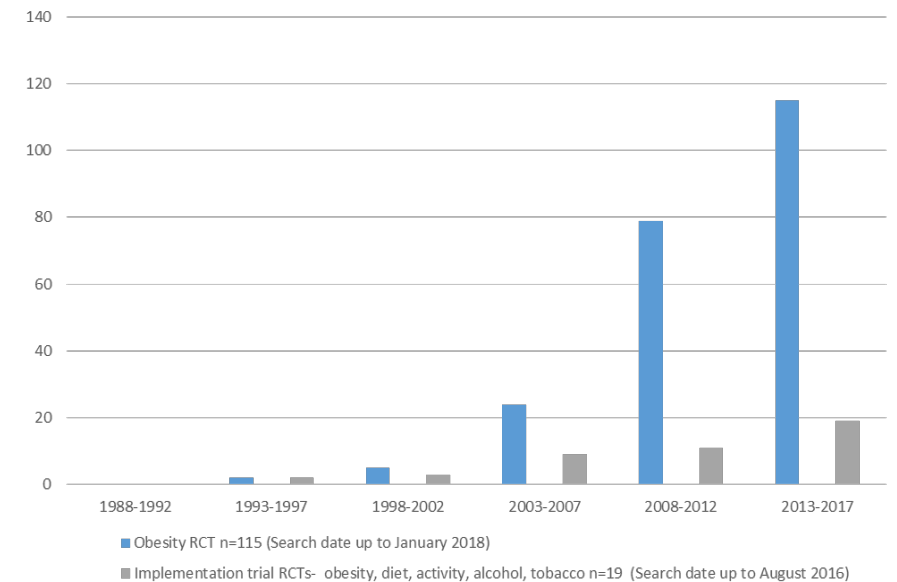
Science is a cumulative industry

- Progression is slow and incremental
- Requires capacity to compare and learn from past studies
- May stagnate in instances where this does not occur, or few trials produced

New models are required where...

- Research is conducted in the contexts it is to be applied, with end-users who will apply it
- Employ harmonised methods (where possible) and builds directly off prior knowledge
- Seek to also contribute generalised knowledge

Cumulative number of school-based RCTs of obesity interventions; and RCTs of school-based implementation strategies for all SNAPO risks



New approaches for public health improvement

Learning health system

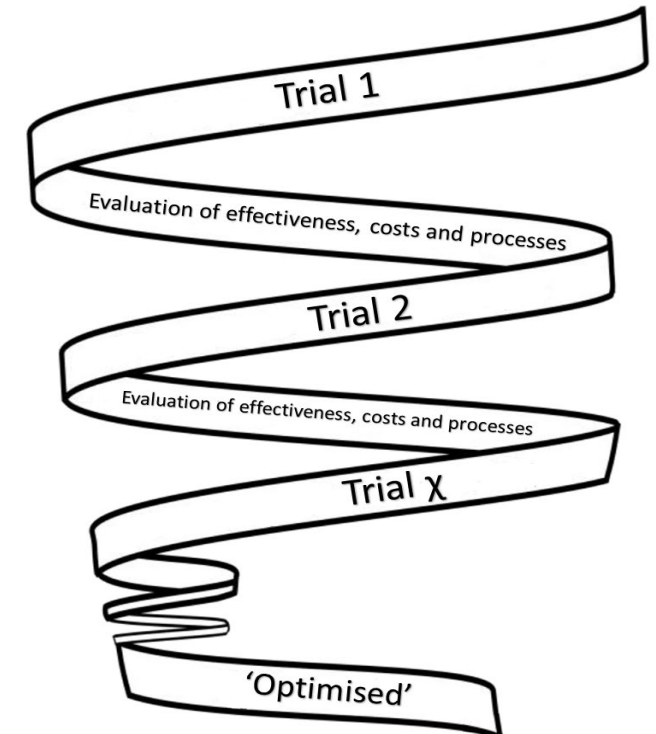
- *“...continuous improvement and innovation, with best practices seamlessly embedded in the delivery process and new knowledge captured as an integral by-product of the delivery experience”*

Optimisation

- *“A deliberate, iterative and data-driven process to improve a health intervention and/or its implementation to meet stakeholder-defined public health impacts within resource constraints”*
- Requires stable partnership, infrastructure, and supportive systems to collect and apply data for improvement

Challenges existing approaches

- Undertaken with/by health services, for health services, in their local context
- Ongoing and iterative



New approaches for public health improvement

- Hunter New England Population Health has used an embedded model – other collaborative approaches used elsewhere
- Integration of service delivery and evaluation with no distinction between research & practice/service
- Optimisation applied to the development of interventions and strategies to implement them
- Yielded health service and community health improvements



The screenshot shows the top portion of a journal article page from the Journal of Clinical Epidemiology (JCE). The header includes the JCE logo, a 'Log in' link, a search icon, and a menu icon. Below the header, the article is identified as a 'COMMENTARY' in 'VOLUME 85, P3-11, MAY 01, 2017'. The title is 'Embedding researchers in health service organizations improves research translation and health service performance: the Australian Hunter New England Population Health example'. The authors listed are Luke Wolfenden, Sze Lin Yoong, Christopher M. Williams, David N. Durrheim, Karen Gillham, and John Wiggers. The article is marked as 'Open Access' and was published on March 21, 2017. A DOI link is provided: <https://doi.org/10.1016/j.jclinepi.2017.03.007>. There is a 'Check for updates' button and a 'PlumX Metrics' logo at the bottom right of the article preview.



Some case studies..

Each have adopted an sequential RCTs approach

- The SWAP-IT healthy lunch-box intervention was optimised to reduce intervention costs by 95% while retaining effects on student diet
- A strategy to improve the implementation of healthy canteen policies was optimised to almost double its effectiveness (16 to 27%) and halve its cost per policy compliant school to (\$4730 to \$2627)



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Yoong et al. *International Journal of Behavioral Nutrition and Physical Activity* (2016) 13:126
DOI 10.1186/s12966-016-0431-2

International Journal of Behavioral Nutrition and Physical Activity

RESEARCH Open Access

CAFÉ: a multicomponent audit and feedback intervention to improve implementation of healthy food policy in primary school canteens: a randomised controlled trial

Nathan et al. *International Journal of Behavioral Nutrition and Physical Activity* (2016) 13:106
DOI 10.1186/s12966-016-0431-5

International Journal of Behavioral Nutrition and Physical Activity

RESEARCH Open Access

Effectiveness of a multicomponent intervention to enhance implementation of a healthy canteen policy in Australian primary schools: a randomised controlled trial

Woffenden et al. *Implementation Science* (2017) 12:6
DOI 10.1186/s13012-016-0537-9

Implementation Science

RESEARCH Open Access

Multi-strategic intervention to enhance implementation of healthy canteen policy: a randomised controlled trial



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What have we learnt...

On the whole the approach has been remarkably successful

But..

- Sequential randomised trials take time
- Effects sizes diminish at each phase (requiring increasingly greater sample)
- Mechanistic understanding is elusive..
- Bringing together statistical, mechanistic, and economic disciplines is a real challenge

Examining other methods of optimising to address these issues

