Role for Economics in improving Health & Well-being in Rural & Remote Australia

Professor Leonie Segal
Chair Health Economics & Social Policy
University of South Australia
Economics discipline concerned with maximising well-being knowing resources are scarce

By answering the questions of:

• What to produce? What is the ideal mix of services/programs.
• How to produce? Optimal mix of resource inputs.
• To whom to distribute? Who should get services?
• How achieve ideal - incorporate right incentives for providers & consumers?
• How fund – for equity and efficiency?

Taking a Systems perspective, theory and logic driven
Research Activities Associated with these Questions
Policy-Driven

What to produce? What service mix?

Priority setting / Evaluation / Costs, Benefits (Outcomes)
  Immediate & downstream, direct target / others (eg drug and alcohol)

Cost-effectiveness, Cost-utility Analysis, Cost-Benefit analysis.

Comparative economic evaluation: Eg low risk vs high risk

How to produce?

Cost Efficiency, Workforce – competencies/skill set

Modality – Clinical (individual clinician, medical model, multi-D/allied health +social,

Public health - social marketing/education, subsidies/penalties
To whom to distribute?

Equity: Horizontal - Equal access for equal need
   Vertical   - Greater access for greater need
Regional   - city, regional inner/outer, rural/remote
   - high/low SES, disenfranchised/competent
Not a/c to capacity to pay, location, power/influence

How fund:
For equity    – Universal cover vs PHI
For efficiency – Universal cover vs PHI
What to cover in this talk?

- Burden of disease
- Priority setting – theory / application to life style, diabetes, child maltreatment
- Economic evaluation – examples, distortion of not including all impacts.
- Health Workforce
- Outcome Measurement metrics
- Defining the research question / the health problem
- Causal pathways into poor heath / How to disrupt
- Market failure and how this distorts health service mix / efficiency argument for patient/citizen empowerment
- Case studies
- Developing policy – eg a nutrition strategy
Health funding: the nature of distortions and implications for the health service mix

Leonie Segal
Economics Unit, Monash University, Melbourne, Victoria

ECONOMIC EVALUATION OF INTERVENTIONS FOR PROBLEM DRINKING AND ALCOHOL DEPENDENCE: DO WITHIN-FAMILY EXTERNAL EFFECTS MAKE A DIFFERENCE?

DUNCAN MORTIMER* and LEONIE SEGAL
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Revised 26 May 2008; first review received 20 July 2008; in final revised form 29 September 2008; accepted 29 September 2008; advance access publication 21 October 2005

ABSTRACT—Alcohol is an important and growing problem for all developed countries, and the consequences of problem drinking and alcohol dependence are serious. The aim of this paper is to evaluate the extent to which within-family externalities play an important role in the decision to drink, and to assess the consequences of these externalities for the design of policy intervention. We have developed a modified version of the model of alcohol consumption, and have estimated the contribution of the within-family externalities using a series of empirical tests. The results indicate that these externalities are significant, and that the policy implications of this finding are important.

INTRODUCTION

The nature of the relationship between a state of mental illness and the occurrence of a particular disease is complex and varied. It is important to understand the nature of these relationships in order to develop effective strategies for prevention and treatment. One approach to addressing this problem is to study the interactions between different factors, such as genetics and environment. This can help to identify key determinants of disease risk and inform the development of targeted interventions. For example, studies have shown that there is a strong association between obesity and cancer risk. Understanding this relationship can help to develop more effective prevention strategies for these diseases.

Review of Australian health economics evaluation – 245 interventions: what can we say cost effectiveness? Kim Dalziel1, Leonie Segal1 and Duncan Mortimer1,2

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*Author to whom correspondence should be addressed: Kim Dalziel, Centre for Health Economics, Monash University, PO Box 38, Clayton South, VIC 3805, Australia. Fax: 613 9908 4267.
Chapter 10: Economic Issues in the Community Response to Child Maltreatment

Leonie Segal

Fixing the Game: Are Between-Silo Differences in Funding Arrangements Handicapping Interventions and Giving Others a Head Start?

Leonie Segal1, 2, Kim Dalziel3, and Duncan Mortimer1, 4

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Summary

The economic discipline is concerned with maximising community well-being for available resources. Underpinning economics is a study of markets, market failure and the role of government. Thus, the uninterred operation of the private market will rarely solve the resource allocation questions economically is not widely understood.

Original Research

The real cost of training health professionals in Australia: it costs as much to build a dietitian's workforce as a dental workforce

Leonie Segal1, Claire Marsh2, and Rob Heyen3

Abstract

Objective: We explored the real cost of training the workforce in a range of primary health care professions in Australia with a focus on the impact of retention to contribute to the debate on how best to achieve the optimal workforce mix.

Methods: The cost to train an entry-level health professional across 12 disciplines was derived from university fees, payment for clinical placements and, where relevant, cost of internship, adjusted for student drop-out. Census data were used to identify the number of qualified professionals working in their profession over a working lifetime and to model expected years of practice by discipline. Data were combined to estimate the mean cost of training a health professional per year of service in their occupation.

Results: Clinical medical graduates were the most expensive to train at $451,000 per completing student and a mean cost of $18,400 per year of practice (expected 24.5 years in general practice), while dentistry also had a high training cost of $352,189 but an estimated cost of $1,140 per year of practice (based on an estimated 31.6 years in practice).

Training costs are similar for dieticians and podiatrists, but because of differential workforce retention (mean 14.9 vs 31.5 years), the cost of training per year of clinical practice is twice as high for dieticians ($10,300 vs $5,200), even 8% lower than that for dentistry.

Conclusions: Return on investment in training across professional occupancies is highly variable, with expected time in the profession as important as the direct training cost. These results can indicate where increased retention and/or attracting trainees to professions return to practice should be the focus of any supply expansion versus increasing the student cohort.

Keywords: cost, health workforce, multidisciplinary care, primary care, training

How many children in Australia are at risk of adult mental illness?

Sophie Guy1, Gareth Furber1, Matthew Leach2 and Leonie Segal1

Abstract

Objective: To estimate the prevalence of children in the Australian population with risk factors for adult mental illness.

Methods: Key risk factors and risk domains were identified from a 2013 review of longitudinal studies on child and adolescent determinants of adult mental illness. Data were from the Longitudinal Study of Australian Children that map onto the risk domains. A three-step process was undertaken: assigning risk factors to risk domains; and using a checklist for identifying prevalence of these key risk factors and the magnitude of multiple risk factors in children aged 3 months to 13 years.

Results: Even by infancy, risk factors for adult mental illness are highly prevalent, with 51.7% of infants having multiple risks. In 10 infants, I was born to mothers who consumed alcohol 1 and 7 to 8 mothers who smoked cigarettes daily during pregnancy. Also, 10.5% of infants were in families where the parents had separated, which increased to 16% in 10–11 year-olds. Psychological problems in the clinical round (based on the Strengths and Difficulties Questionnaire total score) ranged from 7.8% to 9.7% across the 4–13 year age range. Risks from negative parenting behaviours were highly prevalent across age groups. Two-thirds of children aged 12–13 years had parents who displayed low warmth or exhibited high hostility/anger. Three-quarters of children aged 9–12 years had at least one risk factor, and one in seven children are in families exposed to five or more life stressors. By age 9–9 years, more than 18% of children are exposed to five or more risk factors.

Conclusions: We find that modifiable risk factors for adult mental illness occur at the earliest stage in the life course and at greater prevalence than is commonly recognised. Considerable capacity will be required in child and adolescent mental health services and community family support programmes if risk factors for adult mental illness that are
What I plan to cover

- How distribute funds – Single fund holding
- Understand the problem
- Workforce mental health, Diabetes

Economic evaluation GBCC FNQ
Single fund-holding of populations at regional level

- Bring into one pool funding from Commonwealth, State, Health other agencies, across program areas, programs, portfolios?

- Likely maximise **efficiency** - *opportunity* for resources to shift in response to local needs / core health problem, across modalities, clinical groupings, prevention/treatment/ spectrum.

- Achieve *equity* across regions thru application of needs-adjusted capitation formula → clinicians/service providers will follow the money

- It can work
  - Eg motor accident insurers, US VHA

- It will radically alter the service mix eg Congress
Central Australian Aboriginal Congress

For >9,000 Indigenous people in / around Alice Springs

Youth including Head space

Alukura Women & babies midwife training, FPP nurse visiting etc.

Early Childhood Abecedarian

Remote Health

Directorate Public Health Advocacy

Health Services chronic disease, dental, kids, elderly, pharmacy, transport

Social & Emotional Wellbeing. DV, IFFS

Inkintja Men’s Health

Community controlled Board

Health Education & Training
Single fund-holding: - Challenges

- **Vested interest** – medical profession the most vocal critic, consumer groups, pharmaceutical lobby etc. –
  - Will be a radical change in clinical mix, And where jobs are located

- How get Commonwealth and State to allocate funds into fund-holder
  - Move away from program-based funding
  - Allow different regions to set distinct priorities

- Technical challenge in setting priorities and services planning

- Scope – what sectors to cover? What funds to bring in?

- Financial Risk – how pay providers - P4P, salaried, FFS,

- How retain Medicare principles – minimum access to a set of core services?

- How ensure quality?

- Skill up community to participate – not dominated by vocal interests
Better problem conceptualisation

For more Effective and Efficient solutions
Example: Closing the health gap

- Between:
  - high/low SES
  - Marginalised/disenfranchised and Mainstream

- Need a Deep understanding of the source of the problem
  - Focus on the family environment and trauma load
The impact of trauma

- Trauma is toxic to brain development and can affect all aspects of the developing child and their life trajectory.

- Historic and current – economic and social, Dispossession, racism, family-based, community
Entrained Mother, Entrained Child: Agonic Mode, Hierarchy and Appraochment in Intergenerational Abuse and Neglect

Jackie Amos - Leonie Segal - Chris Cantor

Abstract: Attachment theory wishes it had provided a powerful, biologically understanding route for the analysis of the influence of the environment on human development. This paper proposes a model for understanding and intervening in cases of severe trauma and inapproachment in the development of mother-child relationships. The core psychopathology of depression, behavior, and trauma are discussed. The author hypothesizes that a mother's malingering behavior arises from unconscious attempts to experientially avoid dissociative processes, which in turn leads to the reemergence of attachment-related dissociative states. The implications of this model for therapy are considered.

Child Development

Building a New Biodvelopmental Framework to Guide the Future of Early Childhood Policy

Jack P. Shonkof

Four decades of early childhood policy and program development indicate that evidence-based interventions can improve child outcomes, and dramatic advances in the biological and behavioral sciences now provide an opportunity to augment those impacts. The challenge is not just to increase the gap between what we know and what we do, but also to scale up the interventions that we do know to promote healthy development of young children. This article offers an integrated, biodvelopmental framework to promote greater understanding of the antecedents and causal pathways that lead to change in children's lives and in policies and programs.

Decades of research in child development have taught us that families and communities play a central role and have the most impact on children's learning experiences, including the supportive relationships they have with their caregivers.
Entrapped by Cause/Consequence interplay + unsympathetic Social environment

RISKS
- Child abuse history
- Poor mental health
- Drug & Alcohol
- Teen pregnancy
- Welfare dependency / Poverty
- Involvement in Crime
- Low education
- Parental separation

TRAUMA
- ABUSE & NEGLECT

CONSEQUENCES

Intergenerational

Negative Social Environment: Racism / Justice / Forensic Welfare system
Segal L, Doidge J, Amos J, Determining the determinants: Is child abuse & neglect the underlying cause of the socio-economic gradient in health?’ Ch 13 in Determining the Future: A Fair Go &

Positive socioeconomic determinants

Social & Economic Policies
- Protection from exploitation & discrimination
- Affordable housing
- Income protection
- Education

Healthy lifestyle
- Delayed and spaced pregnancy
- Improved education outcomes

Safe & nurturing childhood environment

Physical and mental development
- Emotional autoregulation
- Improved learning capacity

Child abuse & neglect
- Relational Trauma
- Disturbed behaviours
- Compromised physical & mental development
- Drug & alcohol problems
- Teenage pregnancy
- Crime victim/perpetrator
- Poor education outcomes

Physical & mental illness, injury & disability
- Unemployment
- Welfare dependency
- Low income
- Unstable housing
- Failed relationships

Good physical & mental health

Secure income
- Stable employment
- Supportive relationships

Health Policies
- Healthy food supply
- Healthcare services
- Health insurance
- Environmental health

© Segal & Doidge 2011
Accumulation of harms: Where Interventions needed

- Maternal health & mental health programs (incl. drug and alcohol), child & adolescent mental health services, Child/family centres, Infant home visiting, Family support programs
- Child & adolescent mental health services, Family support programs, School-based programs, Therapeutic schools
- Youth mental health services, technology-based services, youth justice, Drug & Alcohol
- Adult mental health services

+ Negative exposures in adolescence, youth

Psychopathology in childhood & adolescence

Negative Consequences
Cognitive, Emotional, Behavioural (anti-social & self-harming), physical health, Poor educational/employment outcomes

Negative family-based exposures
Abuse, Neglect, Parental mental illness and substance use, Parental Separation, Poor housing/living conditions

In-utero Infancy Childhood Adolescence Youth/Adulthood
Commonwealth mental health payments 2012-13

- Disability Support Pension ($4700m)
- Hospital in-patients ($1000m)
- Carer payments ($1000m)
- MBS ($900m)
- PBS ($800m)
- DVA ($192m)
- PHI ($105m)
- Mental health initiatives (eg perinatal depression, suicide prevention) (payments to states) ($169m)
- Headspace ($69.4m)
- Beyond Blue ($29.5m)
State ‘mental health’ payments 2012-13

- In-patient psych services ($2,000m)
- Community adult psych services ($1,200m)
- CAMHS ($346m)
- Residential mental health ($261m)
- Grants to NGOs ($321m)
- Other ($227m)
- Corrections ($3,059m)
- Child protection ($3,323m)

Where are services needs

- Infant Child and Adolescent and their families mental health services
- Accessible friendly comprehensive early childhood services
- Intensive support for families.
Health Workforce
Needs-driven Health workforce planning

Diabetes

Infant, Child & Adolescent Mental Health
DIABETES

Conceptualise the problem in a way that is tractable but reflects the complexity.
Current primary care team vs Bio-psychosocial for Diabetes care
How Conceptualise need?
• Combination of psychological distress and multiple current adversity

How measure number in need
• LSAC, LSIC, YMM

Determine service need per person
  – using a care pathway: accept referral, management - clinical, psychiatric oversight/care, specialised input, social/economic support.

Compare modelled with existing service delivery – area SA
  Population served, FTE, Budget
Current Psychological Distress

Risk exposure/Adversity
Estimated hours required over a 12 month clinical episode

1. First contact, assessment, follow-through 3 hours
2. Lead therapist 27 hours (18 direct, 9 indirect)
3. Clinical specialty – 12 hours (eg Parenting program, Speech/language assessment & therapy)
4. Psychiatric care – 2 hours
5. Psychosocial support – 12 hours (eg monthly meeting with youth worker/family support worker)
Mental Health workforce Conclusions

- Current SA CAMHS 2.1% of 0-18s cf ~7% in desperate need
- Current CAMHS FTE ~180  NEED >900 FTE
- Current Budget $24million  NEED >$100m
- Required FTE and budget 5 times current CAMHS workforce.
- If don’t invest in high quality, highly skilled infant, child adolescent / family mental health service will continue to bear the consequences in poor mental & physical health, social and economic outcomes
- Need a new centre of excellence operating flexibly, to reach vulnerable populations And train mental health workforce and others working with vulnerable populations.
• Aim: improve chromic disease management through upskilling Indigenous health workers
• Target persons with poorly controlled Type 2 Diabetes and comorbidities
• Cluster RCT 12 communities  GBCC  Usual care control
• Intervention:
  – Train IHWs to support more effective patient self-care
  – Extra resources for more IHW involvement
  – Central clinical support service for IHWs
Tasks of the economic evaluation

• Select and measure differential outcomes
• Measure differential costs – attributable to the program as would be incurred if rolled-out
• Compare costs and benefits in a cost-effectiveness and cost-utility analysis
Costs of implementation $2013

- $10,100 per participant (18 month intervention)
- $6,730 per participant year

<table>
<thead>
<tr>
<th>Costs allocated to the GBCC intervention</th>
<th>Costs for Project Activities</th>
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<tbody>
<tr>
<td>$</td>
<td>%</td>
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<tr>
<td>Project team (2010 – 2013)</td>
<td>487,683</td>
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<tr>
<td>Indigenous Clinical Support Team</td>
<td>357,353</td>
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<tr>
<td>Management</td>
<td>25,662</td>
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<tr>
<td>Operation</td>
<td>104,668</td>
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<tr>
<td>Indigenous Health Workers (2012 &amp; 2013)</td>
<td>522,421</td>
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<td>Site 1</td>
<td>118,210</td>
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<td>2.</td>
<td>96,993</td>
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<td>3.</td>
<td>131,087</td>
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<td>4.</td>
<td>69,445</td>
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<td>5.</td>
<td>73,346</td>
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<td>6.</td>
<td>33,341</td>
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<tr>
<td>Grand total</td>
<td>1,010,104</td>
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</table>


Outcomes – HbA1c (mmol/L) differential change in mean value and change in distribution

<table>
<thead>
<tr>
<th>Differential change</th>
<th>Change between ‘baseline’ &amp; ‘endpoint’</th>
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<tbody>
<tr>
<td>IHW &amp; UC</td>
<td>Mean</td>
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<tr>
<td></td>
<td>-0.62</td>
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### Baseline & Endpoint Distribution

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<th>Baseline</th>
<th>Endpoint</th>
<th>Baseline</th>
<th>Endpoint</th>
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<tbody>
<tr>
<td>Usual care</td>
<td>65%</td>
<td>41%</td>
<td>58%</td>
<td>54%</td>
</tr>
<tr>
<td>IHW</td>
<td>35%</td>
<td>37%</td>
<td>42%</td>
<td>23%</td>
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</table>

- **Red** ≥ 11.5%
- **Orange** 8.5 - 11.4%
- **Blue** < 8.5%
Outcomes: Disease progression

Baseline

Usual care

Endpoint

Baseline

IHW

Endpoint

Dead

Stage 4

Stage 3

Stage 2

Stage 1

0%

10%

20%

30%

40%

50%

60%

70%

80%

90%

100%
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<tbody>
<tr>
<td>Usual care</td>
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<tr>
<td>All hospitalisations</td>
<td>0.99</td>
<td>1.13</td>
<td>0.93</td>
<td>0.96</td>
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<td>Diabetes related</td>
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<tr>
<td>(any diagnoses)</td>
<td>0.50</td>
<td>0.44</td>
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<td>Diabetes related</td>
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<td>(principal diagnoses)</td>
<td>0.15</td>
<td>0.15</td>
<td>0.16</td>
<td>0.10</td>
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Outcomes: QoL

Summary scores AQoL 4D: Differential change 0.025 or 0.044

<table>
<thead>
<tr>
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<th>All participants</th>
<th>Matched participants</th>
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<tbody>
<tr>
<td></td>
<td>UC</td>
<td>IHW</td>
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<tr>
<td>Baseline (N=213)</td>
<td>0.796</td>
<td>0.762</td>
</tr>
<tr>
<td>Endpoint (N=170)</td>
<td>0.795</td>
<td>0.718</td>
</tr>
<tr>
<td>Change</td>
<td>0.001</td>
<td>-0.045</td>
</tr>
<tr>
<td></td>
<td>UC</td>
<td>IHW</td>
</tr>
<tr>
<td>Baseline (N=170)</td>
<td>0.804</td>
<td>0.750</td>
</tr>
<tr>
<td>Endpoint (N=170)</td>
<td>0.795</td>
<td>0.718</td>
</tr>
<tr>
<td>Change</td>
<td>-0.008</td>
<td>-0.033</td>
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</table>
Was GBCC a good investment?

Costs High


– Community/primary care cost to deliver best practice diabetes care in 2012: $2,090/person per year (Segal et al., 2013)

– The mean cost of primary care (across 20 communities in far north Queensland): $637 - $2,147/person (Gibson, 2013)

– Mean cost per hospitalisation:$4,500 (AR-DRG 2009/10)

Cost-effectiveness v. poor >$200,000/QALY
Overarching themes

Economics provides policy relevant evidence
Taking a systems and logic driven perspective

• Creative problem conceptualisation – if we don’t conceptualise problem correctly will never arrive at the best solution

• Costing studies, cost-effectiveness, burden of disease
  – describing outcomes in policy relevant ‘meaningful’ terms
  – using transparent methods
  – focus on ‘final’ not intermediate outcomes
  – Model LT consequences – budget, health, social

• Workforce and services planning

• Funding models etc.
Engage economics early
  – Help refine research question
  – Contribute to how best to answer that question

Use economics in policy and practice translation.
Thank You .