

## Importance of translational research in population health

SYDNEY MEDICAL SCHOOL

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## Overview of presentation

- Definitions and concepts
- Phases of research
- Why this is an important area of research
- Examples of translational research
- Take home messages

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## Definitions and Concepts

- **Efficacy research:** the extent to which the intended intervention effect or benefit is achieved under optimal, tightly controlled conditions.
- **Effectiveness research:** the extent to which the intended effect or benefit achieved under optimal conditions is also achieved in real world settings.

## Definitions and Concepts

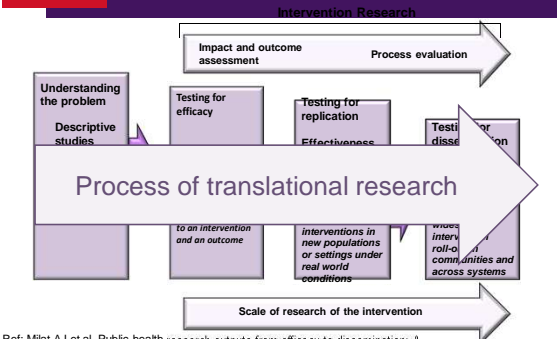
- **Replication:** the duplication of studies in which efficacious programs are adapted for other settings or other target groups.
- **Up-scaling:** taking an intervention from a local or small scale to a large population-wide program.



## Definitions and Concepts


- **Dissemination:** proactive and planned implementation and spreading of evidence-based interventions across populations.
- **Translational research:** the process of moving the discoveries of controlled research, to the subsequent replication and dissemination of approaches that have been shown to be effective.

## Phases of Research



Ref: Milat AJ et al, Public health research outputs from efficacy to dissemination: A bibliometric analysis. *BMC Public Health*, 2011 11:934.

## Importance of translational research



Equivalent of  
**bench to bedside**  
in more traditional forms of  
medicine and practice

- › “The ultimate goal of new discoveries is to enhance human health” (Glasgow et al 2012)
- › Effective interventions do not achieve their full potential if they are not applied beyond their original testing in research trials (Brownson 2009)

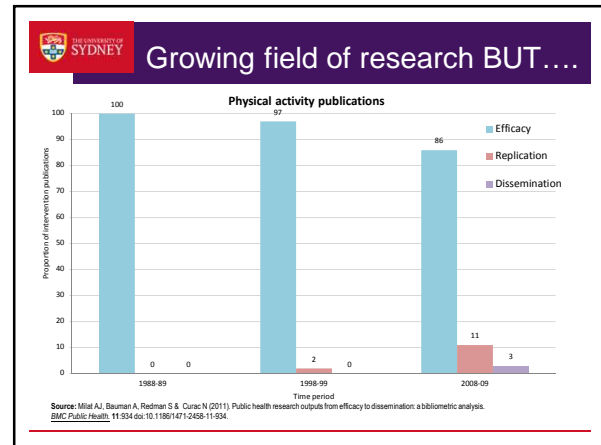
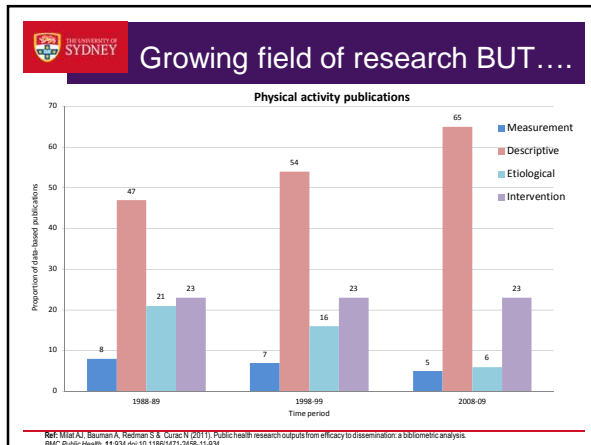
## Growing field of research



**IMPLEMENTATION SCIENCE**

IMPACT FACTOR **2.51**



## Growing field of research BUT...

Current research is very good at:

- describing the problem (the what),
- describing how the problem can
- be measured (the how) and
- talking about the causes of the problem (the why)

Problems  
Solutions

More work to be done getting “intervention” research published, particularly large scale dissemination research (the what to do about it).

## Growing field of research BUT...

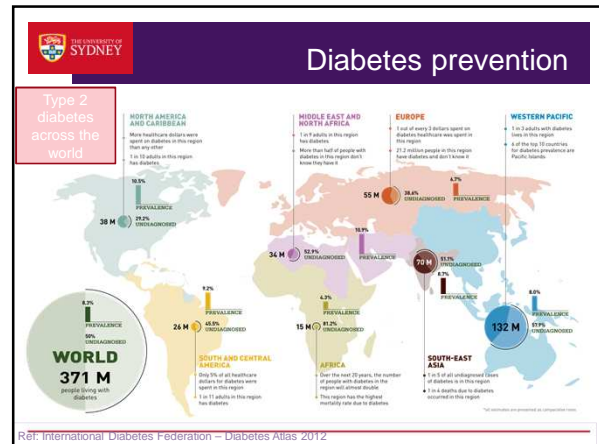
**Urgent need for high quality studies assessing mechanisms by which more widespread intervention adoption and reach can be achieved.**

Ref: CDC., 2011 Rubenstein and Pugh., 2006

**Examples of translational research**

**Type 2 Diabetes Prevention**

**Obesity Intervention**



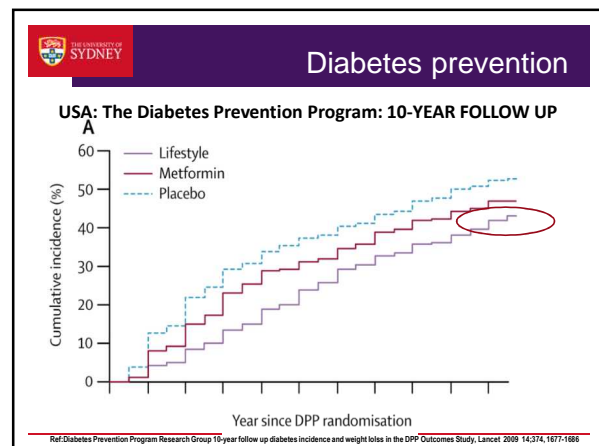
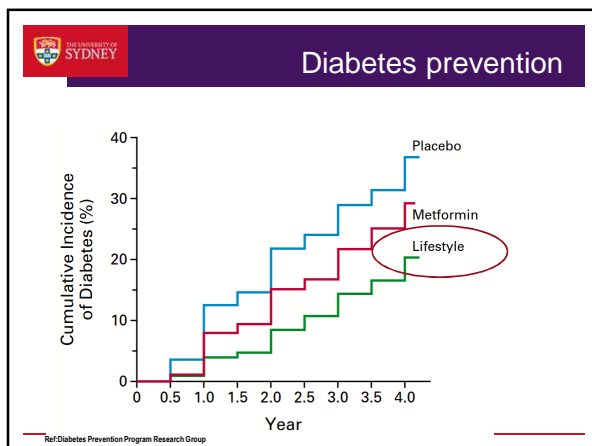
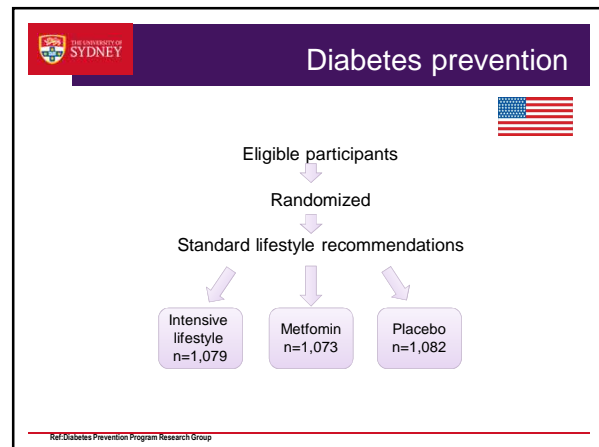
**Diabetes prevention**

Epidemiological and observational studies	Small scale efficacy trials	Larger scale efficacy trials and studies	Replication and Dissemination	Dissemination and Institutionalisation
Observational studies linking Physical Activity to decrease in Diabetes	Small scale efficacy trials	1993: Finland n=522 1996: USA n=3,000 2001: India n=531 2004: Aust-Victoria n=237	2004: USA YMCA and DEPLOY - pilot 2005: Aust-Sydney n=1,550	2008 Aust-Victoria Life! 2010: USA YMCA
	1985: Sweden n=415 1986: China n=577			

1980s      1990s      2000s      2010s

Efficacy      Effectiveness


*Journal Reports | The Y Takes On Diabetes*



**Diabetes prevention**

**Sydney Diabetes Prevention Program:**

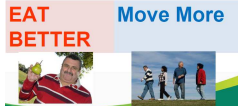

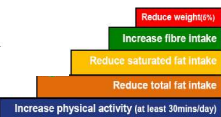
- Develop, implement and evaluate a community-based diabetes prevention program:
  - to identify people 50-65 years at high-risk of the future development of type 2 diabetes
  - to motivate, educate, facilitate and demonstrate skills to increase physical activity, eat better and lose weight



**Diabetes prevention**

**Sydney Diabetes Prevention Program:**

- Implemented in three areas across Sydney
- Participants recruited through **General Practice**
- 12-month lifestyle program


**Diabetes prevention**

**Sydney Diabetes Prevention Program:**

The evaluation component focused on:

- Reach
- Feasibility
- Effectiveness and
- Cost-effectiveness

*Process of implementation is what is important*




**Diabetes prevention**

**Results**

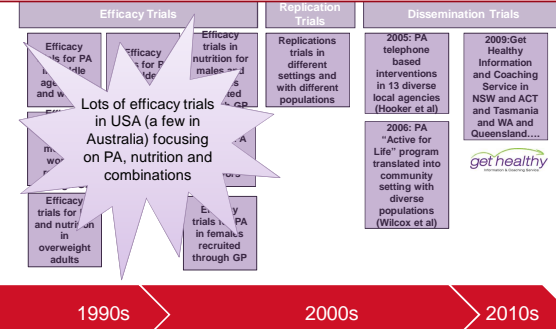
Program goal	Number of participants	Baseline	12-months
At least 210 minutes of physical activity per week	712	11.1%	10.5%
No more than 30% of total energy from fat per day	681	31.0%	51.5%**
No more than 10% of total energy intake from saturated fat per day	681	24.7%	49.0%**
At least 15g/1000kcal of fibre per day	681	19.8%	40.5%**
At least 5% weight loss at 12-months	829	n/a***	21.7%

Table 1. Proportion of participants meeting the Program goals - baseline vs 12-months



**Obesity intervention**

Telephone based interventions for physical activity, nutrition and weight management




**Efficacy Trials (1990s):** Lots of efficacy trials in USA (a few in Australia) focusing on PA, nutrition and combinations. Includes trials for PA in older adults, nutrition for males, and PA in female's recruited through GP.

**Replication Trials (2000s):** Replications trials in different settings and with different populations.

**Dissemination Trials (2010s):**

- 2005: PA telephone based interventions in 13 diverse local agencies (Hooker et al)
- 2006: PA "Active for Life" program translated into community setting with diverse populations (Wilcox et al)
- 2009: Get Healthy Information and Coaching Service in NSW and ACT and Tasmania and WA and Queensland...



**Obesity intervention**

**Information Kit**

- Healthy eating
- Physical activity
- Achieving and maintaining a healthy weight

**Coaching program includes**

- TEN free individually tailored telephone coaching sessions.
- Support for six months+
- Individual health coach
- University qualified




## Obesity prevention

### Evaluation framework

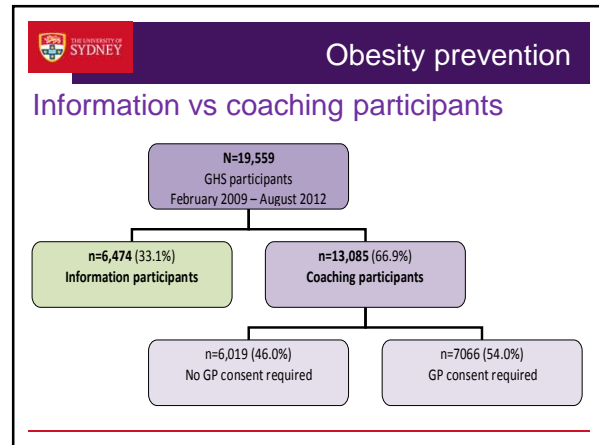
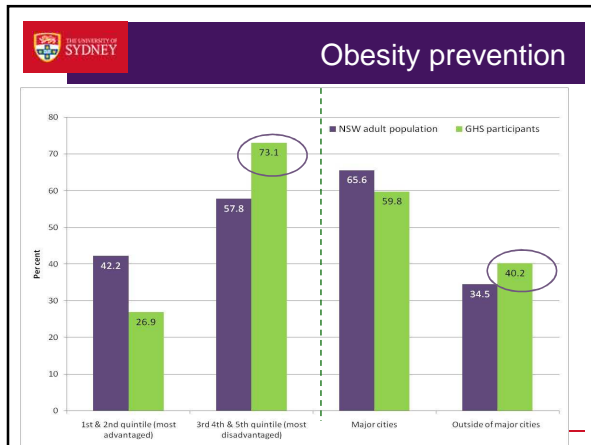
- **PROCESS:** evaluate the marketing and implementation of the service from user and service delivery perspectives
- **IMPACT** evaluate the effectiveness of the service on users [in terms of anthropometrics, behavioural risk factors and psych-social variables]
- **COSTING:** evaluate the costs and cost-effectiveness of the GHS

## Obesity prevention

### Profile of GHS participants

Gender	72.7% female
Age	50.7% aged 50 years +
Employment status	55.0% are employed (full time, part time or casual)
Educational attainment	45.1% have a high school education only
Indigenous status	3.3% - Aboriginal
Language spoken at home	92.0% - English

N=19,559



## Obesity prevention

### Coaching participants improvements

	Baseline	6 months	Δ	p-value
Weight (kg) n=1581	86.6	82.7	-3.9kg	p<0.001
Body Mass Index (kgm <sup>2</sup> ) n=1586	31.3	30.2	-1.1 units	p<0.001
Waist circumference (cm) n=1057	101.7	96.8	-4.9cm	p<0.001

## Obesity prevention

### Take home messages

Discipline of **public health** underpinned by:

- Evidence based
- To do justice to the discipline of public health – researchers and policy makers **MUST** focus on effective whole of population initiatives.....translational research and up-scaling is how this occurs
- Emphasis on prevention rather than treatment

Ref: Koplan et al (2009) Towards a common definition of global health. The Lancet. 373:1993-1995

## Take home messages

The benefit of any public health intervention is determined =

Efficacy and Effectiveness + Adopted and implemented

## Take home messages

› As research moves towards dissemination research there is a compromise between traditional scientific control and real world application

## Take home messages

› The difficulty closing the gap between research and practice is in part attributed:

- to a failure by research to address the contextual factors
- a research centric view of what constitutes evidence
- the characteristics of the intervention itself (eg: too intensive, too expensive, hard to do with alternate populations)
- Research or evaluation designs that are unsympathetic to the context/ environment

...or a combination.....

## Take home messages

› Shift in **evaluation emphasis** ie. impact evaluation still important but more emphasis placed on formative and process evaluation as we move towards dissemination/ translation research.

› **Partnerships and collaborations** are required between policy makers and researchers to make the translational research process happen

## References / More information

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