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GETTING RESEARCH INTO POLICY AND PRACTICE

GUEST EDITORIAL

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Over the past decade or so there has been a growing interest in not only gathering the best available evidence on effective public health interventions, but also on how to use this evidence to make better policy and practice decisions. In 1993 Oxman and colleagues suggested that there are 'no magic bullets' for achieving effective dissemination and use of evidence, rather one must use a range of mechanisms in order to get evidence into practice.[1]

Lomas has offered similar advice and suggested that 'multi-faceted activities' are required in order to 'retail' evidence and promote research utilisation.[2] Above all, for Lomas, getting evidence into policy and practice requires active management of the available evidence rather than passive diffusion. This requires 'product champions' who will take responsibility for promoting the use of available evidence, as well as evidence-based guidelines, the co-ordination of implementation activities, the involvement of relevant stakeholders (including patients and citizens), and incentives to use evidence (including financial incentives).

Stocking has suggested three requirements for getting evidence into practice—'observability' (or transparency) of the available evidence; 'trialability' of the available evidence (does it work in my context?); and 'demonstrable relative advantage' (will the use of the available evidence enhance the health care provided in some noticeable way, over and above doing something else or doing nothing at all?).[3]

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Davies has supported all of these ideas for getting evidence into practice and has also noted that open, democratic and non-hierarchical environments might be more conducive to research utilisation than those that are operated by rank, status or hierarchy.[4,5] Davies has also suggested the importance of establishing ownership of a policy or practice issue, and of the available evidence on effective interventions, by the most senior decision makers in an organisation. Failure to do so can result in a lack of responsibility and accountability for the use of evidence, and a reliance on less robust influences. It is also important to recognise the many factors other than research evidence that influence policy making and practice, including experience, expertise, judgement, resources, habit and tradition; lobbyists and pressure groups; and contingencies.

Presentation and communication of the available evidence is also important. Too often research evidence is inaccessible to key decision makers either because it is published in journals that are not read by policy makers or practitioners, or is presented in ways that are dense, verbose, written in jargon or are otherwise impenetrable. Appropriate sources and formats for presenting evidence include user-friendly websites and printed documents that are clear, concise and coherent. The Canadian Health Services Research Foundation has proposed a 1:3:25 format for presenting research evidence. This consists of a one-page summary of key points and messages; a three-page executive summary that supports the one-page; and a full report of no more than 25 pages that provides substantiation of what is presented in the one-page and three-page documents.[6]

GETTING EVIDENCE INTO PUBLIC HEALTH IN NSW

The papers presented in this special edition of the *NSW Public Health Bulletin* allow many of these principles of getting research into policy and practice to be demonstrated empirically. Bowen, Zwi and Sainsbury in 'What evidence informs population health policy? Lessons from early childhood intervention policy in Australia' argue that the breadth and complexity of the public health field calls for a variety of types of evidence to be used to inform policy making and practice. This paper also makes the point that governments draw on a variety of types of evidence, other than research evidence, to inform decisions. Interviews with policy actors revealed that four types of evidence were required: evidence of the problem, evidence of effectiveness, evidence of effective implementation, and evidence of cost effectiveness.

Poulos and Zwi in 'Building capacity in injury research transfer' report on the role of translation task groups (TTGs) in getting research evidence into policy and practice. The principal role of TTGs is to 'enhance the linkage between researchers, policy makers and other stakeholders, and to foster the development of policy-sensitive researchers and evidence-sensitive policy makers'. Poulos and Zwi report on two current TTGs in NSW, one focussing on road safety and the other on the prevention of falls in elderly people. Both TTGs identified personal contact with policy makers as the most critical factor in getting evidence into policy and practice. Poulos and Zwi note that 'two-way communication aids both the dissemination of emerging research, and the setting of the research agenda'. The authors also point out that 'research evidence requires active management, rather than the assumption that "the evidence would speak for itself"'.

Another public health issue that requires effective knowledge transfer is the prevention of HIV. Salter in 'HIV prevention and community engagement: 15 years on' presents an overview of the National Centre in HIV Social Research's (NCHSR) work in this area. He also notes the importance of collaboration between health care providers and researchers, and argues that 'health providers are being encouraged to turn to research to both inform and justify their service delivery decisions, and researchers are increasingly expected to engage policy makers and research consumers in both the construction and dissemination of research'. Salter adds that this involves integrating knowledge transfer with community engagement, and the work of many health and community agencies. Integrated and strategic planning of both research and service responses is also seen as being very important to successful knowledge transfer and effective prevention.

Jones et al offer the important message that in order to get best evidence into policy and practice we need to find effective ways of changing behaviour. The authors propose social marketing as one way of doing this. They note that despite the use of social marketing techniques in the areas of smoking cessation, healthy eating, drug use and physical activity they have been under-used in preventing skin cancer (a major public health challenge for Australia). Drawing on systematic review evidence the authors suggest ways in which social marketing might be used to change Australians' behaviour so as to reduce exposure to the sun and prevent skin cancer.

Another substantive area in which research has influenced effective practice is the prevention of smoking. Oakes and Edwards in 'Building evidence and support for a strategy to counter smoking images in movies' report on counter advertising in cinemas. This provides health promotion messages to cinemagoers to counterbalance the encouragement of smoking by the tobacco industry. Oakes and Edwards join other authors in this special issue of the *Bulletin* in highlighting the importance of collaboration across a number of sectors. This is particularly important in areas where there are powerful vested interests—in this case the tobacco industry and the mass communications industry—against which the health promotion sector has to compete. Oakes and Edwards conclude their case study by suggesting that 'by working collaboratively, public health research, health promotion and advocacy groups

can combine their respective strengths to present a feasible solution that is not only based on sound evidence but will also satisfy the many technical and practical issues involved in implementing the strategy'.

Harris and Powell Davies in 'SNAP: A journey from research to policy to implementation and back' present an account of the SNAP (Smoking, Nutrition, Alcohol, Physical activity) prevention program and the actions needed to enhance greater systematic implementation of effective primary care interventions. The SNAP program involves actions at the levels of clinical consultations, the general practitioner practice, the Division of General Practice, and state and national levels against seven broad outcome areas (organisational structures and roles; financing systems; workforce planning, education and training; information management and information technology; communication, community awareness and patient education; partnerships and referral mechanisms; and research and evaluation). NSW Health has funded an implementation trial of the SNAP framework, the main results of which are presented in Harris and Powell Davies's paper. The authors report that 'a number of the tools and guidelines developed in the trial have been widely disseminated across Australia—notably the SNAP guide, which was published by the Royal Australian College of General Practitioners and distributed to all general practitioners, with funding from the Australian Government Department of Health and Ageing'. By integrating primary care services with other community agencies, as well as state and national bodies, the SNAP program has achieved some success in linking policy, practice and research and improving the risk management of these major public health challenges.

Campbell and Rubin in 'An "Evidence Check" system for facilitating evidence-informed health policy' present a tool, called Evidence Check, 'to facilitate access to high quality research reviews that could inform policy development across NSW Health'. Evidence Check has been produced for the Sax Institute to provide NSW Health users with a commissioning tool, a directory of experts who can undertake reviews, and a team of knowledge brokers who can liaise between policy makers and researchers and advise appropriately. This tool will help enhance the development of 'intelligent customers' of evidence (the demand side) as well as the provision of 'intelligent providers' (the supply side).

The paper by Tang and Penman reminds us of the potentially important contribution of economic analysis to the evidence to inform policy and practice. It also demonstrates the cost and benefits to NSW of reducing smoking. There are two clear messages from this study: reducing smoking would benefit the economy of NSW and will, in particular, be of greatest benefit to the poorest households in NSW. Tobacco control is a case example that demonstrates that research evidence faces many challenges in the decision-making process and, on its own, is usually not enough to bring about change. Empirical evidence is but one factor influencing decision-making. It must compete at times with stronger political and economic influences, and vested interests, in the shaping of policy. As noted by the authors, doing this relies on much more than just producing good research and calls for research design that considers the impact of broader factors in decision-making.

The papers presented in this special issue of the *NSW Public Health Bulletin* provide both evidence and encouragement to those eager to link research evidence to policy and practice. It is also encouraging to learn that the substantive public health issues covered in this issue are common to other countries as well as Australia, and there is a growing body of evidence from around the world on how to respond to them effectively.

Since guest editing this issue of the *Bulletin*, Shelley Bowen has left the Sax Institute to pursue full time study for a doctorate.

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WHAT EVIDENCE INFORMS GOVERNMENT POPULATION HEALTH POLICY? LESSONS FROM EARLY CHILDHOOD INTERVENTION POLICY IN AUSTRALIA

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Given that we know that policy making is 'iterative, continuous, incremental, subject to review and inherently political'[1], how does evidence feed into policy?

The term 'evidence-based policy' has become routinely used in government policy deliberations, but the rhetoric is often not matched by the reality. The systematic integration of evidence into policy and practice is rare. There is also ongoing debate on what constitutes evidence for policy. This paper proposes a way of categorizing, according to source, the evidence used for policy making. We draw on the literature and on the ideas and experiences of the key people (referred to here as policy 'actors') involved in the development of policies that support families and the early years of life in NSW and South Australia. The findings from this study suggest that a variety of types of evidence inform health policy making. This challenges the public health community to broaden its ideas on what constitutes evidence for policy and to recognize the validity of different types of evidence in better informing the policy process.

Policy making is complex; appreciating the interplay of people, processes and politics is critical if such processes are to be understood. While policy actors are constantly encouraged to base their policy making on evidence, this is extremely difficult given the limited quality of available policy-relevant research to inform the breadth of public health issues. One response to navigating the use of evidence in policy making is to adopt an 'evidence-informed' approach [2] that considers how different types of information may be transformed into evidence for policy making. We seek not to detract from the value of high quality research evidence, but rather to recognize that even when such evidence is available, governments still draw on a variety of other forms of evidence to more comprehensively inform their decisions.

HOW ARE EVIDENCE AND POLICY MAKING LINKED?

The evidence movement has its origins in evidence-based medicine, 'the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients'.[3] However, the public health community has been struggling with attempts to transfer the concept of evidence-based medicine to policy and practice. [4,5] Recent literature has transformed the notion of evidence from clinical interventions and direct pathways to practice to evidence in complex policy settings in which people, processes and politics need be considered.[2,6-9] The term 'evidence-based decision making' has emerged to describe the use of the best possible evidence when dealing with real life circumstances.[3,10-12]

Rychetnik and colleagues (2004) encourage the judicious use of a range of research and evaluation evidence.[9,13] There is increasing recognition of complementary and competing evidence in the policy process, building on scientific research [3,10,14-18], although health policy decisions remain primarily based on experience and opinion, with little use of available research evidence.[18-23] Davies et al [24] describe the 'hot debate' raging around definition and propose that the term 'evidence influenced practice' would emphasise the need to be context sensitive, examining what works and in what context.

The UK Cabinet Office propose that expert knowledge, existing domestic and international research, available statistics, stakeholder consultation, evaluation of previous policies, new research, and secondary analyses, inform policy development.[12,15] This suggests that evidence is data that can be turned into information and may be sourced from a variety of areas.[25]

The aim of this paper is to use the experiences of views of policy makers to categorise the forms of evidence used in the policy making process.

METHODOLOGY

Building on concepts from the literature, this paper also draws on 35 semi-structured, in-depth interviews with policy actors in South Australia (n=10) and NSW (n=25) over 2004 and 2005. Interviewees were selected on the basis of their involvement in committees, roles in policy and government, authorship of grey and published literature, identification on relevant web sites, reference in the media and through 'snowballing' during an initial round of interviews. Interviewees included politicians, political advisors, researchers, journalists and a range of public servants at various levels in government departments and regional health services.

Interview questions focussed on:

- when and why the policy area becomes important
- what sorts of information inform policy
- what 'evidence' means in this policy area
- what evidence is useful to the policy process and when
- what drives policy: evidence, equity or something else?
- interests of decision-makers: is it in evidence of what works or evidence that describes a problem?

EVIDENCE IN EARLY YEARS POLICIES

In recent years there has been significant policy investment in prevention and early intervention strategies with families in NSW and South Australia. Families First NSW and Every Chance for Every Child, South Australia, emerged as whole-of-government approaches to providing children with a good start in life. One strategy within these policies is supporting mothers and new babies through nurse home visiting. Delivery of nurse home visiting differs in the two states. NSW offers a universal first home visit to all new mothers and their babies. In South Australia, a universal first visit is offered as well as sustained regular home visiting over a two-year period to those most in need.

These programs have been heralded throughout their development as equity promoting, solution focused and evidence based.[26,27] Policies that focus on early childhood intervention with parents and young babies provide a powerful opportunity for public health improvement and impact on lifelong health and other positive social outcomes for children. These two policies were selected for study as they provide critical insights into health policy development and the role of evidence.

FINDINGS FROM INTERVIEWS: WHAT DID POLICY ACTORS SAY ABOUT THE EVIDENCE?

The term 'evidence' can mean many things to many people: 'is it information from a trial or something we did yesterday?' asked one informant. There appear to be two views on the nature of evidence: many believe that 'evidence' implies research while others acknowledge that in policy decision-making, research evidence is complemented by a breadth of information which includes, but is not restricted, to research.

Interviewees described 'hard' and 'strong' forms of research evidence, with hard evidence measured by randomised controlled trials (RCTs) or other forms of rigorous studies (Box 1). Different research evidence was sought for four distinct purposes in the development of these policies: evidence of the problem, evidence of effectiveness, evidence of effective implementation and evidence of cost effectiveness (Box 2). The 'hard and visible science' of brain development largely generated by Dr Bruce Perry[28] from the United States was a particularly influential piece of evidence informing early years policy development. Policy actors described this evidence as symbolic in its graphic display of brain size in nurtured and neglected babies. A source of intervention evidence was a 15-year RCT by Olds and colleagues of the long-term effects of home visiting on child abuse and neglect.[29]

A second source of intervention evidence is the Perry preschool studies in the United States. These studies followed the lives of 123 poor African American children

BOX 1

RESEARCH AS THE ONLY LEGITIMATE SOURCE OF EVIDENCE: QUOTES FROM INTERVIEWS WITH POLICY ACTORS, NSW AND SOUTH AUSTRALIA, 2004–2005

'you know hard evidence, if you like, would be studies that have a before and after. They have a control group and they have multiple sites'

'it [evidence] is the empirical science of brain development'

'the strongest evidence from the literature was home visiting by nurses'

'Evidence is an RCT'

'it [evidence] is randomised controlled studies'

'the two key bits of evidence were the brain development stuff, and the appreciation of the importance of the early years and its impact on the rest of your life'

BOX 2

EXAMPLES OF EVIDENCE THAT INFORMED EARLY YEARS POLICY DEVELOPMENT IN AUSTRALIA

Purpose of evidence	Source of evidence
What's the problem evidence (descriptive)	Observational data: Presentation of impact on child (neuro) development of abuse by Dr Bruce Perry*
What works evidence (intervention)	Published study/reports: Perry Preschool (Highscope) project in the United States—30 year follow up (1993)[31]; 40 year follow (2005)[30] Published study: Long term effects of home visitation on maternal life course and child abuse and neglect: fifteen year follow up of a randomised control trial, David Olds et al, JAMA — (1997)[29]
How it works evidence (implementation)	Some insights in Olds[29], RAND Corporation report[32] and the Perry Preschool study [31]
What it costs evidence (economic)	Discussion paper: Costing home visiting for NSW; NSW Health (1998) [27] Report: RAND Corporation in the United States—$1spent = $7+ saved[32]

*Seminar & NSW Cabinet presentations by Dr Bruce Perry, hosted by University of Newcastle & NSW Cabinet Office, 8 and 9 May 2000, 'The impact of abuse on child development', 'Responding helpfully to children who have been abused'.

for up to 40 years and measured the effects of a high quality preschool education program on school failure and associated problems.[30,31] Synthesis of the evidence on these and other intervention studies formed the base for reports that demonstrate cost effectiveness of investing in nurse home visiting. The economic benefits of early intervention are found in the Rand Corporation report in the United States.[32] A NSW Health discussion paper [27] modeled the actual costs associated with delivery of nurse home visiting programs statewide. The critical 'how it can be done' evidence to guide effective implementation is a gap in these policy examples, as little is known and almost nothing published on what actually occurs during home visits by nurses.

BOX 3

USING A BREADTH OF SOURCES OF EVIDENCE: QUOTES FROM INTERVIEWS WITH POLICY ACTORS, NSW AND SOUTH AUSTRALIA, 2004–2005

'The other sort of evidence is empirical evidence about what people think, about community polling or public surveys and things like that'

'A combination of things, anecdotal, wisdom, cross sectional studies, RCTs etcetera. It is a full continuum of information'

'Well it's not level 1 RCT evidence'

'we started pulling in all of the overseas evidence about programs and things around Australia…We said alright these are all of the different levels and examples of evidence'

'it's some sort of empirical observation or set of empirical observations or modeling of possible and probable empirical outcomes'

'General literature, studies all the sorts of things you usually use in a literature review including grey literature, trials, studies etcetera, to small pilot type studies'

'Informal interviews with colleagues in other states formed the evidence for this policy'

'The other piece of evidence was the US government accounting for its review of the economic benefits of early intervention prevention'

'all of these people feed information, both experiential and research level'

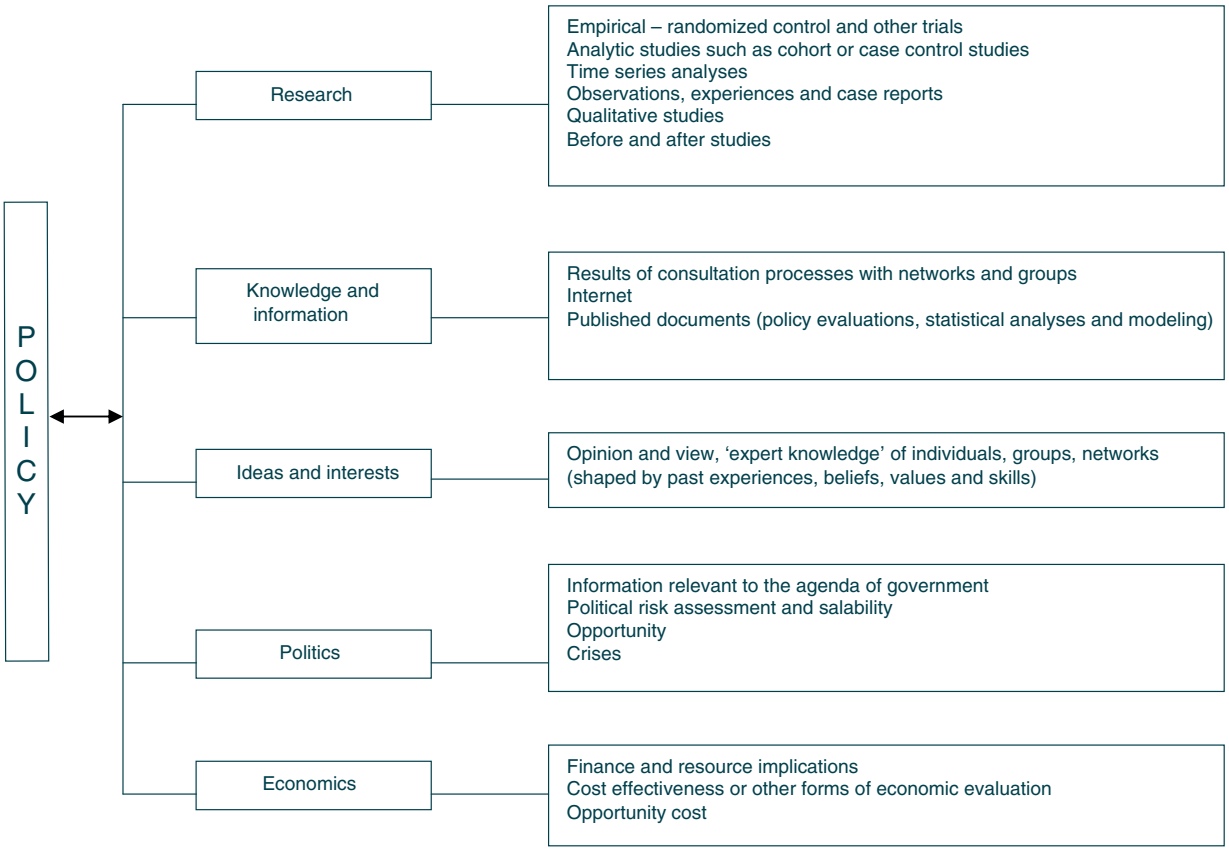
Policy actors also identified a breadth of evidence relevant to policy context (Box 3). Such insights derive from sources ranging from clinical trials to experiences and knowledge of what people think, whether determined informally or through community polling and surveys. A 'full continuum of information' was proposed as critical to policy making by one participant, and should include the sciences, experience and opinion. The experience of other programs was considered key to informing policy making. These experiences may come from individuals or via reports, the 'grey literature', not necessarily evaluated sources. In contrast to the comment that 'evidence is an RCT', others stated that evidence is not 'level 1 RCT evidence' for policy making. Clearly those involved in policy making have different views, equally strongly held, about the nature of evidence.

OUR SYNTHESIS: A WAY OF UNDERSTANDING EVIDENCE FOR POLICY MAKING

There are many ideas concerning what constitutes evidence in the policy environment, the answer being dependant upon the question being asked. Evidence of the impact of a clinical intervention will involve something very different to the evidence for effective interventions by health professionals in the home with families. An RCT may be a reasonable method for one whereas qualitative methods may be required for the other.[33,34] Review of the literature and the findings from this study support the idea of evidence-informed policy making which 'sees the use of different types of information in a variety of forms and

FIGURE 1

TYPES OF 'EVIDENCE' INFORMING THE POLICY PROCESS



from a variety of sources, reflective of and responsive to, the policy and practice context'.[2]

We can discern at least five types of information that inform policy development: research, knowledge, ideas and interests, politics, and economics (Figure 1). Can all or some of these types of information be called evidence for policy?

This model describes the forms of information and influences on policy making. Do we name these non-research types of information 'evidence'? Is scientific research the only form of evidence that has a rightful place as the basis of the policy process? What definition of evidence best serves policy? If we continue with the idea that scientific research, 'hard evidence', is the only appropriate form of evidence, then 'evidence-based policy' is seldom achievable. And while the other four types of evidence are at risk of being ignored by researchers and policy analysts, these are in reality drawn upon for decision-making and often have greatest impact on real-life decisions.

If we recognise that a breadth of evidence informs policy making, then this should affect how we approach the production and use of such evidence. Irrespective of the source of the evidence—for example political or policy science, or economics, RCT or focus group discussion—the pursuit of the highest quality and most robust evidence is essential.

This model aims to identify the information sources in public health policy making. It helps determine areas where we could be building the evidence base for making decisions. It will not, however, tell us which of these forms of evidence is most important, or how to weight them in one or other contexts; this warrants further work.

CONCLUSION

The views of policy actors in Australia exposed different understandings of the nature and use of 'evidence' for policy. These findings resonate those from the United Kingdom and Canada.[12,33] Drawing on these views and the literature, we have developed a model to help navigate the development and use of evidence in policy making. This synthesis demonstrated that a variety of types of evidence inform policy making. Considering evidence to be derived from research, knowledge, interests and ideas, political and economic information challenges us to commission, produce, sharpen and use a variety of sources, forms and formats of evidence in policy making.

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BUILDING CAPACITY IN INJURY RESEARCH TRANSFER

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This paper was written on behalf of the Injury, Trauma, Rehabilitation Partnership (see Box 1)

BACKGROUND

Injury is a leading cause of mortality, morbidity and disability in Australia. In recognition of the national burden of injury, the area of injury prevention and control was endorsed as a national health priority in 1986. Despite this, however, there has been a substantial mismatch between the identification of injury as a problem and the level of funding available for injury research.[1] Late in 2004, a NSW consortium of academic institutions (Box 1) was awarded a five-year National Health and Medical Research Council Capacity Building Grant in Population Health Research to build capacity in population approaches to injury prevention and control. Four injury domains were identified for ongoing research (road safety, falls, sports and work-related injuries) across a number of thematic areas, one of which includes the translation of injury research into policy and practice.

Enhancing the interface between research on the one hand, and policy and practice on the other, is crucial to ensuring the widespread adoption of effective interventions and strategies. The literature abounds with theories on how to improve 'linkage and exchange'[2], yet empirical research remains limited. This paper builds upon the concept of a Translation Task Group, which was suggested by one of the authors (Zwi) as a component of the Capacity Building Grant. The concept has developed its own momentum and is a structure through which to broker productive relationships between researchers, policy makers, practitioners and other stakeholders. This paper reports some of the early outcomes of Translation Task Group activity to address injury.

THE ROLE OF TRANSLATION TASK GROUPS

As part of the Capacity Building Grant, we have developed with our consortium researchers two Translation Task Groups, one focusing on road safety and the other on falls. Currently, both groups comprise internationally recognised researchers and a number of early career researchers. Initial meetings have been held to identify the role of such groups and to determine appropriate membership. These meetings also recognised the need to form, in the near future, a further Translation Task Group with a focus on Indigenous safety. This group will traverse the injury domains and address specific issues of relevance to the Indigenous community with respect to the development and implementation of injury prevention and safety policies.

For the purpose of the project we have defined a Translation Task Group as 'a group that is able to enhance linkage and exchange between researchers, policy makers and other stakeholders, and to foster the development of policy-sensitive researchers and evidence-sensitive policy makers with the aim of improving the development of policy appropriate research and improving the dissemination and uptake of research into policy and practice'. It is intended that membership be broadened to a wider range of stakeholders including [3]:

- government representatives who have the potential to facilitate the presentation of research evidence at policy making forums
- practitioners who can apply new knowledge to practice
- social marketers and health journalists, who have the potential to stimulate wider interest
- representatives from relevant community groups, who may assist and enable the dissemination of information to the public.

All of these groups will have a role in influencing the research agenda.

Although only in their very early stages, the Translation Task Groups are already proving beneficial. First, they provide the opportunity for researchers in common theme areas, but from different institutions, to come together and reflect on their respective and combined experiences. This has led to the identification of a number of common difficulties in facilitating the transition of research into policy and practice, which can later be addressed. For example, among the road safety researchers there was an appreciation that research evidence was only one influence among many political priorities. The perception of scientific naiveté of policy makers, the turnover of ministerial advisory staff and the lack of scientific consensus in the field were among the significant barriers identified. Researchers in falls prevention with a focus on falls in older people identified some significant successes with clear evidence-informed policy already in place.[4]

In terms of enhancing the research-policy interface, both Translation Task Groups identified personal contact with policy makers as the most critical factor in getting evidence into policy and practice. Two-way communication aids both the dissemination of emerging research and the setting of the research agenda. [5] Translation Task Groups were recognised as a forum through which this communication could be enhanced.

Second, the groups have identified areas in which researchers require development of their skills. Both groups recognised the need to influence and interact with the policy process rather than assume that the evidence would speak for itself.[6,7] Researchers felt limited in their ability to advocate for policy change, not only because this takes time, but also because they felt they lacked the skills necessary to be effective policy advocates. Similarly, an improved understanding of the policy making process was sought. It has been recognised that policy making is a 'messy and convoluted process' [6] which is an enigma to

many outside government bureaucracy and that 'researchers need to acquire a more sophisticated understanding of the policy process'. [3] An active program of skill development in this area is planned in the next six months and will be assessed in terms of its effectiveness in enhancing linkage and exchange. It will be important, within this agenda, to improve understanding of the policy-related roles of a wide range of actors operating within the policy environment, as policy makers are themselves not a homogeneous group.

Finally, the initial meetings have generated a new research agenda describing the process of translation. The road safety group has formulated a methodology for a qualitative study to examine the experiences of established researchers in order to document the barriers to, and facilitators of, research uptake and dissemination in the area of road safety. It is planned that this research will inform the ongoing role of the group and aid in the determination of its membership. The falls group has identified a successful Health Research Partnership Grant as a model for how policy makers, researchers, practitioners, government and private enterprise can work effectively together to set research agendas and disseminate evidence. Research to document this apparently successful process is planned.

EVALUATION

Indicators of the contribution of Translation Task Groups will need to include measures of process, impact and outcome. While these are yet to be defined, initial suggestions have included measures such as the number of groups established with consideration of the range and breadth of stakeholders and the regularity of meetings; the creation of educational activities designed to meet the needs of members (for example, policy training for researchers, or research training for policy makers); actions around policy and practice arising directly from the groups (for example, new dissemination strategies for emerging research, ministerial briefings, media activities); new research partnerships between stakeholders; and scientific presentations and peer-reviewed papers on our research at the translation interface.

Outcome measures, however, will prove the most challenging to evaluate. While some research may be directly incorporated into policy, this is rare and most research is likely to act through a much slower and indirect route[8], and may entail a process of adoption, adaptation and action.[9] However, in such cases, attributing policy change to a particular research intervention or output will be difficult.

In addition to the specific research agenda arising from individual Translation Task Groups, we are studying the formation and function of the groups as part of an action research agenda that combines our desire to both change practice and enhance knowledge. Consequently, group members will be actively involved throughout the process of the study, so that their discussions and reflections on the process informs subsequent stages of both the research and the implementation of the groups. We hypothesise that a Translation Task Group will be an effective instrument through which to promote policy-sensitive research and effect knowledge transfer. Adaptations on the concept may also be applicable to other research areas. Our findings should provide empirical data on which to develop strategies to maximize the contribution of Australian injury research to policy and practice.

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BOX 1

MEMBERSHIP OF THE INJURY, TRAUMA, REHABILITATION PARTNERSHIP

Injury, Trauma, Rehabilitation is a collaborative program auspiced by the NSW Injury Risk Management Research Centre, the University of New South Wales; the George Institute for International Health, the University of Sydney; the Prince of Wales Medical Research Institute, the University of New South Wales; the School of Public Health and Community Medicine, the University of New South Wales; and the Rehabilitation Studies Unit, the University of Sydney.

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HIV PREVENTION AND COMMUNITY ENGAGEMENT: 15 YEARS ON

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The translation of research findings into evidence-based health promotion remains an important challenge in HIV prevention. Despite an increasing emphasis on establishing 'community engagement' and 'knowledge transfer' frameworks within health research, there has been little discussion of either the long-term nature of this work or the maintenance of the linkages between organisations and individuals that result from it. This article will provide an overview of the work of the National Centre in HIV Social Research (NCHSR) in this area, and will highlight the importance of reflexivity and adaptability in established knowledge transfer systems in the context of changing social, political and epidemiological environments.

COMMUNITY ENGAGEMENT AT NCHSR

From its very inception, NCHSR has been embedded in the network of community and government partnership that has characterised Australia's response to the HIV epidemic. NCHSR was established in 1990 following an approach to Macquarie University from members of the AIDS Council of NSW, who believed that social research had an important role to play in crafting effective HIV education and prevention.[1] The initial project that gave rise to the Centre was the Social Aspects of the Prevention of AIDS (SAPA) study, a joint effort between researchers and community partners. [2] The SAPA survey was developed collaboratively, and results were disseminated through community reports and feedback sessions.

NCHSR has a dual mandate to inform both the government and the community response to the threat of HIV, and community engagement is central to that task. Today, the framework of community engagement is similar to that established in the early 1990s, albeit in an expanded form. NCHSR is now host to two significant programs of community engagement and knowledge transfer. The commonwealth-funded Research Link project is now in its sixth year. Research Link has enabled NCHSR to hire a full-time Community Liaison Officer, who works with community educators and health promoters in translating social research into policy. NCHSR's hosting of the Consortium for Social and Policy Research on HIV, Hepatitis C and Related Diseases, funded by the NSW Department of Health, has also made it possible to develop a program of capacity-building workshops for workers in the HIV, hepatitis C and sexual health sectors, and a Masters program in health, sexuality and culture.

Research dissemination and knowledge transfer at NCHSR has traditionally occurred in the context of community engagement. If data collection is the flow of information to NCHSR through community partnerships, then knowledge transfer is the movement of research findings from NCHSR back to community partners. Knowledge transfer at NCHSR has been one aspect of a complex system of interactions between researchers, research participants and community stakeholders. This can be described as the 'community liaison' model of research transfer[3] and, although our dissemination efforts have always had an impact beyond community stakeholders, it is an activity that we have traditionally targeted at those stakeholders in particular.

A long-term program of community engagement has had a number of outcomes, both for NCHSR and for our stakeholders. Community engagement demands a specific style of work from researchers that has benefits for NCHSR beyond the processes of knowledge generation and transfer. It requires a reflexive and team-orientated approach that has a ripple effect throughout the entire organisation. In addition, the involvement of stakeholders in research development provides a series of checks and balances that entrenches accountability and ultimately produces higher quality research by enabling new personal and professional experiences and insights.

Community engagement provides stakeholders with access to relevant and timely information, but perhaps a more important outcome is the research literacy that comes with proximity to the whole of the research process. Stakeholders are not the passive recipients of knowledge transfer, but partners in developing research ideas, writing grants, guiding projects and formulating conclusions. In any given project, community members and stakeholders provide not only the raw data, but also the expertise to understand and interpret that data. Through partnership with us and other research centres, the HIV community sector has developed a significant level of familiarity and comfort with research as a whole, and the demonstrated capacity to access research findings and incorporate them in practice.

CHANGES IN THE WORK OF COMMUNITY ENGAGEMENT

The increased currency of the 'evidence-based' paradigm has repositioned the knowledge transfer mandate within NCHSR, and challenged us to expand our dissemination efforts beyond the work of community engagement. Health providers are being encouraged to turn to research to both inform and justify their service delivery decisions[4], and researchers are increasingly expected to engage policy makers and research consumers in both the construction and dissemination of research. [5] This shift requires us to reach out to sexual health services, alcohol and other drug services, general practitioners, government employees, welfare workers and health care providers. The challenge is to integrate a broader 'knowledge transfer' agenda alongside

our community engagement work, acknowledging that they are related but distinct endeavours.[3]

A number of important changes within our organisation, and in the context within which we work, also requires us to re-evaluate our community engagement and knowledge transfer strategies. Over the past five years, our research program has expanded beyond HIV and sexual health to include viral hepatitis and injecting drug use, both nationally and internationally. These new research foci have brought NCHSR into contact with a broader range of communities and populations across the country and the Asia–Pacific region. As the NCHSR research agenda expands, the work of community engagement takes on complex new dimensions. After a 16-year partnership, HIV community stakeholders demonstrate high levels of research literacy and significant buy-in to the NCHSR research program. In contrast, new stakeholders may be less familiar with social research, or may be working in contexts in which they have considerably fewer resources and less capacity to engage with research agendas, which has a direct influence on their receptivity to research.[6] The early days of research partnerships are often characterised by negotiation over the ownership of both data and outcomes, and these are sensitive discussions that have consequences for both the relevance of research findings to affected communities and stakeholders, and the subsequent impact of these research findings.

Medical and epidemiological developments have also had an impact on both the direction of our research and the research needs of our partners. Since the introduction of highly active antiretroviral therapy in 1996, the HIV sector as a whole has had to adjust to the needs of an HIV-positive population who are now living with HIV rather than dying from AIDS-related conditions. In the view of some community partners, this has resulted in a perceived increased need for more research relating to health determinants and health systems implementation. Other stakeholders require information on health promotion, education, and the evaluation of intervention strategies. Others have interests in broader issues of gay and lesbian health. Some of these issues may intersect with the remit of the NCHSR research agenda; others may not. However, even the partial decoupling of our agenda from those of longstanding stakeholders requires delicate handling.

RESPONDING TO CHANGE IN COMMUNITY ENGAGEMENT

Identifying and responding to changes in community engagement has required an integrated planning response. Strategic planning is central to a well-coordinated community engagement strategy[7], and in 2004 the Centre initiated a macro-level strategic review to provide an opportunity for institutional reflection on the specificity and clarity of our mission. The strategic plan, released in mid-2005, identified a number of key responses to changes in community engagement and knowledge transfer:

- **Regular consultation frameworks:** A collaborative research agenda, in and of itself, is a powerful strategy in promoting knowledge transfer and the application of research findings by research partners.[8] The strategic planning process found a need for a more structured and planned approach to community consultation and NCHSR is in the process of establishing a schedule of regular, formal consultations.
- **Memorandum of understanding:** As part of the consultation process, NCHSR is drawing up a Charter for Community Engagement, a collective 'memorandum of understanding' that articulates the NCHSR approach to community engagement. As notions of 'community engagement' and 'knowledge transfer' shift and change, the purpose of the Charter is to articulate some formal commitments to community engagement as part of the research and dissemination process to ensure that NCHSR remains accountable to our community partners in these regards.
- **Diversification of research output:** Community reports have typically been targeted at education and health promotion managers, but mechanisms for disseminating research to workers at the coalface of HIV prevention have been limited. NCHSR is exploring the possibility of crafting shorter fact sheets that summarise relevant research findings in a manner accessible to both the HIV community sector and health workers more broadly. We are also discussing with community and health sector partners effective means of distributing these resources.
- **Online dissemination:** One of the central challenges in the dissemination of health research findings is simply getting information onto the desks of practitioners.[6] The increasing prevalence of broadband enables online dissemination in a way that has not previously been possible. It enables us, for instance, to distribute fact sheets directly to workers, rather than rely on organisations to circulate printed reports on our behalf. However, online and offline research dissemination strategies need to be coordinated and complementary, which requires a strategic and managed approach to knowledge dissemination.
- **Benchmarking and evaluation:** Measuring community engagement is a challenge, but it dovetails closely with changes in the education and research sectors.[5] Ideally, the evaluation of engagement strategies should be a cumulative study of the links between activities, outcomes and the overall context of community engagement. It could take the form of a yearly audit, in which community stakeholders are asked a series of questions about their awareness of opportunities to engage with NCHSR and their satisfaction with those mechanisms. We are presently looking into community

engagement benchmarks and evaluation criteria, at a macro and organisational level, in terms of the quality, quantity and timeliness of engagement programs and policies.

While research suggests that our traditional modes of community engagement and dissemination (community reports, feedback sessions and seminars) are our most effective tools in the array of knowledge transfer techniques[6], community engagement and knowledge transfer are dynamic and adaptive processes. Taking stock of existing processes and emerging opportunities ensures the stability of stakeholder relationships and augments the effectiveness of dissemination strategies. The quality of research output is heightened when stakeholders have a central place in the generation of knowledge and understanding. Knowledge transfer, in its simplest sense, is the feedback mechanism in an economy of knowledge powered by engagement and collaboration.

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IMPROVING SUN PROTECTION BEHAVIOUR THROUGH EVIDENCE-BASED CAMPAIGNS

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Australia has the highest incidence of skin cancer in the world. Skin cancer is the most common form of cancer in Australia, with incidence rates outnumbering all other forms of cancer by more than three to one. The Australian health system spends more money on the diagnosis and treatment of skin cancer than on any other cancer, an estimated $420m each year.[1] The majority of these skin cancers could be prevented if the public could be persuaded to adequately protect themselves from the sun.

Social marketing is well placed to guide the development of sun protection programs, as it is orientated to achieving voluntary behaviour change at a group or community level. It is a knowledge discipline grounded in behavioural and communications theory that has developed from commercial marketing, with an underlying difference of being driven by a motivation to change consumer behaviour for the social or individual 'good', rather than for company profit.[2] An understanding of the theory and practice of social marketing provides a foundation for the development of communication campaigns aimed at changing the community's health-related behaviour. However, many organisations that conduct communication campaigns do not adequately consider these factors in the development of their campaigns.

Social marketing has been used in the areas of smoking cessation, healthy eating, drug use and physical activity promotion. It has been used to a lesser extent for primary prevention of skin cancer.[3] As a result, there is no documented evidence on how best to utilise social marketing within sun protection campaigns. In a specific application to sun protection, this project will investigate the use of social marketing and advertising communications theory in practice, and systematically apply the theory and research in the development of a demonstration campaign by the Cancer Council New South Wales.

This paper reports on work-in-progress and presents the proposed methodology and the results achieved in the first nine months of a three-year project.

METHOD AND RESULTS TO DATE

Phase one—Formative research

1. Identification of the use of relevant theory in sun protection research and practice

The project commenced with a literature search to identify research on the use of social marketing and advertising communications theory and strategies to develop and conduct primary prevention campaigns that have potential for use within sun protection campaigns. This has provided a framework with which to analyse past and present sun protection programs via the systematic review and in-depth analysis of communication strategies.

1.1 Systematic review of sun protection primary prevention programs

A series of systematic reviews will be undertaken on published and unpublished primary prevention programs that have been implemented over the past 25 years. The reviews will examine the extent of use of social marketing and communication theory in practice within sun protection programs, and identify effective elements within these programs.

Preliminary analysis of 21 published studies targeted at children and their sun protection behaviours (utilizing pre and post designs with comparison groups) has confirmed low utilisation of social marketing within past programs. The analysis revealed only one program where it was stated that a social marketing process had been used in the program's development. However, other elements that sit within the social marketing framework (such as the use of behavioural theory and formative research, the targeting of secondary audiences and the utilization of environmental changes to facilitate behaviour change) were used within many of the interventions. The combination of these elements appeared to produce effective outcomes, though increased effectiveness could not be predicted following the use of any one element.

No studies reported segmentation of the target audience or discussed tailoring of messages for specific subgroups within the larger target group. These approaches could be useful in sun protection campaigns because if the target market is segmented into smaller, more homogenous groups, sun protection messages can be tailored to address the attitudes and perceptions of the group and to appeal more specifically to them. Also, while research studies on specific message factors for sun protection are evident on literature review, little of this research appears to have been utilised within programs to date. Further work will broaden inclusion criteria and commence systematic review on interventions targeting adolescents and adult populations.

1.2 In-depth analysis of sun protection communication campaigns

An in-depth analysis will be undertaken of recent (in the past five years) sun protection communication campaigns from Australia, the United States, the United Kingdom and Canada that have completed impact or outcome evaluations. Within Australia, this will include campaigns currently conducted by the Australian Cancer Society, the state and territory Cancer Councils, government-funded organisations, and other non-profit cancer organisations. International campaigns will be those conducted by national or statewide cancer societies or public health organisations within the United States, Canada or the United Kingdom, dependent on the availability of campaigns materials. This analysis will specifically examine communication strategies used within these campaigns.

2. Selecting and investigating the target audience

2.1 Identification and review of literature to determine current knowledge and sun protection behaviour in the target markets

A comprehensive literature review will be conducted to examine current sun protection knowledge and behaviour, and particularly the effects of previous sun protection interventions on attitudes and behaviours in the Australian population. A preliminary review of current literature identified those segments of the population at risk of developing skin cancer, and current patterns of behaviour in relation to sun protection within these segments.

2.2 Consultation with a panel of experts

As part of broader project management processes, a project reference group was established to ensure expert consultation and participatory management decision-making.[4] The group consisted of the Cancer Council New South Wales Chief Executive Officer and relevant experts from the Cancer Council in the areas of retail, marketing and communications, health strategy and campaigns, media and skin cancer prevention. The group also included experts from the University of Wollongong in marketing, social marketing and health behaviour, as well as the project manager and PhD students.

The format for the meeting utilised a clear goal-oriented agenda and an evidenced-based platform on which to base the discussion. A summary of the current literature was presented, detailing which segments of the population were at risk of developing skin cancer and which segments had modified their behaviour and adopted positive sun protection practices. A historical review of sun protection programs provided by the Cancer Council allowed reflection on which segments had previously been targeted and current priorities for the council. After reflecting on these presentations the group participated in a facilitated discussion in order to make a decision regarding the primary segmentation of the target market. Various established techniques were used to facilitate the discussion. These included brainstorming to generate all relevant variables and concept mapping to draw out a consensus regarding the variables discussed.[5]

Results from this process include a decision by the group to use age as the primary segmentation criteria for the target

market (because the risk factors and behaviours in skin cancer prevention vary predominantly by age).[6] Additional demographic variables would be considered as secondary segmentation variables and would be further explored as part of formative research with the target market. This is consistent with the findings of Kotler, Lee and Roberto, who describe how target audience segmentation often uses one primary basis to segment a market, with each segment then 'further profiled and perhaps narrowed, by using additional important and relevant variables that predict response to strategies'.[7]

2.3 Determining the effects of previous sun protection within the target market

Consistent with the principle of market segmentation, qualitative and quantitative research will be undertaken with the target market. Likely areas of investigation include perceived susceptibility to skin damage, perceived severity of sun damage, attitudes towards tanning, and the influence of family and friends on sun protection behaviours.

Phase two—Application of formative research

Development of best-practice guidelines and a comprehensive sun protection campaign

A detailed set of guidelines for the development and implementation of sun protection campaigns will be developed from the results of Phase one. The research team will also develop a comprehensive social marketing plan for a sun protection campaign for the Cancer Council. The content of this plan will incorporate the best-practice guidelines and formative research. This plan will focus on the four key elements of marketing campaigns—product, price, place and promotion—and will include elements from advertising theory such as communication objectives and positioning, execution tactics, and media strategy. It is hoped that further funding will be secured to evaluate the implementation and outcomes of this campaign.

DISCUSSION

While social marketing processes have rarely been used in sun protection campaigns, the preliminary work undertaken has shown that social marketing offers a useful framework that can accommodate elements already used within campaigns, as well as adding other elements that could lead to improved effectiveness. Areas relating to behavioural and communication theory appear under-developed in many sun protection programs, with little use of segmentation on attitudinal or behavioural grounds, and minimal attention to message factors within the programs reviewed. This gap between theory and practice is important to address. In the next stage of our project, we will identify how these elements can be best incorporated into the planning and development of campaigns.

The project processes described in this paper demonstrate how appropriate formative research (such as literature reviews) can combine with established project management processes to provide a platform for evidence-based decision-making. This paper also describes the establishment of the first comprehensive attempt to investigate the extent to which the academic theory (social marketing and advertising communications) can be applied in practice to develop and implement a social marketing sun protection campaign. This campaign will, in turn, inform future primary prevention interventions by demonstrating how best to close the gap between theory and practice.

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BUILDING EVIDENCE AND SUPPORT FOR A STRATEGY TO COUNTER SMOKING IMAGES IN MOVIES

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An increasing body of research indicates that the attractive portrayal of smoking in movies is a factor in the uptake of smoking by young people. Indeed, a recent study by Sargent *et al*[1] suggests that in the United States, exposure to movie smoking is the primary independent risk factor for smoking initiation in adolescents aged 10 to 14 years, accounting for smoking initiation in more than one third of this group.

A number of interventions have been suggested to counter this effect. Screening an anti-smoking advertisement before a movie that contains excessive or attractive images of smoking (counter advertising) is currently supported by the best level of evidence. Consequently, the Cancer Council New South Wales has committed to advocating for counter advertising to become health policy in NSW.

However, while health research may provide a high level of evidence that a particular public health intervention will result in real health benefits to the community, this is rarely the only determining factor in the decision to use the intervention. In order for counter advertising to become incorporated into policy and practice, the agreement of stakeholders outside the health sector (including the arts and film industries) is required.

The needs of the different stakeholders create a complex dynamic, with research informing the development of an advocacy position. This, in turn, highlights obstacles to implementation of the intervention, which can often only be solved through further research. This paper is a case study of the co-operation between researchers, policy makers, health promotion staff and a non government organisation to contribute to the current research on counter advertising, thus building a case and harnessing support for a counter advertising policy to be implemented in NSW.

THE IMPACT OF SMOKING IN MOVIES AND POSSIBLE POLICY RESPONSES

Banning tobacco advertising in cinemas and on television in Australia in the 1970s was an early public policy response to the impact of glamorous film images on smoking rates. However, smoking continues to exert its seductive influence. Instead of one 45-second advertisement before a movie in your local cinema, there is now an average of 12 smoking scenes in the movie itself, many featuring the latest celebrity.[2] There is growing evidence that the impact of this on audiences, and especially on young audiences, is the same as that of tobacco advertising. This evidence shows that:

- High exposure to smoking in movies increases the risk of viewers taking up smoking by 2.71 times in the 10–14 years age group.[2]
- Adolescents (14–15 years) are more likely to report positive attitudes to smoking after seeing smoking portrayed in movies, increasing the risk that they will take up smoking.[3]
- Teenagers whose favourite stars smoke on screen are up to three times more likely to smoke than those whose favourite stars do not smoke.[4]
- Teenagers whose favourite stars smoke are 16 times more likely to think favourably of smoking, increasing the risk they will take up smoking.[4]

Tobacco control advocates have suggested several ways to counter this influence. The American Legacy Foundation, the World Health Organization and a number of other United States health organisations, for example, support four 'Smoke Free Movies Principles':

1. Rate new smoking movies 'R' (the US 'R' rating means that under 17-year-olds must be accompanied by a parent or adult guardian)
2. Require a credit at the end of the movie certifying that no payment has been received for showing smoking
3. Require strong antismoking advertisements be shown before the movie
4. Stop identifying brands.

From a health impact perspective, it is irrelevant whether the smoking scenes are a result of tobacco industry product placement or the creative choice of the director, producer or actor. Research has provided evidence that clearly points to a relationship between exposure to glamorised smoking images in movies, and smoking rates amongst young people.

There is also a good level of evidence demonstrating that showing anti-smoking advertisements before a movie will affect young people's attitudes to the smoking they see in movies.[3] However, to move from research evidence to public policy and then to the practical implementation of a counter advertising strategy in NSW will require collaboration across government and commercial sectors in health and arts portfolios, and involve politicians, policy makers and commercial interests in the film industry.

Non government organisations interested in tobacco control, such as the Cancer Council New South Wales, can help to bring these partners together by gathering evidence, demonstrating the effect of proposed policies through test or pilot interventions, creating public awareness of the issue and harnessing public support for the solution.

The Cancer Council New South Wales has approached its advocacy position in the following systematic way.

1. Gathering evidence that smoking in movies is a problem

A literature review has shown that there is now a strong body of evidence in the peer reviewed literature that exposure to smoking in movies increases the risk that young people will take up smoking.[1,2,3] In addition, a survey of the health behaviour of secondary school students conducted by NSW Health showed that 49 per cent of the young people surveyed thought that celebrities' smoking encourages young people to take up smoking.[5]

2. Gathering evidence that counter advertising could be effective in dealing with the problem

While published research supports counter advertising as an effective way to counter attractive images in movies of smoking[3,6], the Cancer Council decided to participate in further research in local cinemas to build on this evidence. Together with the former Central Coast Health, the former Central Sydney, South West Sydney, Northern Sydney, Northern Rivers and Macquarie area health services conducted research in real life situations to test the effectiveness of counter advertising among 12- to 20-year-old, male and female moviegoers. The test screening of a counter advertisement in cinemas also allowed us to assess the feasibility of implementing counter advertising as an on-going public health intervention.

The Cancer Council produced a new cinema advertisement designed to alert viewers to the smoking in the movie they were about to watch, with the message 'Don't be sucked in by the movie you are about to see'. The advertisement was shown before the movies *Alfie* and *Closer* across 21 locations around NSW; Cancer Council staff, area health service staff and volunteers conducted exit surveys using the methodology developed by Edwards *et al*.[3]

The results of this research have described the effectiveness of the intervention and the feasibility of implementing counter advertising. The advertisement was successful in reducing approval of smoking in the movie in 12- to 17-year-old non-smokers.[7] This is a potentially useful health outcome as approval of smoking is a risk factor for future smoking uptake.[8]

3. Assessing practical issues and possible obstacles

(a) The availability of effective advertisements

Both policy makers and commercial interests will want to know whether a counter advertising policy will require the use of specially produced advertisements, which could significantly add to the cost of implementation. There is currently field research providing evidence of the effectiveness of two types of advertisements that reference smoking in an upcoming movie.[3,6] However, US studies that used a range of anti-smoking advertisements in a classroom situation suggest that other anti-smoking advertisements would also work. A number of anti-smoking mass media campaigns are planned for 2006 and the Cancer Council will investigate the possibility of these being used for further research on the effectiveness of different advertisement messages in cinemas.

(b) Selection of movies that require counter advertising

The Cancer Council New South Wales is not advocating a total ban of all smoking images in all movies. In fact, some movies may enhance anti-smoking messages by portraying the damaging effects of smoking. The major concern of tobacco control advocates is smoking that:

- is portrayed as desirable, attractive, rebellious or normal, especially to youth audiences
- is portrayed unrealistically, for example in locations where smoking is normally prohibited or among non-smokers who would normally object
- is portrayed at unrealistically high levels
- shows cigarette brands.

The Cancer Council believes that no further research is required before counter advertising could be introduced. The Office of Film and Literature Classification already has a process by which it rates violence, coarse language and sexual activity and the same sorts of processes could be used to achieve a rating system for smoking that would indicate which films require counter advertising.

(c) Who should be responsible for ensuring that anti-smoking advertisements appear with appropriate movies?

The answer to the question of who should be responsible for ensuring that anti-smoking advertisements appear with appropriate movies will not be solved by health research, irrespective of the quality. Good quality pilot programs, however, will help identify solutions to some of the practical issues involved in putting the strategy into practice and will also help to reassure stakeholders, such as the film industry, that this can be achieved. A simple short-term answer to the question of responsibility could be that governments—either federal or state—who run anti-smoking campaigns could include cinema as part of their media package.

The Cancer Council's preferred option is that film distributors in NSW be legally required to provide notification of their intention to screen any film that meets the criteria for unacceptable smoking and that the cinema screening the film be required to show an approved anti-smoking advertisement before the movie.

4. Gathering support for counter advertising

(a) Public reaction

One vital step in the journey from research to policy and practice is acquiring the support of the general population. Strong community concerns about smoking issues can drive political will and thus policy change and, equally, a lack of community interest can result in policies not being implemented.

Collaborative research is again providing support for advocates on this issue. The Centre for Health Research

and Psycho-oncology (CHeRP), which is jointly funded by Newcastle University and the Cancer Council New South Wales, has surveyed the community's awareness of smoking in movies and its support for government action to counter it. The results from this survey and future community surveys will inform the Cancer Council's advocacy strategies and provide a measure of the success of awareness activity.

(b) Product champion

Evidence and health policy will not be enough to ensure that counter advertising is put into practice. The arts and film industries are key stakeholders with strong political connections and the potential power to block any proposed interventions. Therefore, an essential supporter in the advocacy campaign will be a 'champion' from the film industry who is prepared to lend their support publicly and introduce health advocates to the key players from the arts and film industries. The Cancer Council has already received support and assistance from individuals in the film industry and will continue this discussion to identify a champion for the campaign.

CONCLUSION

To move counter advertising from being a good evidence-based theoretical strategy into practice will require collaboration across a number of sectors. By working collaboratively, public health research, health promotion and advocacy groups can combine their respective strengths to present a feasible solution that is not only based on sound evidence but will also satisfy the many technical and practical issues involved in implementing the strategy.

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SNAP: A JOURNEY FROM RESEARCH TO POLICY TO IMPLEMENTATION AND BACK

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This paper describes an implementation trial, conducted in two divisions of general practice, of evidence-based interventions to manage behavioural risk factors in general practice. This arose from the Smoking, Nutrition, Alcohol, Physical Activity (SNAP) policy framework developed by the federal and NSW governments in 2001, which was in turn based on a review of the evidence. The trial broadly demonstrated that such implementation was feasible and identified a number of attitudinal, organisational, financial and work practice barriers. This helped in the development of further national initiatives and is now the subject of a trial in community health services in NSW.

Smoking, poor nutrition, hazardous and harmful use of alcohol and declining levels of physical activity are major contributors to the burden of chronic disease in Australia.[1] There is increasing evidence that measures to change behaviour are at least as important in reducing the population's risk of developing a chronic disease as medical interventions are in reducing physiological risk factors such as hypertension and dyslipidaemia.[2] Much of this can and should be addressed at the population level, for example by legislative mechanisms to control marketing of foods, alcohol or tobacco. However, there is also an opportunity to address the common behavioural risk factors in general practice. This is because of its high population reach, the high frequency of presentation of patients with the risk factors and because addressing behavioural risk factors is accepted by consumers as part of a general practitioner's role.[3] Interventions in general practice have been demonstrated to be effective in changing risk behaviours, especially among patients who are at higher risk.[4–9]

SNAP FRAMEWORK

Despite this, however, there is little evidence to support systematic implementation of interventions in general practice.[3,10,11] This led the Commonwealth Government's Joint Advisory Group on General Practice and Population Health to establish a working group to develop policy and strategy to address the issue. This work culminated in the SNAP Framework in 2002[12], which was endorsed by the National Public Health Partnership Group (NPHPG). The framework suggests actions at the levels of clinical consultations, general practice, the Division of General Practice, and state and national levels in seven broad outcome areas:

- organisational structures and roles
- financing systems
- workforce planning, education and training
- information management and information technology
- communication, community awareness and patient education
- partnerships and referral mechanisms
- research and evaluation.

Although there was a high level of commitment, the framework was generally not translated into specific programs, the main exception being the Diabetes Service Incentive Program, which identified assessment of the SNAP risk factors to be a key part of the 'annual cycle of care' for people with diabetes. However, this coincided with NSW Health developing its Chronic Disease Prevention Strategy, which identified the importance of linking population health activities with the SNAP approach to risk factor management in general practice (see Figure 1).[13] This led NSW to fund an implementation trial in an urban and rural division of general practice during 2003 and 2004. This was intended to help inform and stimulate further implementation in NSW and through national initiatives.

IMPLEMENTATION TRIAL

This project was coordinated by the University of New South Wales and conducted in the Sutherland and Hastings Macleay divisions of general practice together with the South Eastern and Mid North Coast area health services and other organisations in the National Heart Foundation of Australia. The intervention was planned in close collaboration with the area health service and implemented through the divisions as an integral part of their activities, which included:

- developing referral pathways and a referral directory for practices to use to support referral to local services for each of the SNAP risk factors.
- visits to each practice to determine practice needs and support practices to make changes in order to improve the quality of behavioural risk factor management and encourage teamwork and communication within the practice to support this
- practically orientated clinical training for general practitioners and nurses in SNAP, behaviour change (based on Stages of Change theory), motivational interviewing and information management
- providing resources for practice staff, including the Royal Australian College of General Practitioners evidence-based SNAP Guideline, a 5A's chart and other support material to general practitioners and other practice clinical staff
- providing resources to support patient self-management, including patient education materials and information on self help and community organisations.

EVALUATION

The trial was evaluated through surveys of self-reported practices in risk factor management, assessments of changes in practice organisation and capacity, and in-depth interviews with division project staff and collaborators from other services and with a subset of participating practices.

The trial demonstrated that the partnership between divisions and the area health service could be sustained, and that a structured preventive intervention could influence clinical general practice. SNAP implementation was integrated with different programs in the two divisions. In both divisions it was integrated with physical activity programs, and the program to enhance recall and reminders for the diabetes practice incentives program and service incentive payment. There was good evidence of linkage with area health service programs for physical activity but less for smoking and healthy eating programs, largely because these programs did not have the capacity to absorb more referrals.

Practice visits and the provision of support resources achieved some change. However, there was only limited impact on the organisation and capacity of practices (especially teamwork and communication), partly because of the lack of financial support for activities outside of the general practitioner consultation and the other pressures operating on practices, including workforce shortages.

The survey of all general practitioners in the division before and after the trial revealed an improvement in the proportion using guidelines and the reported frequency of verbal advice by general practitioners to patients in the rural division (Table 1). Referral rates were also higher for nutrition in both divisions and did not change after the trial. They were lowest for smoking and alcohol. Referrals for smoking increased in the rural division. Major barriers remained, including frustration with the difficulty motivating patients, lack of time, ease of referral and competing demands, including the expectations of patients that their presenting problems were the main priority.

Despite these limitations the trial has been useful in providing a practical demonstration of the implementation of at least four of the seven elements of the SNAP framework. A number of the tools and guidelines developed in the trial have been widely disseminated across Australia – notably the SNAP guide, which was published by the Royal Australian College of General Practitioners and distributed to all general practitioners, using funding from the Australian Government Department of Health and Ageing. The general practitioners survey and practice assessment tools have been disseminated widely to divisions and a majority of other divisions across Australia have implemented SNAP strategies within their chronic disease, population health or practice visits programs.[14] The experience of the trial has been used to inform the development of the Lifestyle Prescription package developed by the Australian

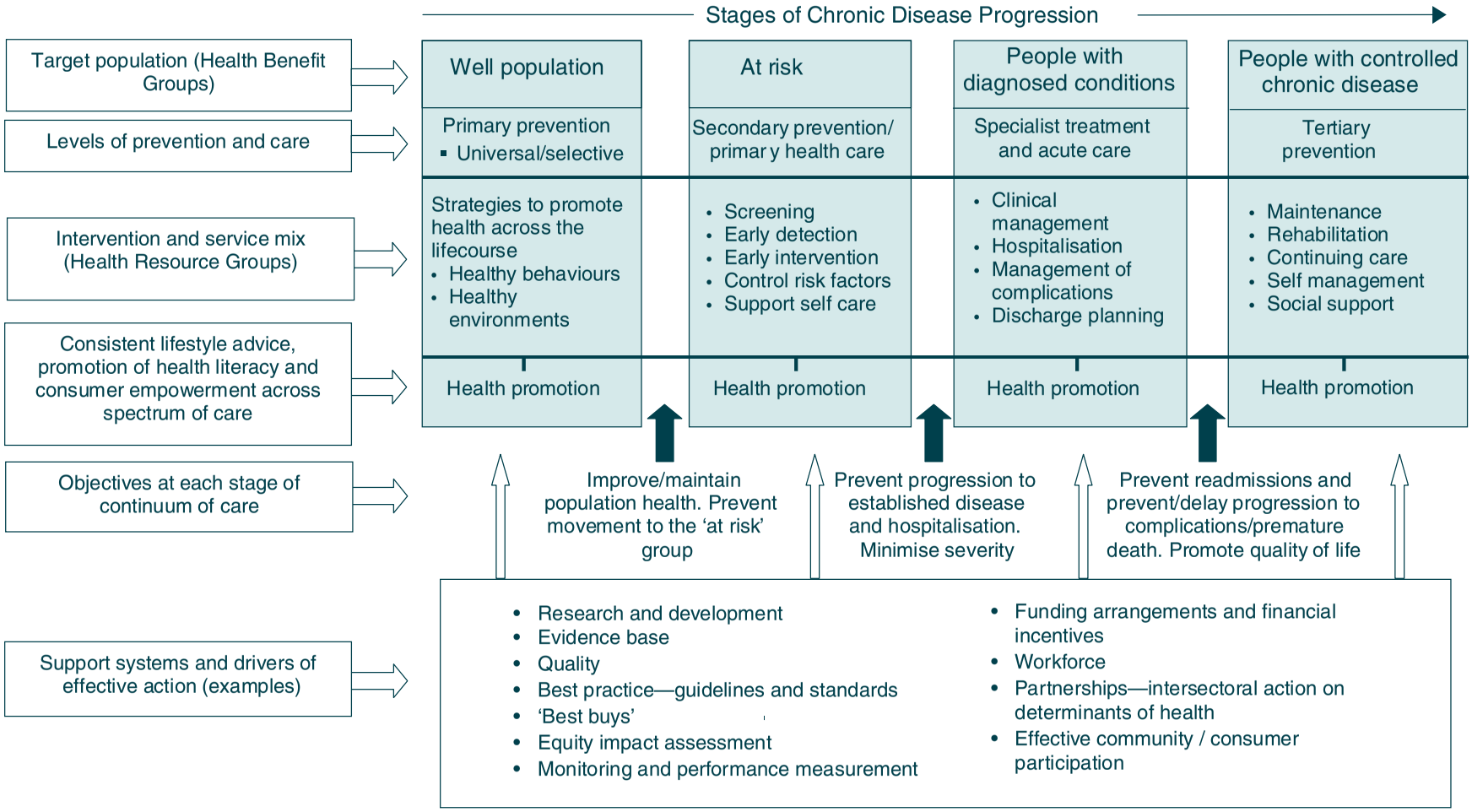
TABLE 1

SURVEY OF GENERAL PRACTITIONERS BEFORE AND AFTER IMPLEMENTATION OF THE SNAP TRIAL IN TWO DIVISIONS OF GENERAL PRACTICE IN NEW SOUTH WALES

	Urban Division (Sutherland)				Rural Division (Hastings Macleay)			
	Before		After		Before		After	
Respondents (N)	100		78		46		45	
Reported use of Guidelines for SNAP risk factors								
	Nov 2003		Nov 2004		Nov 2003		Nov 2004	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Smoking	35.0	25.6–44.4	26.9	17.1–36.7	17.8	6.8–28.9	34.1	20.3–48.0
Nutrition	39.0	29.4–48.6	25.6	15.9–35.3	15.6	5.1–26.1	36.6	22.5–50.7
Alcohol	22.0	13.8–30.2	35.9	25.3–46.6	24.4	12.0–36.8	48.8	34.2–63.4
Physical activity	46.0	36.2–55.8	30.8	20.6–41.1	15.6	5.1–26.1	36.6	22.5–50.7
Verbal advice offered often or very often								
Smoking	99.0	97.0–100	96.1	92.8–100	40.8	31.1–50.5	77.8	65.7–89.9
Nutrition	97.0	93.6–100	93.6	88.2–99.0	40.8	31.1–50.5	97.7	93.3–100
Alcohol	91.0	85.4–96.6	88.5	81.4–95.6	38.8	29.2–48.5	86.6	76.7–96.6
Physical activity	93.0	88.0–98.0	98.7	96.2–100	41.8	32.0–51.6	93.4	86.2–100
Referral to other services often or very often								
Smoking	11.0	4.8–17.2	6.4	1.0–11.8	6.7	0–13.9	24.5	11.9–37.1
Nutrition	48.0	38.2–57.8	38.4	27.6–49.2	42.2	27.9–56.5	44.4	29.9–58.9
Alcohol	25.0	16.5–33.5	9.0	2.7–15.4	28.9	15.8–42.0	24.5	11.9–37.1
Physical activity	31.0	21.9–40.1	30.8	20.6–41.1	17.8	6.8–28.9	31.1	17.6–44.6

FIGURE 1

NSW HEALTH COMPREHENSIVE MODEL OF CHRONIC DISEASE PREVENTION



Source: NSW Chronic Disease Prevention Strategy: Discussion Paper. Public Health Division, NSW Health, September 2001.

Government Department of Health and Ageing to distribute to all divisions of general practice.[15]

EXTENDING SNAP TO COMMUNITY HEALTH SERVICES

The next phase of the research has been to extend this approach to community health services in NSW. This is challenging given the variety of services delivered within community health and the very different opportunities that they have for addressing risk factors. This trial includes an urban community nursing team and a rural health service. It will include many of the basic elements of the general practitioner SNAP trial, including development of options for clinicians that fit within their patterns of client contact, development of resources and referral options to support their interventions and organisational development to build support for risk factor management into their teams and services.

LINKING POLICY, PRACTICE AND RESEARCH

The general practitioners and community health SNAP trials have played a number of roles in linking policy, practice and research to advance the development of risk factor management. They have been a mechanism to take ideas that were seen as an important part of the chronic disease agenda and provided specific opportunities to put them into action. This has provided a way of moving policy into action at limited cost and without the risk of moving directly into larger scale implementation. They are helping link policy development at the local level across settings that are often dealt with independently. The fact that community health and general practice work in the same communities and rely on the same referral agencies opens up other challenges for policy and practice relating to relationships between the two sectors and opportunities for collaborating to improve population health.

There is always a danger of too many trials, which are not broadly implemented. On the other hand there are numerous examples of policies hastily introduced without adequate evidence of how they will work, particularly at service provider level. The general practitioners trial has provided information for those in the field—for example staff in divisions of general practice—who wanted to put the ideas from the SNAP framework into practice but lacked the resources to undertake the development on their own. It also helped inform policy at national and state levels. There is now a much stronger basis for implementation across both the seven areas of the national SNAP framework and a key component of the NSW model of chronic disease prevention.

Successful strategies in the SNAP trial included evidence-based guidelines, training using simulated patients, and practice visits to provide tailored support and education. Key facilitators of implementation were links to existing division and area health service programs and the fit between the SNAP approach and clinical general practice. Major barriers included the lack of teamwork and capacity within general practice and limited availability of, or communication with, some referral services.

Preventive care requires the involvement of all staff in the practice. Unfortunately, current financing mechanisms do not readily support the involvement of non-medical staff in SNAP interventions and workforce and other pressures reduce the amount of time which general practitioners themselves can devote to these. While new Medicare funding for allied health and practice nurses is welcome, this is mainly focused on patients with chronic or complex needs. Until this is corrected, opportunities for systematic chronic disease prevention will continue to be missed.

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AN 'EVIDENCE CHECK' SYSTEM FOR FACILITATING EVIDENCE-INFORMED HEALTH POLICY

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In partnership with the NSW Department of Health, the Sax Institute has established a Getting Research into Policy and Practice (GRIPP) Program to improve the integration of population health and health services research with policy. The program is overseen by the GRIPP Steering Committee, which is co-chaired by the NSW Chief Health Officer (Dr Greg Stewart until February 2005, then Dr Denise Robinson) and Professor Anthony Zwi (University of NSW). One initiative of the GRIPP Program is an Evidence Check system to facilitate the commissioning of high quality research reviews relevant to policy issues. This article outlines the background to Evidence Check and describes how the system was developed and implemented.

BACKGROUND

Reviews of Australian health research at both the national[1] and state[2] levels have called for the establishment of priority-driven research programs supported by initiatives to improve the transfer of research findings into policy and practice. However, there are several known barriers to the integration of research and policy, including limited contact between researchers and policy makers, research that is untimely or not relevant to policy priorities, and the availability of competing forms of evidence of varying quality.[3-5] It has been suggested that better exchange between the policy and research communities requires a cultural shift toward 'decision-relevance' in research and a 'research-attuned' approach to policy[6], alongside the development of new organisational structures, improved linkage activities, and innovative human resource approaches.[7]

One strategy for encouraging the consideration of evidence in policy development is the production of targeted syntheses of research evidence relevant to policy issues. Such reviews can be useful in assembling the 'evidence jigsaw' and highlighting the causal links that are relevant to policy decisions[8], while avoiding some of the risks of relying on results from individual studies.[9,10] Another strategy for promoting exchange between the research and policy communities is the use of knowledge brokers. Brokers are intermediaries who can foster relationships and facilitate communication between researchers and policy makers, so that the respective needs, values and priorities of both groups are considered.[11] The concept of knowledge brokering in public policy is not new[12], but attempts to develop and evaluate the role in health contexts have emerged only recently.[11]

THE EVIDENCE CHECK SYSTEM

While these strategies are useful in theory, there is little empirical evidence to suggest how best to implement them in practice. Guided by expert members of the GRIPP Steering Committee and the experiences of groups such as the Canadian Health Services Research Foundation, the Evidence Check system was developed to facilitate access to high quality research reviews that could inform policy development across NSW Health.

Evidence Check has three components. First, an Evidence Check Commissioning Tool was developed, using the findings of a targeted literature review and consultations with senior policy makers and researchers about three hypothetical policy issues. The tool aims to elicit policy makers' needs so that an expert reviewer has the right information to produce a useful review. When completing the tool, policy makers are encouraged to act as 'intelligent customers'[13] of evidence by considering and articulating:

- the background to and purpose of the policy
- targeted questions to be answered by the review, including the intervention(s), population(s) and outcomes of interest
- the timeframe and funds available to conduct the review

- the breadth of evidence to be considered and the depth of analysis required
- the format of the final product, with an emphasis on reader-friendly styles such as the 1:3:25 framework (see page 178 in this issue) developed by the Canadian Health Services Research Foundation.[14]

Second, a directory of experienced researchers from across NSW has been established. The directory will enable the timely identification of experts who have up-to-date knowledge of the most recent research evidence in their field, and the skills and capacity to conduct high quality reviews of the evidence.

Third, a team of knowledge brokers has been recruited. The brokers are senior health and social sector professionals with extensive experience in both the research and policy spheres and excellent negotiation and communication skills. As each review opportunity arises, a broker will be appointed to liaise between the policy maker and reviewer during the process of scoping and commissioning the review, and provide advice to all parties as required.

CONCLUSION

Evidence Check is currently being trialled across the NSW Department of Health. Findings from an ongoing evaluation will be built into the Evidence Check system to ensure it continues to work to the mutual benefit of policy makers and researchers in NSW.

For more information about Evidence Check visit the Institute's website at www.saxinstitute.org.au.

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THE ROLE OF ECONOMIC ANALYSIS IN POLICY MAKING —A TOBACCO CONTROL CASE STUDY

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Economic analyses and modelling can influence the development of public health policy by providing evidence about the economic impact of different policies and the return on investment for policy changes, as well as any differential outcomes arising from policy implementation. Such analyses can also provide data relevant to broader factors that impact on policy decisions.

This article describes the use of an economic analysis of a reduction in smoking prevalence to counter competing claims of industry interest groups, and to identify the potential beneficiaries of tighter tobacco control policies.

BACKGROUND

Tobacco control—a case study in public policy impasse

Tobacco use is the largest single preventable contributor to premature death and chronic illness in Australia. Tobacco use imposes substantial, yet avoidable, costs on smokers and their families, as well as on the community generally, through costs to the health system and to business.

Although Australia leads the way in many areas of tobacco control, the situation remains well short of optimum. There are a number of notable policy opportunities that would substantially reduce smoking rates, including funding of a comprehensive anti-tobacco social marketing campaign, legislating for smoke-free pubs and clubs, and tighter regulation of the tobacco retail distribution environment. There is ample evidence that social marketing campaigns can rapidly accelerate the decline in the prevalence of smoking, and numerous evaluations demonstrating substantial economic and health benefits from such campaigns.[1–4] Despite the evidence, it has become increasingly difficult to engage policy makers of all levels and persuasions about the need for tighter tobacco control policies.

Barriers to policy decisions in favour of tighter tobacco control

There are many reasons why policy makers may be reluctant to pursue tighter tobacco control policies. These include the perception that the 'smoking problem' has been sufficiently addressed and that everyone is already aware of the health impact of smoking, resulting in an attitude of policy complacency or weariness in relation to tobacco control policy. The long timeframe on returns on investment in tobacco control also reduces the likelihood of governments seeing this as an urgent or high pay-off policy issue.

Reasons could also include those relating to a balance of power and visibility of different stakeholders involved in tobacco. There is a limited visible constituency pushing for tighter tobacco control measures, in contrast to the visibility and power of the constituency with vested economic interests in tobacco use. This is exemplified by the aggressive campaigns by pubs and clubs over controls on environmental tobacco smoke, and by the newly formed National Alliance of Tobacco Retailers, established with tobacco and energy company support, to oppose further point of sale controls. The pro-tobacco interests have relied increasingly on economic arguments to counter any attempts at tighter tobacco control, by asserting that reduced smoking rates would have detrimental effects on the economy overall.

In contrast, government as a whole is yet to engage with the impact of tobacco and the challenge of tobacco control. Policy makers generally take the view that tobacco control is exclusively a health issue and therefore all initiatives should be funded from within existing health budgets. Senior politicians often express views that mirror the tobacco industry position— that tobacco is a legal product and the decision to smoke is a personal adult one—and state this as a reason for resisting a tighter tobacco control policy.

The Cancer Council New South Wales commissioned an economic analysis of the effects of reduced smoking prevalence in NSW to provide empirical evidence about the impact of tighter tobacco control policies. This analysis provides an opportunity to reframe the tobacco control issue in terms of economic, not just health, outcomes.

The full report describing the study by Juror, Collins and Lapsley, *The macroeconomic and distributional effects of reduced smoking prevalence in New South Wales*, has been published by the Cancer Council New South Wales. Here we summarise the purpose of the study, the method, and major findings.

METHODS

The economic analysis was designed to contribute to policy making in three main ways:

- by quantifying the extent and direction of any economic effect of reduced smoking prevalence
- by assessing the validity or otherwise of the claims made by tobacco industry interests about the economic harm from reducing smoking prevalence
- by identifying potential economic beneficiaries of tighter tobacco control policies with a view to developing a broader constituency in support of such policies.

The economic analysis examined the impact on output, employment and other economic variables in NSW

resulting from a reduction in smoking prevalence in NSW of one percentage point per year over a five-year and ten-year period.

The analysis took into account alternative expenditure patterns at a household level resulting from (a) a reduction in expenditure on smoking and (b) a range of possible government budgetary response to changes in tobacco tax revenue resulting from reduced consumption. The economic analysis was based on modelling the effects of four different scenarios with various plausible combinations of budgetary responses.

This allowed the analysis to identify which business sectors would be advantaged or disadvantaged by lower smoking prevalence. It also provided data on the effects of reduced smoking prevalence on:

- distribution of household income
- federal and state government budgets
- sectoral employment
- balance of payments
- NSW gross state product.

RESULTS

The results described here are reported in Junor, Collins and Lapsley, *The macroeconomic and distributional effects of reduced smoking prevalence in NSW*.[5]

Empirical evidence about the direction and extent of economic impact

The analysis concluded that the effects of a 25 per cent decline in NSW smoking rates upon aggregate NSW output and employment would be minor, and that the direction of the effect would depend on which budgetary response was adopted by the government. The analysis identified a number of NSW industries that would experience increased outputs and employment as a result of reduced smoking prevalence, as well as those that might experience a downturn. However, any reductions in output or employment in specific industries would be easily absorbed by the effects of overall economic growth in the economy over the five-year period.

Countering tobacco industry arguments

The tobacco industry has commissioned various reports purporting to demonstrate that it makes a major contribution to national economic output and employment. However, many of these studies failed to take into account that any reduction in spending on tobacco will inevitably be accompanied by an increase in either spending on other goods and services or on savings. The economic analysis conducted by Junor, Collins and Lapsley assumed that households that quit smoking would spend the money freed in the same way as non-smoking households.

The economic analysis in all scenarios tested clearly refutes tobacco industry claims about the economic harms that would result from reduced smoking prevalence. The analysis showed that the only significant loser would be the tobacco industry.

The evidence from this economic analysis should enable policy makers to dismiss the claims of the tobacco industry that there would be large negative effects on the economy from reduced smoking prevalence. The fact that the economic impacts of reduced smoking prevalence would be close to neutral means that they should not be an obstacle to framing a policy response to the continued problem of tobacco use in the community.

Constituency building

One of our objectives in commissioning the economic analysis was to identify any particular sectors that would gain from reduced smoking prevalence in order to build a more visible constituency for tighter tobacco control policies. This would help change the current imbalance in constituency power between the tobacco industry and its allies, and those calling for improved tobacco control. A broader recognisable constituency for tobacco control would also assist in increasing the relevance of tobacco control to government portfolios beyond health.

The economic analysis did not identify any industry sector that would particularly benefit from a reduction in smoking prevalence, given that the overall effects were found to be close to neutral.

However, the analysis of the impact of reduced smoking prevalence on household expenditure showed that, relative to income, the greatest benefits of additional income freed up through reduced smoking would accrue to the poorest households in NSW. The research estimated that the poorest households could achieve average savings of over $14 per week at the end of five years where smoking prevalence was reduced by one percentage point per year, and savings of almost $29 per week at the end of ten years under the same assumptions. Importantly, these figures represent the average for all households, including those where smoking continues. The impact on the lowest income households that quit would be much greater as these households spend an average of 18 per cent of household income on tobacco.

These results highlight the fact that tobacco control provides a tangible opportunity for reducing the impact of poverty, and so should be of relevance to the social services sector and those government agencies concerned with poverty alleviation. The data clearly demonstrated that a reduction in smoking prevalence across the community would provide the greatest financial benefit to the poorest households in the state.

DISCUSSION

The reality of public policy making and influence is that the process is not a direct linear one from evidence to policy. There are many factors that impact on decisions of policy makers, and empirical evidence is only one of these. The challenge is to ensure that research is designed in a way that

addresses the broader factors that impact on policy decision making such as competing policy and economic interests and the political context, and that takes into account the mechanisms and structures of public policy making.[6]

The research described in this article was explicitly designed to address some of the broader factors impacting on decision-making in relation to tobacco control policy. These included the need to address the claims of the tobacco industry interests that tobacco control would have a detrimental impact on the economy; to provide information to policy makers on the economic (rather than health) impact of tobacco control policies; and to identify the economic beneficiaries of tighter tobacco control policies.

One of the most important outcomes of this research was the evidence that the poorest households would have the most to gain from a reduction in overall smoking prevalence in NSW through tighter tobacco control policies. This provided an opportunity to demonstrate the relevance of tobacco control to the social services sector, and to policy makers concerned with reducing the impact of poverty.

Copies of *The macroeconomic and distributional effects of reduced smoking prevalence in New South Wales* can be obtained from Sarah Ford at the Cancer Council New South Wales by contacting her on 02 9334 1753 or sarah@nswcc.org.au.

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VARICELLA ZOSTER

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Varicella zoster is a herpes virus that causes chickenpox (also known as varicella) and shingles (herpes zoster). This Bug Breakfast discussed the background to the addition of the varicella vaccine to the National Immunisation Program on 1 November 2005, and outlined the process of introducing a new vaccine to the schedule in NSW.

CHICKENPOX

Chickenpox is usually a mild, self-limiting disease of childhood. It is highly contagious and causes a vesicular rash. Complications are seen in approximately one per cent of cases and infection of pregnant women can cause congenital varicella syndrome and neonatal varicella.[1] There are approximately 240,000 cases of chickenpox in Australia each year, leading to approximately 1500 hospitalisations and eight deaths.[1] In Australia, 80 to 90 per cent of unvaccinated people have been infected with varicella zoster by adolescence.[2]

SHINGLES

Shingles occurs following a primary infection with varicella zoster when the virus establishes a latent infection in sensory nerve ganglia then later reactivates as a vesicular, often painful rash. The most common complication of shingles is post-herpetic neuralgia. The lifetime risk of shingles is 15 to 20 per cent and the number of hospitalisations and deaths due to shingles are approximately twice that caused by chickenpox.[2]

VARICELLA VACCINATION IN AUSTRALIA

A varicella vaccine has been licensed for use in Australia since 1999. Prior to November 2005, it was recommended for use at 18 months of age as well as in immunocompromised people; however, the vaccine was not funded. The estimated rate of vaccination in two-year-olds in 2005 in Australia was approximately 16 per cent.[1] Since November 2005 the vaccine has been provided free to children at 18 months of age as part of the National Immunisation Program. A catch up vaccination program will also be conducted for children aged 10 to13 years who have not had the disease or the vaccine.

In the United States a universal varicella vaccination program has been in place since 1996 and coverage amongst 19- to 30-month-old children has risen from 12 per cent in 1996 to 85 per cent in 2003. Associated decreases in hospitalisations by 88 per cent and morbidity by 66 per cent have been observed.[3,4] Post-licensure studies of vaccine effectiveness have indicated that its effectiveness for prevention of varicella disease is about 85 per cent.[1]

The impact of universal vaccination against chickenpox on the incidence of shingles has not yet been determined. There are concerns that loss of ongoing exposure to varicella zoster as a result of population immunity may lead to loss of immune boosting and increased rates of shingles. However, the rate of shingles in vaccinated people is likely to be reduced and active surveillance in the United States has so far indicated no change in the rates of shingles in adults. Rates in children appear to be declining. Recent studies of a high-dose 'zoster vaccine' suggest that it may decrease the rates of herpes zoster and post-herpetic neuralgia in elderly populations.[5]

The aim of introducing the varicella vaccine to the National Immunisation Program in Australia is to reduce the burden of disease, hospitalisations and deaths. At least 80 per cent vaccine coverage is required to reduce the disease burden across all ages.[6]

INTRODUCING A NEW VACCINE INTO THE VACCINATION SCHEDULE

At a national level, the initial step in introducing a new vaccine into the schedule is for the vaccine to be licensed with the Therapeutic Goods Administration. Following this, the Australian Technical Advisory Group on Immunisation undertakes a review of the epidemiology of the disease and the vaccine data, including the cost-effectiveness of the vaccine, and makes recommendations to the Federal Minister for Health and Ageing. If the vaccine is approved for inclusion on the National Immunisation Program the price of the vaccine is negotiated nationally and all other support systems, such as the Australian Childhood Immunisation Register, are amended. From May 2005, the Australian Technical Advisory Group on Immunisation will make recommendations on the vaccine to the Minister for Health and Ageing; however, cost-effectiveness and pricing arrangements will be undertaken by the Pharmaceutical Benefits Advisory Committee.

At a state level, the NSW Department of Health tenders for the supply of the vaccine. The vaccine is purchased and then stored and distributed to all NSW service providers by

* Bug Breakfast is the name given to a monthly series of hour-long breakfast seminars on communicable diseases delivered by the NSW Department of Health's Division of Population Health.

the NSW Vaccine Centre. To coincide with the program, a communication strategy is implemented. This includes media releases, advice to public health units and general practitioners and all other service providers, an information kit, information on the web, and a 'road show' to area health services and general practitioner divisions.

FUTURE CONSIDERATIONS

Issues that may need to be considered in future include the need for two doses and/or booster doses of the vaccine. A new combined vaccine for measles, mumps, rubella and varicella was licensed in the United States in 2005. Another issue will be surveillance for varicella zoster. Although many Australian states are planning to make this a notifiable disease in association with the new vaccination program, at this stage NSW is planning to use alternative forms of surveillance including varicella-related hospitalisations and deaths and periodic serosurveys. NSW will also investigate the feasibility of sentinel surveillance. As the incidence of varicella infections declines with time, the feasibility of statewide surveillance will be reviewed.

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COMMUNICABLE DISEASES REPORT NSW FOR SEPTEMBER AND OCTOBER 2005

For updated information, including data and facts on specific diseases, visit www.health.nsw.gov.au and click on **Infectious Diseases.**

TRENDS

Tables 2 and 3 and Figure 1 show reports of communicable diseases received through to the end of September and October 2005 in NSW.

Data from the NSW Influenza Surveillance Program www.health.nsw.gov.au/infect/pdf/flureport.pdf show that the 2005 **influenza** season peaked in late August and had declined to baseline levels by mid October. Most cases were due to the influenza A virus. A small number were due to the influenza B virus, especially towards the end of the season.

Reports of **pertussis** cases appear to have peaked in NSW in August when 759 patients reported onset of symptoms. Nonetheless, pertussis remains common throughout the state (555 cases were reported in October), and clinicians should consider the diagnosis in people presenting with persistent bouts of coughing, especially when associated with an inspiratory whoop or vomiting. Treatment of the patient, if given within three weeks of onset, reduces infectiousness. It is important to identify other people who may be at risk of pertussis in whom infection could be severe, and who would benefit from receiving preventive antibiotics.

Prophylaxis is recommended for the following contacts of people infected with pertussis:

- all household members where the household includes an infant less than 12 months of age, a child aged between 12 and 24 months who has received fewer than three doses of pertussis vaccine, or a woman in the final month of pregnancy
- household members who have close dealings (within one metre) with children under five years old or with pregnant women
- where the person attended childcare for more than one hour while infectious, then other children and adults in the same classroom who are infants less than12 months of age (regardless of vaccination status); other children aged 12 to 59 months who have received fewer than three doses of pertussis vaccine; or staff who have not received a pertussis vaccine in the previous 10 years
- infants less than 12 months of age, children aged between 12 and 24 months who have received fewer than three doses of pertussis vaccine, and women in the last month of pregnancy who were cared for (at a

distance of within one metre) by the person for at least one hour while infectious

- unvaccinated health care workers who were exposed (came within one metre) to the infectious case for more than one hour, if the health care worker is to care for children under two years of age in the next two weeks.

Antibiotic prophylaxis is generally not considered valuable in other settings such as primary schools, high schools, tertiary institutions and work places, as prevention of transmission in these settings is unlikely. Call your public health unit for advice.

The mosquito-borne diseases **Ross River virus infection** and **Barmah Forest virus infection** tend to increase around Christmas and peak around Easter. The main risk of infection is in non-metropolitan areas, so residents and visitors to these areas should protect themselves by avoiding being bitten by mosquitoes. This involves staying inside when mosquitoes are most active (around dusk and dawn); wearing loose fitting, light coloured clothing that covers the arms and legs when outside; using an insect repellent; fitting fly screens to all windows, doors and chimneys and keeping them in good repair; using a knockdown insecticide in bedrooms (according to the manufacturer's instructions) half an hour before going to bed; and removing pools of water in which mosquitoes might breed from around the house.

ENTERIC DISEASE

Eleven outbreaks of **gastroenteritis in institutions,** involving at least 130 cases, were reported by public health units in September, including four in childcare settings, four in aged care facilities and three in hospitals. While the causative agent was not identified in most, rotavirus was confirmed in one childcare outbreak. From July to September 2005, at least 30 outbreaks of gastroenteritis in institutions (involving 382 cases) were investigated by public health units. This number is much lower than for the same period in 2004, when 161 outbreaks (involving 4896 cases) were reported. It is thought that the emergence of a new strain of norovirus in NSW in 2004 may have accounted for the large number of outbreaks that year.

On 26 September, Clark County Health District, located in Las Vegas in the United States, reported that a food handler at an international conference there had developed **hepatitis A**. On 13 and 14 September—while infectious—the food handler had served approximately 1000 soft serve ice-cream cones with bare hands to attendees of the conference. Nonetheless, public health officials in Las Vegas deemed the risk of contamination of ice cream to be low. Of the 26,000 conference attendees, it was thought that 187 resided in NSW. NSW Health sent these people a letter advising them that they might have been exposed to the disease and should seek medical care if they developed symptoms.

INVESTIGATION OF A CLUSTER OF SALMONELLOSIS

In early September staff at the Randwick office of the South Eastern Sydney / Illawarra Public Health Unit reported two cases of ***Salmonella*** **typhimurium phage type 9** (STM9) infection. Both individuals had South American names and had attended the same social club during their incubation periods. A review of statewide laboratory notifications identified another six people with STM9 infection who also had South American sounding names. On interview, five of the eight infected people reported that they had attended the same social club between 29 July and 8 August 2005.

A case series investigation was conducted in an attempt to identify and control the likely source of the apparent outbreak. A possible case of disease was defined as a laboratory-confirmed STM9 infection or untyped STM infection in a person with a South American sounding name who was a NSW resident with a specimen collection date since 15 July 2005. Possible cases were interviewed by public health unit staff using a questionnaire that included questions about whether they attended the club and what foods they ate at the club or from a bakery that supplied the club with specialty salad and pastries.

Seventeen possible cases were identified, or whom 12 were later found to have STM9. Apart from the five cases (all confirmed to have STM9) who were known to have eaten at the club, none of the other possible cases reported attending the club. One case with STM9 did report perhaps purchasing food items in the exposure period from the bakery.

Of the five cases linked to the club, food items reportedly consumed included barbeque steak (n=1), grilled beef (n=1), beef schnitzel (n=2), speciality sausage (n=1), pastries (n=3), chips (n=1), specialty salad (n=2) and unspecified salad (n=1).

The NSW Food Authority undertook an environmental investigation of the club and the bakery, and collected food samples for testing. No likely source of infection was identified at either the club or the bakery. None of the food samples, including the specialty salad and pastries, showed the presence of any organisms. (However, the samples were collected approximately one month after the people who became infected had attended the club.) The specialty salad was prepared with a homemade mayonnaise that used raw egg and was supplied by the bakery.

The source of the outbreak remains undetermined. As a precaution, the bakery was advised by the NSW Food Authority to use pasteurised egg in the mayonnaise, rather than raw egg. No further cases linked to the club have been identified and there is no evidence of ongoing risk of transmission related to this cluster.

In October 2005 notifications of **salmonellosis** (including paratyphoid infections) increased to 167, compared with

92 cases in September. There were 119 notifications in October 2004. Several salmonellosis outbreaks were under investigation by public health units in collaboration with the NSW Food Authority in October 2005, relating to:

- five cases of Salmonella *Anatum* across NSW
- eight confirmed and 22 probable cases of Salmonella *Typhimurium* (STM) phage type 197 infection among attendees of a childcare centre located in South Eastern Sydney / Illawarra Area Health Service
- three cases of Salmonella *Birkenhead* infection in residents of a facility located in North Sydney / Central Coast Area Health Service
- four cases of STM135a infection in Sydney South West Area residents
- four cases of STM170/108 infection linked to two large functions at a café located in Sydney South West Area.

Cryptosporidiosis infections increased in October with 37 notifications, compared with 12 in September. This was a more than three-fold increase compared to October in previous years and may be related to changes in testing procedures by laboratories. No common exposures have been identified among cases.

AVIAN INFLUENZA AND PANDEMIC PLANNING

In his report of 27 April 1920, Robert T Paton, the Director-General of Public Health in NSW, noted that the 1919 influenza epidemic occurred in two waves, each of about 10 weeks duration. While the first wave (from 19 March to 27 May) was bad enough, with 1892 deaths recorded, the second wave (from 28 May to 25 August) was terrible, causing 3989 deaths. The investigation by the Department of Public Health found that the highest death rates were in the most densely populated areas, and among working-aged males. For all of 1919 (when about 2 million people lived in NSW), 6387 deaths from influenza were reported, representing 24 per cent of all deaths for that year.

Mr Paton's report is a salient reminder of the havoc that a new strain of influenza can cause to humans. Since late 2003, an epidemic of avian influenza affecting both bird flocks and humans has been occurring in Asia. This epidemic in birds is caused by the H5N1 strain of influenza virus and is unprecedented in its geographical spread. It is highly unlikely that it will be eradicated in these countries in the short term. The World Health Organization (WHO) has reported that as of 24 October 2005, in Thailand, Vietnam, Cambodia and Indonesia there have been 121 human cases of avian influenza and 62 deaths. Although clusters of human cases have been reported, none of these reports have definitively demonstrated human-to-human transmission. So the current outbreak of H5N1 avian influenza in Asia and parts of eastern Europe is a disease primarily of birds, not humans.

However, in recent weeks, analyses of reconstructed virus from the 1918–1919 influenza pandemic have suggested that that virus adapted to humans directly from an avian-like virus, rather than from re-assortment with co-exiting human viruses.[1] These data support the fears of many scientists that the current H5N1 virus could also adapt to infect humans, as the 1918 strain seems to have done.

Influenza pandemics occur every 10 to 50 years when an influenza virus strain develops to which humans have little or no immunity. The Spanish flu of 1918–1919 was the most severe pandemic of the last century, killing between 20 and 40 million people worldwide. The most recent pandemic, the Hong Kong flu, occurred in 1968 and was far milder, causing one million deaths. This virus was thought to have arisen from re-assortment of influenza viruses rather than adaptation of an avian strain. WHO is closely monitoring changes to the makeup and behaviour of the H5N1 virus in order to assess any change in pandemic risk. Using the WHO seven-point pandemic phase scale, the world at present is at 'Pandemic alert period—Global phase 3' (human infections with a new subtype overseas, with rare instances of spread to a close contact of a case). Despite recent reports suggesting that the H5N1 strain may be transforming into a more dangerous form, an expert committee of the WHO recommended in June 2005 that the world pandemic alert level not be raised from the current level, which has been in effect since January 2004.

Pandemic preparedness is now a major concern of governments. Internationally, the WHO has taken the lead role and in April 2005 released the WHO global influenza preparedness plan. At the national level, in June 2005 the Australian Government released the Australian Management Plan for Pandemic Influenza; see www.health.gov.au/internet/wcms/Publishing.nsf/Content/phd-pandemic-plan.htm.

NSW Health has carried out a number of preparedness activities. These included *Exercise Warning Shot* in 2003, which exercised the public health network's preparedness for an influenza pandemic, and in late 2004 the *Infectious Diseases Emergencies Workshop– Planning a Way Forward,* involving over a hundred clinicians, public health and other health professionals. Ongoing preparedness activities include:

- participation in the National Influenza Pandemic Action Committee
- revision of the NSW Health Influenza Pandemic Plan, which will include protocols for the management of cases
- expert consultation through the NSW Infectious Disease Emergency Advisory Group
- development of planning frameworks for area health services

- improving the emergency supply of personal protective equipment and antiviral medicines
- improving communications systems for health care workers
- developing and conducting preparedness exercises
- participating in Exercise Eleusis, a national exercise designed to test Australia's response to an incursion of avian influenza, planned for late 2005.

Preparing for a pandemic of influenza is a continuous process, and plans will need to be updated as new information about the threat, and new response technologies, emerge. For more information about avian influenza and pandemic preparedness, see www.health.nsw.gov.au and click on **Infectious Diseases.**

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QUARTERLY REPORT: AUSTRALIAN CHILDHOOD IMMUNISATION REGISTER

Table 1 compares the percentages of fully immunised Indigenous and non-Indigenous children in NSW aged 12 months to less than 15 months in each area health service, reported by all service providers.

These data refer to children whose age has been calculated 90 days before data extraction. The information contained in the report has been extracted from the Australian Childhood Immunisation Register and may be underestimated by approximately three per cent due to children being vaccinated late or to service providers failing to forward information to the register.

TABLE 1

PERCENTAGE OF FULLY IMMUNISED CHILDREN AGED 12 MONTHS TO LESS THAN 15 MONTHS BY AREA HEALTH SERVICES AND BY INDIGENOUS AND NON-INDIGENOUS STATUS

Area Health Service	30/06/2005		30/09/2005		31/12/2005	
	Non-Indigenous %	Indigenous %	Non-Indigenous %	Indigenous %	Non-Indigenous %	Indigenous %
Greater Southern	93	91	93	88	94	91
Greater Western	92	81	92	84	90	85
Hunter / New England	94	87	93	82	93	86
North Coast	83	83	85	78	86	83
Northern Sydney / Central Coast	91	92	91	96	91	97
South Eastern Sydney / Illawarra	90	91	90	83	91	90
Sydney South West	90	83	90	83	89	89
Sydney West	90	93	90	90	90	84
NSW	**91**	**87**	**91**	**85**	**91**	**88**

FIGURE 1

REPORTS OF SELECTED COMMUNICABLE DISEASES, NSW, JAN 2000 TO OCT 2005, BY MONTH OF ONSET

Preliminary data: case counts in recent months may increase because of reporting delays.

Laboratory-confirmed cases only, except for measles, meningococcal disease and pertussis

BFV = Barmah Forest virus infections,
RRV = Ross River virus infections

Lab conf = laboratory confirmed

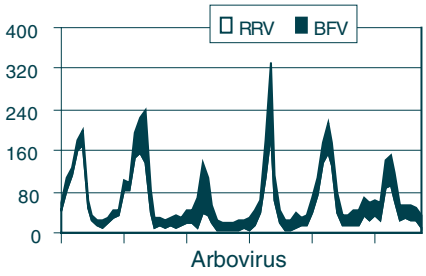
Men Gp C and Gp B = meningococcal disease due to serogroup C and serogroup B infection, other/unk = other or unknown serogroups.

NB: multiple series in graphs are stacked, except gastroenteritis outbreaks.

NB: Outbreaks are more likely to be reported by nursing homes and hospitals than by other institutions

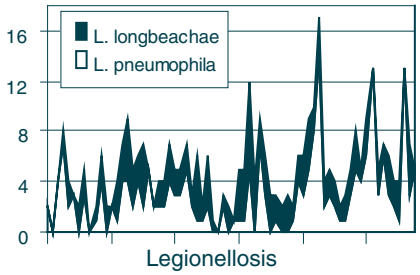
NSW population	
Male	50%
<5 yrs	7%
5–24 yrs	27%
25–64 yrs	53%
65+ yrs	13%
Rural	46%

Aug 05–Oct 05	
Male	51%
<5	0%
5–24	12%
25–64	73%
65+	15%
Rural	95%



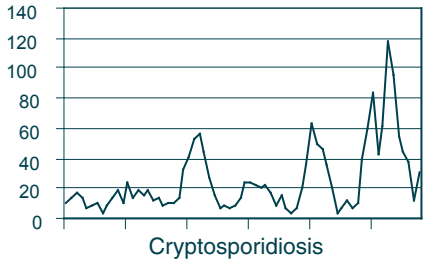
Arbovirus

Aug 05–Oct 05	
Male	56%
<5	0%
5–24	4%
25–64	72%
65+	24%
Rural	40%



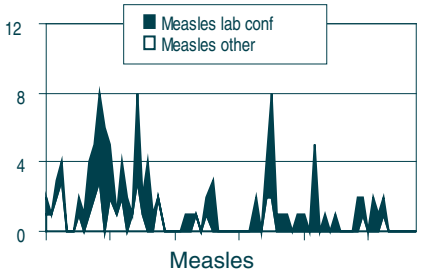
Legionellosis

Aug 05–Oct 05	
Male	61%
<5	28%
5–24	39%
25–64	32%
65+	1%
Rural	44%



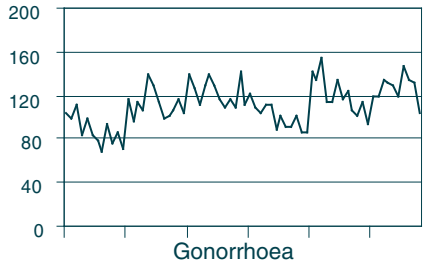
Cryptosporidiosis

Aug 05–Oct 05	
Male	0%
<5	0%
5–24	0%
25–64	0%
65+	0%
Rural	0%



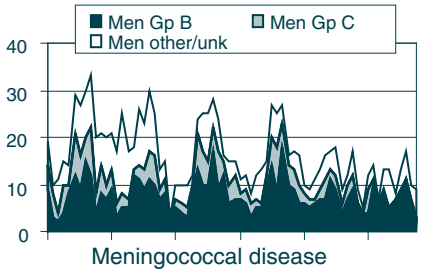
Measles

Aug 05–Oct 05	
Male	89%
<5	0%
5–24	28%
25–64	71%
65+	1%
Rural	19%



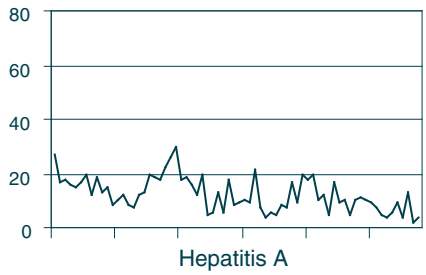
Gonorrhoea

Aug 05–Oct 05	
Male	56%
<5	30%
5–24	25%
25–64	28%
65+	17%
Rural	64%



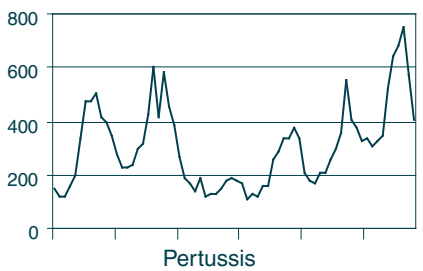
Meningococcal disease

Aug 05–Oct 05	
Male	58%
<5	5%
5–24	42%
25–64	53%
65+	0%
Rural	21%



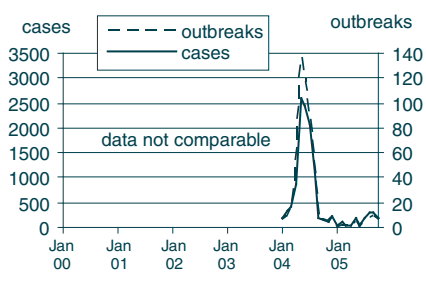
Hepatitis A

Aug 05–Oct 05	
Male	39%
<5	4%
5–24	13%
25–64	69%
65+	14%
Rural	34%



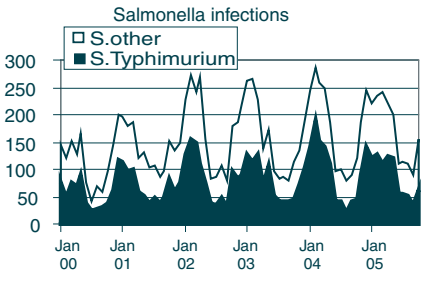
Pertussis

Aug 05–Oct 05	
All outbreaks	32
Nursing homes	16
Hospitals	3
Child care	13
Schools	0
Other	0



Gastroenteritis outbreaks in institutions

Aug 05–Oct 05	
Male	50%
<5	29%
5–24	26%
25–64	37%
65+	8%
Rural	39%



Salmonella infections

TABLE 2 REPORTS OF NOTIFIABLE CONDITIONS RECEIVED IN SEPTEMBER 2005 BY AREA HEALTH SERVICES

	Area Health Service (2005)																			Total	
	Greater Southern		Greater Western			Hunter / New England		North Coast		Northern Syd / Central Coast		South Eastern Syd / Illawarra		Sydney South West		Sydney West					
Condition	**GMA**	**SA**	**FWA**	**MAC**	**MWA**	**HUN**	**NEA**	**MNC**	**NRA**	**CCA**	**NSA**	**ILL**	**SES**	**CSA**	**SWS**	**WEN**	**WSA**	**JHS**	**for Sept+**	**To date+**
Blood-borne and sexually transmitted§																				
Chancroid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlamydia (genital)*	34	21	13	5	17	95	34	36	41	24	92	37	135	67	42	12	67	7	790	8432
Gonorrhoea*	2	-	-	-	1	1	1	4	1	1	13	5	47	13	11	-	5	-	107	1133
Hepatitis B–acute viral*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hepatitis B–other*	4	1	1	2	2	8	4	2	2	2	41	7	45	46	10	1	42	1	222	2767
Hepatitis C–acute viral*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hepatitis C–other*	11	14	14	6	22	33	13	37	22	30	27	35	101	57	6	14	52	31	528	4979
Hepatitis D–unspecified*	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	-	3	12
Syphilis	-	-	4	-	-	1	3	-	2	1	14	-	28	14	11	1	4	2	87	718
Vector-borne																				
Barmah Forest virus*	-	1	-	2	-	4	1	17	2	1	-	-	-	-	-	-	-	-	28	371
Ross River virus*	2	-	2	-	-	10	3	8	6	2	-	-	-	1	-	-	1	-	35	412
Arboviral infection (other)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32
Malaria*	-	-	-	-	-	-	-	-	2	2	4	-	2	-	-	-	-	-	10	175
Zoonoses																				
Anthrax*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brucellosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	3
Leptospirosis*	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	27
Lyssavirus*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Psittacosis*	2	-	-	-	-	2	-	-	-	-	-	-	1	-	-	4	1	-	10	102
Q fever*	-	-	1	5	1	-	6	1	1	-	2	-	-	-	-	-	-	-	17	102
Respiratory and other																				
Blood lead level*	-	1	-	4	2	5	-	-	-	-	-	-	-	-	3	-	-	-	15	196
Influenza*	1	5	2	5	8	32	4	4	10	1	38	8	44	6	26	2	18	-	214	1141
Invasive pneumococcal infection*	4	1	-	2	3	10	-	3	2	3	4	4	5	1	12	4	19	-	77	529
Legionella longbeachae infection*	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	14
Legionella pneumophila infection*	-	1	-	-	-	-	-	1	-	2	1	1	1	-	-	-	2	-	9	53
Legionnaires' disease (other)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Leprosy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Meningococcal infection (invasive)*	1	-	-	-	2	1	1	1	-	1	-	-	-	-	1	3	1	-	12	105
Tuberculosis	-	1	-	-	-	-	-	-	-	-	-	1	7	1	-	-	6	-	18	271
Vaccine-preventable																				
Adverse event after immunisation (AEFI)**	2	-	-	-	-	5	-	2	-	1	-	-	-	2	-	-	-	-	12	82
H. Influenzae b infection (invasive)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Measles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Mumps*	-	-	-	-	-	1	-	-	-	-	1	-	1	2	-	-	-	-	5	89
Pertussis	22	27	1	61	7	36	12	30	12	13	80	40	123	57	76	30	115	-	742	4499
Rubella*	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	9
Tetanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Enteric																				
Botulism	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cholera*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptosporidiosis*	1	-	-	-	-	-	-	1	-	1	1	1	5	3	1	4	5	-	23	590
Giardiasis*	3	3	3	2	2	7	1	3	-	3	19	7	16	5	1	5	12	-	92	1103
Haemolytic uraemic syndrome	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Hepatitis A*	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	-	1	-	4	63
Hepatitis E*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
Listeriosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18
Salmonellosis*	3	4	-	-	3	10	2	1	4	3	11	1	15	1	15	1	13	-	87	1615
Shigellosis*	-	-	-	-	-	-	-	-	-	-	1	-	5	-	-	-	-	-	6	107
Typhoid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	25
Verotoxin producing *E. coli**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Miscellaneous																				
Creutzfeldt-Jakob disease	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	5
Meningococcal conjunctivitis	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	2	3

* lab-confirmed cases only + includes cases with unknown postcode § HIV and AIDS data are reported separately, quarterly in the *NSW Public Health Bulletin.*

** AEFIs notified by the school vaccination teams during the National Meningococcal C Program are not included in these figures. These notifications are reviewed regularly by a panel of experts and the results will be published quarterly in the *NSW Public Health Bulletin.* N.B: From 1st Jan 2005, Hunter/New England AHS also comprises Great Lakes, Gloucester & Greater Taree LGAs; Sydney West also comprises Greater Lithgow LGA

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CCA = Central Coast Area
NSA = Northern Sydney Area
ILL = Illawarra Area
SES = South Eastern Sydney Area
CSA = Central Sydney Area
SWS = South Western Sydney Area
WEN = Wentworth Area
WSA = Western Sydney Area
JHS = Justice Health Service

TABLE 3 REPORTS OF NOTIFIABLE CONDITIONS RECEIVED IN OCTOBER 2005 BY AREA HEALTH SERVICES

	Area Health Service (2005)																			Total	
	Greater Southern		Greater Western			Hunter / New England		North Coast		Northern Syd / Central Coast		South Eastern Syd / Illawarra		Sydney South West		Sydney West					
Condition	**GMA**	**SA**	**FWA**	**MAC**	**MWA**	**HUN**	**NEA**	**MNC**	**NRA**	**CCA**	**NSA**	**ILL**	**SES**	**CSA**	**SWS**	**WEN**	**WSA**	**JHS**	**for Oct+**	**To date+**
Blood-borne and sexually transmitted§																				
Chancroid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlamydia (genital)*	26	18	12	3	36	103	44	25	74	31	68	49	159	112	64	18	64	4	923	9425
Gonorrhoea*	1	2	-	-	2	16	1	2	4	-	10	4	54	36	7	-	9	-	149	1302
Hepatitis B–acute viral*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hepatitis B–other*	2	1	2	3	1	4	3	3	6	6	30	5	41	61	18	1	39	2	229	3095
Hepatitis C–acute viral*	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Hepatitis C–other*	12	14	13	7	20	35	11	25	31	32	24	25	59	76	17	16	55	34	511	5630
Hepatitis D–unspecified*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	13
Syphilis	-	1	2	1	-	2	2	1	1	1	4	2	16	32	11	-	5	-	81	786
Vector-borne																				
Barmah Forest virus*	-	-	-	1	-	4	-	10	9	-	-	-	-	-	1	-	-	-	25	398
Ross River virus*	-	-	1	1	-	7	1	2	3	-	-	-	-	-	-	-	-	-	15	426
Arboviral infection (other)*	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2	35
Malaria*	1	1	-	-	1	-	-	-	1	-	2	-	1	1	1	1	1	-	11	185
Zoonoses																				
Anthrax*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brucellosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Leptospirosis*	-	1	-	-	-	-	2	1	1	-	-	-	-	-	-	-	-	-	5	31
Lyssavirus*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Psittacosis*	-	1	-	-	2	2	-	1	-	1	-	-	-	-	2	1	1	-	11	113
Q fever*	1	1	-	2	-	-	4	1	3	-	-	-	-	-	-	-	-	-	12	115
Respiratory and other																				
Blood lead level*	-	-	-	-	-	2	-	-	-	-	-	1	1	3	1	1	-	-	9	210
Influenza*	1	1	-	1	1	8	2	1	10	4	11	6	23	6	6	4	18	-	103	1262
Invasive pneumococcal infection*	1	3	4	-	2	11	-	3	1	4	4	-	5	2	4	3	4	-	51	582
Legionella longbeachae infection*	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1	-	3	18
Legionella pneumophila infection*	-	-	-	-	-	-	-	-	-	-	2	-	1	-	-	-	-	-	3	54
Legionnaires' disease (other)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Leprosy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Meningococcal infection (invasive)*	2	-	-	-	-	-	-	-	-	4	1	-	2	-	-	-	1	-	10	115
Tuberculosis	-	1	-	-	-	-	-	-	-	2	7	-	6	-	1	-	6	-	25	318
Vaccine-preventable																				
Adverse event after immunisation (AEFI)**	2	-	-	-	1	-	-	1	-	-	-	-	1	-	-	-	-	-	5	88
H. Influenzae b infection (invasive)*	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	6
Measles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Mumps*	-	-	-	-	-	-	-	-	2	1	-	-	2	-	1	1	-	-	7	97
Pertussis	24	17	3	26	6	32	14	14	13	14	67	16	106	53	39	27	84	-	555	5055
Rubella*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
Tetanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Enteric																				
Botulism	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cholera*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptosporidiosis*	-	-	1	2	1	4	4	-	2	-	4	2	1	2	3	-	2	-	28	620
Giardiasis*	1	2	3	1	1	10	3	2	-	2	18	3	9	8	5	5	12	-	85	1201
Haemolytic uraemic syndrome	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Hepatitis A*	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	2	-	4	67
Hepatitis E*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
Listeriosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
Salmonellosis*	4	6	1	3	1	7	4	9	16	4	15	5	24	9	22	1	17	-	149	1771
Shigellosis*	-	-	2	-	-	2	-	-	-	-	-	-	2	1	1	1	-	-	9	118
Typhoid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26
Verotoxin producing *E. coli**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Miscellaneous																				
Creutzfeldt-Jakob disease	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
Meningococcal conjunctivitis	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	4

* lab-confirmed cases only + includes cases with unknown postcode § HIV and AIDS data are reported separately, quarterly in the *NSW Public Health Bulletin*.

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