Systems approaches to obesity

Boyd Swinburn
Professor of Population Nutrition and Global Health
University of Auckland
and
Co-Director, WHO Collaborating Centre for Obesity Prevention
Deakin University

RNZCGP conference,
Hamilton, August 2015
Outline

• Key characteristics of the obesity epidemic
• What is a systems approach?
  – Theory
  – Practice
  – Research and evaluation
• Community-level systems approaches
  – Experience in Victoria
  – Situation in NZ
• Options with the health sector
  – General practice
  – Other aspects
  – Monitoring growth and weight – a systems approach
Obesity increase by age group

Age (yrs) = environmental influence

% obese

- 20-34
- 35-44
- 45-54
- 55-64
- 65-74
- 75+

What will the reversal of the epidemic look like?

• Prevention in children
  – Central focus for many reasons
  – Plateau and downward trends will start in U5s
  – Good evidence for effectiveness and cost-effectiveness of community interventions
  – No good effectiveness evidence for high risk groups

• 2/3 adults overweight or obese
  – Mass sustained weight loss is unlikely
  – Halting the age-related increase in weight through clinical and community efforts is plausible
  – ‘No K is OK’ concept has real merit
Maximising the downswing

- **Children**
  - Focus for prevention – systems approaches
  - Extra effort not to increase inequalities
    - Targeted programs (well evaluated)
    - Population policies/regulations
  - Monitor growth throughout childhood
    - Measure growth at touch points – primary care, pre-school checks, immunisations, school nurse/dental nurse, surveys etc

- **Adults**
  - Focus of no extra weight gain
  - Linked into community and primary care systems approaches
Systems map of obesity
The Full Prevention House

- Leadership & governance
- Information & intelligence
- Finances & resources
- Networks & partnerships
- Workforce development
- Health in all policies

High Level Policies

Political commitment

Specific actions – people and food & PA envs

Service delivery, programs, policies

Systems dynamics

Apply arrows everywhere

System & capacity building blocks
Systems thinking

- Understanding the dynamics – stocks and flows diagrams
- Importance of feedback loops, time delays, non-linear effects, relationships, networks, emergent properties etc
- In health promotion, major shift from program thinking – ‘penny drop’ moments
- Building on existing assets, structures, players
- Working ‘in the system’ vs ‘on the system’
- Disruptive actions for systems change
Research tools

• Different to null hypothesis testing tools
• Need to describe, measure changes, predict changes across whole systems
  – Causal loop diagrams
  – Systems dynamics models
  – Social network analyses
  – Agent-based models
  – Continuous quality improvement
Community-based interventions

• Community capacity building approach
  – Leadership and commitment
  – Funding and resources
  – Organisational relationships and structures
  – Knowledge and skills

• Multiple settings and participatory process
  – The approach and process need to be robust
  – Content is determined and specified by the community players
  – Well evaluated

Bell et al Health Prom Int 2008
(Geelong) <5s
2004-'08

1.8% (2y/o) & 2.7% (3.5y/o) over 3 y
$100k for 12,000 children
Δ behaviours and environments
Δ state prevalence
(de Silva-Sanigorski Am J Clin Nutr 2010)

(Colac) 4-12
2002-'06

~1kg, 3cm waist over 3y
Greater effect in lower SES children
No Δ ‘safety measures’
Sustained & spreading influence
(Sanigorski et al Int J Obesity 2008)

(E Geelong) 13-18
2004-'08

5.8% prevalence over 3 y
Δ community capacity
Δ in school environments
No Δ behaviours
(Millar et al Obes Rev 2011)
Healthy Together Communities

Comprehensive health promotion initiative targeting 14 local government areas

- 938 early childhood centres
- 520 schools
- 4,409 workplaces and
- over 1.3 million Victorians
- 150 new positions in LGAs

A systems approach to chronic disease prevention
- Chamber of Commerce
- Rent reductions for healthy catering policies
- Design of healthy food outlets into new developments
- Mayors leading community challenges
- Council meetings discussion on leadership for systems change
- Healthy cafes, pubs, restaurants
- Performance measures for CEOs to deliver HTV

NB: Systems audits tell us much more
Healthy Together Victoria

- Investment in a systems-based approach through local government
- Injection of capacity into 12 sites (~120 FTE)
- 2 years planning, 3 years intervention, change in govt, prevention defunded
- ‘Prevention virus’ spreading after 3 years
- Non-HTV sites stimulated by HTV activity started their own processes
- Little engagement with primary care
- Weak evaluation
Aim: To improve people’s health where they live, learn, work and play

How: taking a dynamic systems approach to prevention

About encouraging families to live healthy lives, by:
- making good food choices
- being physically active
- sustaining a healthy weight
- being smoke-free and
- moderating alcohol consumption
Healthy Families NZ

- Modelled on Healthy Together Victoria
- 10 locations across NZ
- Potential reach of a quarter of the population of New Zealand
- $10M annual investment
- Workforce of ~75 full-time staff being established

- Far North District
- Waitakere Ward
- Manukau Ward
- Manurewa-Papakura Ward
- Rotorua District
- East Cape
- Whanganui District
- Lower Hutt City
- Spreydon-Heathcote Ward
- Invercargill City.
The Healthy Families NZ Model
Primary Care role

1. ‘Health professionals should take every opportunity to engage sensitively with patients who are obese, providing them with advice for healthy living and directing them to exercise and nutrition programs as appropriate. Recognising and acting on obesity in childhood is of particular importance’
Programs

• Issues of evidence, scale, sustainability of effects, sustainability of programs, costs etc

• MEND program for children
  – 2.4y F/U: improvements in all outcomes except BMIz (Kolotourou Childhood Obesity July 2015)

• Positive Parenting Program (PPP)
  – Family-based intervention for children with obesity
  – Significant BMIz effects over 12 months (West, Behav Res Ther 2010)

• Many other small programs
Referral systems

• Weight Watchers (vs GP management)
  - 5kg vs 2.3kg weight loss over 1 year (Jebb Lancet 2012)
  - Regain to baseline over 5y (vs 4y) (Holzapfel IJO 2014)
  - Cost-effectiveness models: 50 LY saved/1000 patients, diabetes delayed 10 months, cost-saving (Fuller IJO 2014)

• Diabetes prevention programs
  - 4 large trials showing ~50% ↓ in diabetes conversion
  - CDC guide (3 papers in Ann Int Med July 2015)
    • Meta-analysis of 53 (efficacy) studies
    • Cost effectiveness $13k/QALY gained
    • Real world effectiveness: experience in Montana, YMCA, HMOs
Short interventions

- Fit within the existing systems and paradigms
- Successful experiences of smoking, alcohol, PA
- Unsuccessful experiences with obesity
  - Active Scripts + diet
- Potential for linking in with a monitoring and social marketing campaign ‘Extra K not OK’
  - Growth monitoring in children
  - 2/3 adults overweight or obese
  - Mass weight loss program unlikely
  - No age-related weight gain
  - Will reduce obesity prevalence and diabetes
Added value of monitoring

- **Routine nature** (awareness, ownership)
  - Accepted normal practice
  - Talking point
  - Self-care paradigm
- **Individual feedback** (clinical intervention)
  - Reality check (50% of parents of obese children think they are normal weight)
  - Self-monitoring
- **Local data feedback** (community intervention)
- **National data systems** (‘white spots’, ‘black spots’)
England’s National Child Measurement Program
England child monitoring data

4-5 year olds
By year & deprivation decile

10-11 year olds
By year & deprivation decile
Would a ‘monitoring+’ work within primary care?

- Growth monitoring among children
  - Electronic growth chart records
  - Feedback to parents
  - Referral options (PPP in South Is)
  - Monitoring systems for national & local progress

- Weight monitoring for adults
  - Monitor like BP
  - Message of ‘no weight gain’
  - Potential for brief intervention, referral (?)
  - Monitoring systems for national & local progress
Preventing obesity

Some linear policy drivers and many small systems changes are needed
Conclusions

• Systems approaches coming to communities
• ‘Infecting’ communities with the ‘prevention virus’ - ‘bootstrap’ action for sustainability
• Engagement with primary care and within primary care - ?systems approaches
• Thinking through:
  - Engagement, social marketing, information, waiting rooms, measuring equipment, feedback approaches, reducing weight bias, CME, data linkages, funding mechanisms, fruit at conference afternoon teas etc
• Increasing accountability (individual, family, community etc)