

## HEALTH IMPACT ASSESSMENT IN NEW SOUTH WALES

### GUEST EDITORIAL

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This issue of the *NSW Public Health Bulletin* provides an overview of health impact assessment (HIA) and reflects upon health practitioners' experiences with the process.

We are now at a point where we can begin an informed debate on what HIA is, why it should be done and when to do it. Papers by Harris, Staff and Corbett raise important issues as they reflect on where and how we can best place HIA in planning processes to improve the health of people in NSW.

Simpson in 'An introduction to health impact assessment' provides a brief introductory outline of the HIA process, emphasising that it is a structured and stepwise process. Unanticipated impacts are arguably just as important as intended ones and Aldrich et al have developed an equity-focussed HIA framework that allows practitioners to systematically consider equity at each step of an HIA.

Considerable energy and effort has been invested in HIA both internationally and within Australia. Scott-Samuel describes the former in 'Health impact assessment: An international perspective', and Langford in 'Health impact assessment in New Zealand' highlights some of the issues from across the Tasman. Mahoney in 'Health impact assessment in Australia' notes the rapid development of HIA within Australia and highlights the fact that both capacity

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within the health sector and routes into key decision-making areas within government are critical issues that need to be addressed.

NSW Health has committed considerable resources to pursuing the potential of HIA. Harris-Roxas and Harris in their articles outline the work of the NSW HIA project coordinated by the Centre for Health Equity Training, Research and Evaluation. This project has supported developmental sites to use a 'learning by doing' approach to gain experience in applying HIA. Articles in this issue (Thackway et al and O'Hara et al) reflect upon the outcomes and better place us to make strategic decisions on how to maximise the potential gains from employing HIA in a NSW context.

HIA can be a useful tool in minimising the negative impacts and enhancing the positive impacts of policies and projects. HIA can be undertaken at a number of levels—as a desk-based audit, rapid assessment and comprehensive HIA. It is also only one of many assessment processes including Aboriginal health impact assessment (Wheeler), and social and environmental impact assessments. As we move to working more closely with other government agencies and the private sector there will be pressure to find ways of developing integrated impact assessment processes. The relative merits of creating a separate HIA process, including looking at the different contexts in which it may operate, need to be reviewed now that we have had some experience with the procedures, methods and tools that HIA uses. ☒

## AN INTRODUCTION TO HEALTH IMPACT ASSESSMENT

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Health impact assessment (HIA) is a structured and stepwise process for identifying the potential beneficial and harmful health impacts of a policy, program, development or project proposal before its implementation, with the purpose of using this information to improve the proposal. A widely used and accepted definition of HIA is:

*A combination of procedures, methods and tools by which a policy, program or project may be assessed for its potential, and often unanticipated, effects on the health of the population and the distribution of these impacts within the population.*<sup>1,2</sup>

HIA has its roots in other forms of assessment such as environmental impact assessment and health risk assessment.<sup>3</sup> These roots are reflected in the steps of HIA, which are generally understood to include:

1. *Screening*—is an HIA required?
2. *Scoping*—setting the boundaries of the HIA.
3. *Identification of impacts*—collecting information from agreed sources about potential health impacts.
4. *Assessment of impacts*—assessing the range of identified health impacts from the different sources.
5. *Development of recommendations*—to improve the proposal by amelioration of potentially negative health impacts and/or enhancement of potentially positive health impacts.

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6. *Evaluation and monitoring*—includes (a) evaluation of the HIA process, (b) setting up a structure to monitor the impact of the HIA, including uptake of recommendations, and (c) assessing the health impact of the proposal following implementation.<sup>4</sup>

The focus of other forms of impact assessment such as environmental impact assessment is usually on major infrastructure developments such as a new road or extending an airport, and information is collected with a view to protecting the environment and/or human health. These assessments usually draw on a more circumscribed evidence base (for example systematic reviews) and use a 'tight' definition of health<sup>5</sup> to guide regulatory intervention that might be required to protect the environment or health.

The articles in this issue of the *NSW Public Health Bulletin* emphasise the broad range of contexts for HIA as an aid to decision-making, for instance for a new policy (for example family tax benefit) or a new physical development (for example construction of a port facility). Where HIA is used in this way, potential health impacts are usually identified using a wide range of sources (for example focus groups and the literature), the focus is on protecting and promoting health and a 'broad' definition of health is applied.<sup>6</sup> A wide body of literature has been published on this application of HIA (see Mahony and Durham<sup>7</sup> for an overview).

Where HIA is used as part of the policy or program development process, it is best undertaken before the proposal is finalised (see Harris, 'Contemporary debates in health impact assessment: What? Why? When?', in this issue) so that decision makers can apply the findings before implementation. The results of HIA can be used to improve proposals developed within and outside the health sector, for example the potential impacts of changes to how health

services are delivered in a region or the potential impacts of a change to gambling laws.

Identification of the unintended potential impacts of a proposal is a particularly important aspect of HIA because of the assumption that all proposals are well intentioned and there will be few if any negative impacts from their implementation. However, this is not always the case. For example a campaign to promote healthy lifestyles, where the intent is to improve and promote people's health, may also unintentionally stigmatise those groups in the population who are unable to act on the information (for a range of reasons not within their control).

Values such as transparency, equity and community participation are generally accepted as integral to the HIA process.<sup>8</sup> Practitioners, however, have found that the incorporation of these values can be challenging in practice (see Aldrich et al, 'Building an equity focus in health impact assessment' in this issue).

Health impact assessment is not a mandated part of the policy or program development process in any state or territory in Australia.<sup>6</sup> However, there is increasing interest in the use of HIA as a method for improving practice and there are an increasing number of Australasian examples of its applications. As described by Harris-Roxas and Simpson in 'The NSW Health Impact Assessment Project' in this issue, in NSW there is a strong commitment to building the capacity to use HIA to improve policies,

programs and projects that are developed by health and, more recently, proposals by other sectors.

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## CONTEMPORARY DEBATES IN HEALTH IMPACT ASSESSMENT: WHAT? WHY? WHEN?

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Public health practitioners and policy makers in Australia have a long history of advocating for health impact assessment (HIA) to be undertaken on major public and private projects and policies. Over the past decade a number of internationally recognised guidelines and discussion papers have been developed in Australia that have tried to strengthen HIA in environmental impact assessment processes.<sup>1,2</sup> Internationally, advocates for the development of healthy public policy have promoted HIA as a necessary step in policy development.<sup>3,4,5,6</sup> Those with an interest in reducing health inequalities have supported this and called for a closer examination of the distributional impacts on groups within the population, especially those groups most marginalized or disadvantaged.<sup>7,8,9,10</sup>

As outlined elsewhere in this issue of the *NSW Public Health Bulletin*, there have now been significant investments by most Australian jurisdictions in developing HIA capacity

within the health system. As these initiatives unfold there are a number of issues that need to be understood and debated within the public health community. These involve the what, why and when of HIA. This article presents those issues and Staff, in the article that follows, provides a response to each of these issues.

### WHAT IS HIA?

HIA is a structured process for assessing the impacts of a proposed policy, program or project on health at the point when it has been sufficiently developed to allow likely impacts to be determined.<sup>11</sup> HIA is therefore only one of several strategies that need to be put in place to ensure consideration of the impacts on health of what society does generally. Needs assessment, planning, monitoring and evaluation also play important roles in promoting and protecting health in the planning and development process.<sup>12</sup>

**Issue:** As well as promoting HIA as an effective tool for assessing impacts on health, we also need to identify ways of building considerations of health impact earlier in the policy or project development process.

## WHY DO AN HIA?

In NSW there are no strong legislative requirements for HIAs to be undertaken, although often health impacts are considered in environmental impact assessment and social impact assessment processes.<sup>13</sup> This leaves open the debate on the scope and function of HIA.

Is the purpose to ensure that minimum levels of safety are ensured (risk management) or is it an opportunity to maximize the extent to which health can be promoted or maintained? Depending on how this question is answered there are implications for the ways in which health is defined (a broad definition of health and well-being or a more narrow definition that is concerned with illness and death), what is accepted as evidence of an impact (rigorous scientific data as well as the perceptions of stakeholders) and the extent to which HIA becomes an expert-driven or community engagement process.

**Issue:** In the immediate future there is unlikely to be a consensus on why HIAs are undertaken and it will be important to match the scope of each HIA to the reasons it is being done.

## WHEN TO DO AN HIA?

Because HIA is a resource intensive process it is important that it is undertaken in ways that 'value-add' to existing decision-making processes. The decision to do an HIA and at what level requires an assessment of the size and uncertainty of the potential impacts, the level of investment and the potential for the recommendations of the HIA to be acted upon. The European Commission has recently identified three levels at which HIA can be undertaken<sup>3</sup>:

- a desk-based HIA that provides a broad overview of possible impacts and takes a single assessor two to six weeks
- a rapid HIA that provides more details of the possible health impacts and takes a single assessor about 12 weeks (this is the most frequent HIA approach)
- an in-depth or comprehensive HIA that provides a comprehensive assessment of possible impacts and takes a single assessor about six months.

**Issue:** In the NSW context we need to debate when an HIA should be undertaken and at what level. This debate needs to consider whether HIA is the best mechanism for reducing the potential negative and promoting the potential positive impacts of proposals.

HIA will become part of the public health armoury to improve the health of the people of NSW. We now have some experience in conducting HIAs in the NSW context and we are able to benefit from the extensive experience of other jurisdictions in Australia and internationally. Phase 3 of the NSW HIA Project<sup>14</sup> (see Harris-Roxas and Simpson, 'The NSW Health Impact Assessment Project' in this issue) presents opportunities for a wide cross section

of public health workers within health and other sectors to participate in this learning and debate. The extent to which this happens will strengthen the relevance and impact of HIA in the planning and decision-making process.

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## RESPONSE TO 'CONTEMPORARY DEBATES IN HEALTH IMPACT ASSESSMENT'

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Harris, in the previous article, has highlighted the significant investment that has been made in developing health impact assessment (HIA) capacity within the health system. There is little doubt that the advocacy for the process has stimulated interest within the health sector and it is now time to extend that to other sectors.

The first issue Harris raises relates to how to build in or institutionalise health impact considerations in policy formation and project development. It has been demonstrated that many of the determinants of health lie outside the traditional sphere of influence of the health sector.<sup>1</sup> Logically, it would be desirable to ensure that when a policy or project that could alter these determinants is being developed its potential health impacts are considered up front. The challenge is that the originator of the initiative is mostly likely to be outside the health sector.

One approach to institutionalising HIA outside the health sector is to couple it with other forms of impact assessment. An example of how this may work can be seen in the World Health Organization Regional Office for Europe's recent suggestion to link HIA to strategic environment assessment as a way of safeguarding human health obligations among European Union Member States.<sup>2</sup> In NSW, whilst there is no legislative requirement for HIA to be incorporated into environmental impact statements (EISs), the process does contain administrative arrangements that can be used to ensure health impacts are addressed. These arrangements include the promotion of planning focus meetings and opportunities for government agencies to prescribe what issues they would like considered within the EIS.

The second issue that Harris has highlighted is that of matching the scope of an HIA to the reasons for it being undertaken. When considering the purpose of undertaking the HIA there is no reason why health protection (minimising risks) and health promotion objectives cannot co-exist, and indeed it would usually be of benefit to consider both these components. For example, although most EISs contain formal risk assessments for potential environmental hazards associated with a development, they also contain a social impact component. The HIA process has an in-built step to ensure that the scope of the assessment is matched to its purpose—the scoping step. There may well be some level of disagreement among participants at this stage about issues

such as how to define health or what sort of evidence will be considered and this step allows an open debate about these critical issues.

The third issue that has been highlighted is the need to debate when an HIA is undertaken and at what level. Fundamental to this discussion is the need to review the effectiveness of the process. There has been considerable discussion about whether the gains achieved by employing an HIA approach can be adequately quantified.<sup>3,4,5</sup> Quantification of changes in health outcomes is comparatively rare in HIA<sup>3</sup> and it has been suggested that the impact on the decision-making process may be a more appropriate focus of evaluation.<sup>6</sup> To help resolve this issue, pursuing innovative approaches such as the policy/risk assessment model proposed by Joffe and Mindell<sup>7</sup> may allow us to combine both approaches and build an evidence base for HIA.

As well as the 'What?, Why?' and 'When?' of HIA we could also add the 'Who?' HIA is a tool that has considerable potential to bring about health gains and much of the foundation to facilitate this has been laid within the health sector. To fully realise its potential and build upon the achievements made to date, advocates must develop interest and build capacity within other sectors outside health.

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# HEALTH IMPACT ASSESSMENT: AN INTERNATIONAL PERSPECTIVE

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The most widely accepted definition of health impact assessment (HIA), from a consensus conference in Gothenburg organised by the World Health Organisation's (WHO) European Centre for Health Policy, defines HIA as 'a combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population'.<sup>1</sup> Thus HIA is both a prospective approach (looking at potential effects) and an equity-focused one (looking at distributional impacts—and attempting to prevent inequities that might arise from the policy under consideration). In this article I will refer only to policies, though HIA does of course cover policies, programs and projects.

## USES OF HIA

The explicit purpose of HIA is to make public policies as health-enhancing as possible. It is a prospective decision-support tool, not a scientific evaluation method, and its key output is a set of recommendations for modifying the policy under consideration. However, it has other important spin-off effects:

- *Health advocacy.* HIA is a useful tool for raising awareness of health, especially in the intersectoral context.
- *Personal, social and economic development.* HIA is very participatory and promotes the personal development of people who undertake it, especially in communities and non-government organisations. Because social and economic development are influenced by social determinants of health, they are enhanced when HIAs are undertaken.
- *Advocacy for disadvantaged groups.* The focus of HIA on distributional impacts, as well as on whole

populations, makes it important in advocating for disadvantaged groups and for partnership building.

## ORIGINS AND HISTORY OF HIA

The origins of HIA were in environmental impact assessment and in health promotion. Environmental impact assessment began in the 1960s and is incorporated into legislation in many countries. HIA principles and methods are based on those developed for environmental impact assessment. The concept of healthy public policy, developed by Nancy Milio<sup>2</sup> and popularised by the WHO, is about explicitly considering the health impacts of all public policies. In the 1980s and 1990s it was widely acknowledged that virtually all public policies impact on health. The next step is to estimate or quantify that impact, hence the need for HIA.

While there were examples in the 1980s of environmental health impact assessment and of HIAs of development projects focusing primarily on disease impacts<sup>3</sup>, the first new-style HIA was carried out on the proposed second runway at Manchester airport, England, in 1992–1993. Although this work was not published, it has been influential in the development of methods for HIA.

In 1994, the Ministry of Health in British Columbia, Canada, published a toolkit aimed at enabling civil servants to carry out rapid prospective HIAs of all cabinet policies.<sup>4</sup> HIA guidelines for regional health boards and community health councils were also produced. In 1995 the United Kingdom (UK) government published *Policy Appraisal and Health*; this report was produced by health economists and focused primarily on economic aspects of HIA.<sup>5</sup>

The Australian National Health and Medical Research Council took an early interest in environmental HIA, producing its national framework in 1994.<sup>6</sup> National guidance was also produced in New Zealand and in Canada in 1995.<sup>7,8</sup> Health Canada also commissioned research on the potential of HIA from the University of British Columbia<sup>9</sup> and the definition of HIA used in this work later gave rise to the WHO definition.

**TABLE 1**

### TWO METHODOLOGICAL PERSPECTIVES ON HEALTH IMPACT ASSESSMENT

Dimension	Perspective	
	Broad	Tight
View of health	holistic	definition and observation
Disciplinary roots	sociology, epidemiology	epidemiology, toxicology
Ethos	democratic	technocratic
Quantification	in general terms	towards exact measurement
Types of evidence	key informant data	measurements
Precision	low	high

Source: *Developing health impact assessment for Wales*<sup>13</sup>

The first published report of an HIA using the participatory research paradigm relates to the 'People Assessing Their Health' (PATH) project in Nova Scotia, Canada.<sup>10, 11</sup> True participatory research means that the people affected by the issues under study are also involved in every stage of devising, undertaking and following up the research. PATH applied this approach to HIA.

## HIA IN EUROPE

In 1996 I was commissioned by the four Merseyside directors of public health to carry out a program of HIAs. They wanted both to assess the potential health impacts of government urban regeneration programs and to support the development of HIA methodology. In the period 1997–2000, Liverpool Public Health Observatory published seven reports of completed HIAs, a literature review, and *The Merseyside guidelines for health impact assessment*.<sup>12</sup>

Following the election of the UK Labour government in 1997 there was strong political support for HIA. In the European context, the momentum for HIA developed following a meeting in Helsinki in 1998, which was part of the European Commission-funded Globalisation and Social Policy Project. Following this meeting, the WHO's European Centre for Health Policy set up a European HIA e-mail discussion group and subsequently established fellowships and seminars, commissioned monographs and organised the Gothenburg consensus conference. All of this activity can be attributed to the leadership shown by the Centre's former Director, Dr Anna Ritsatakis.

It is important not to see HIA solely as a tool of government. The ways in which it can be used depend on who is using it. For example, if a private company or the World Bank commissions an HIA, the implications will be different to those when the WHO, the Australian government, a health promotion unit or a community group in a small town in NSW is the commissioner.

## METHODOLOGICAL PERSPECTIVES

John Kemm wrote a guide to HIA for the National Assembly for Wales in which he described two alternative methodological perspectives (Table 1).<sup>13</sup> Most HIAs fall somewhere between these two extremes. I would propose that broader HIA perspectives are appropriate, since they are more participatory and more likely to avoid the common tendency toward unjustifiable quantification of predicted impacts (evidence which is sufficient to justify the quantification of impacts, preferably with confidence limits, remains the exception rather than the rule in HIA).

## MODELS OF HEALTH

HIA requires a comprehensive model of health causality on which to base the prediction of impacts. The Merseyside Guidelines draw on a model originally produced by Ron Labonté<sup>14</sup>, from which are derived the range of health determinants used in impact prediction (Table 2).<sup>15</sup> The aim is to consider the full range of biological, material and social determinants of health when predicting impacts.

## THE MERSEYSIDE APPROACH— HIA PROCEDURES AND METHODS

The Merseyside Guidelines use a series of procedures and methods. Screening involves a systematic procedure for selecting those policies requiring HIA. However, in many cases an HIA on a specified policy is commissioned and screening is not required. In other cases a rapid screening is sometimes used as a substitute for undertaking an HIA. The screening procedure in the Merseyside Guidelines uses economic, epidemiological and strategic criteria, in addition to criteria relating to probable impacts of the policy.

A steering group of stakeholders is useful in all HIAs other than the briefest desktop exercises. The steering group defines the terms of reference of the HIA, which set its boundaries in time and in space. Consideration of potential

**TABLE 2**

### HEALTH IMPACT CATEGORIES AND DETERMINANTS

Health impact categories	Examples of specific health determinants
Biological factors	age, sex, genetic factors
Personal or family attributes and conditions	family structure and functioning, =g behaviour, diet, smoking, alcohol, substance misuse, exercise, recreation, means of transport (cycle/car ownership)
Social environment	culture, peer pressures, discrimination, social support (neighbourliness, social networks/ isolation), community/cultural/spiritual participation
Physical environment	air, water, housing conditions, working conditions, noise, smell, view, public safety, civic design, shops (location/range/quality), communications (road/rail), land use, waste disposal, energy, local environmental features
Public services	access to (location / disabled access / costs) and quality of primary/community/ secondary health care, child care, social services, housing / leisure / employment / social security services, public transport, policing, other health-relevant public services, non-statutory agencies and services
Public policy	economic/social/environmental/health trends, local and national priorities, policies, programmes, projects

Source: *The Merseyside guidelines for health impact assessment*<sup>15</sup>

impacts of radiation, smoking or asbestos makes it apparent that the setting of spatial or temporal boundaries for an HIA may not be straightforward.

The key steps in an HIA involve conducting and appraising the assessment, negotiating favoured options and making recommendations for policy implementation. Following this, the policy outcomes are monitored and the HIA process is evaluated and documented. HIA methods begin with analysis of the policy content and context, and profiling of potentially affected populations—especially disadvantaged or vulnerable population groups. Following this comes the fieldwork—eliciting impact predictions from stakeholders and key informants, including local communities, policy proponents, professionals and experts.

HIA fieldwork employs a range of qualitative techniques, most commonly interviews and focus groups, but also scenarios and consensus techniques such as Delphi exercises and consensus conferences. Quantitative methods such as economic forecasting and mathematical modelling may be employed. 'Rapid HIA' frequently omits this primary data collection or reduces it to a single stakeholder 'workshop'.

These processes, together with the results of literature searches of earlier policy outcomes, establish potential impacts. These are prioritised on the basis of their predicted severity, magnitude and probability of occurrence. Recommendations are then formulated—sometimes following an option appraisal—to modify the policy to make it optimally health-enhancing, and to mitigate identified problems where necessary.

## METHODOLOGICAL CONTROVERSIES

### Science and politics

HIA is not a scientific evaluation method, it is a decision-making procedure that draws on a scientific knowledge base—essentially it is a political tool. The science in HIA is in the evidence base and in the systematic approach. Thus HIA is historically specific, it is not repeatable or generalisable. Some disagree with this broad perspective and see HIA in a more reductionist, quantitative way.

### Values

Some HIA practitioners perceive HIA as value-free. My position is openly value-laden: equity and democracy are the most obvious values underlying HIA. Transparency about prior values is essential.

### Expertism and participation

The Merseyside Guidelines describe a liberal expertist approach allowing different degrees of participation. In practice we see the involvement of affected people as crucial to the effectiveness of HIA. Others find participation difficult and dispensable<sup>16</sup>, a view I would strongly contest.

## Duration and depth

Duration and depth need to be separated because people talk about 'rapid HIA' when they mean more superficial (as opposed to more comprehensive) HIA. There is a trade-off between duration and depth, for example if you have a month to do an HIA and you have 10 staff, they may achieve more than would be achieved by one person working for six months.

## Equity and equality

Equality principles can be applied to all HIA methods; equity can be incorporated through public involvement, valuing the views of so called lay people and in the choice of paradigm.

## CONCLUSION

Although still in its infancy, HIA would appear to have a rosy future, particularly if it is widely adopted by international organisations such as the United Nations, and in the United States. While the United Nations World Health Organization has formally adopted HIA both in its own activities and in its Commission on Social Determinants of Health, the United Nations has not as yet acknowledged the potential of HIA in relation to its central concerns such as global public policy<sup>17</sup> and human rights.<sup>18</sup> In the United States, arguably the most powerful global actor, the process of adopting HIA is in its early stages.<sup>19</sup> In both of these contexts, the building of capacity and capability will be a limiting factor.

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## HEALTH IMPACT ASSESSMENT IN AUSTRALIA

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A recently published paper which describes the status of health impact assessment (HIA) in Australia in 2003 provides a vantage point from which to see how rapidly HIA is developing across the country.<sup>1</sup> When the report *Health impact assessment: a tool for policy development in Australia* was released in 2002 there was little use of HIA beyond environmental management applications.<sup>2</sup> By late 2005, most states and territories are undertaking a variety of HIA activities either routinely or experimentally. Traditional divisions between environmental project-level applications that focus on health protection and public health policy-level applications that focus on health promotion, are largely disappearing. These are being replaced by a growing understanding of the need for complementarity in approach and cross-sectoral working. This is not to say that there are high levels of activity, but both awareness and action are increasing.

In terms of the development of HIA in Australia, the period between 1999 and 2003 was characterised by a desire to strengthen the health component in environmental assessment processes and procedures, broaden the interpretation of health through the introduction of the enHEALTH *Health Impact Assessment Guidelines* (2001)<sup>3</sup> and commence discussions about the strategic positioning of HIA as a tool for use by governments. In 2004 two national events helped to strengthen intersectoral understanding of HIA: a three-day national HIA workshop in Brisbane co-hosted by the Queensland Public Health Forum, the National Public Health Partnership (NPHP), Queensland Health and enHEALTH and a two-day equity-focused HIA workshop in Sydney hosted by the Australasian Collaboration for Health Equity Impact Assessment

(ACHEIA) and funded by the federal government and NSW Health. Both events allowed for jurisdictional and cross-disciplinary conversations about work being undertaken and the exploration of enablers and barriers. They also provided the chance for a deeper understanding of HIA and its future role to be developed.

The list of developments in the field of HIA that are described in this article has been collated from three sources: submissions prepared by each jurisdiction for the Brisbane conference; state submissions on HIA for inclusion in a national HIA poster presented at the 6<sup>th</sup> UK and Ireland HIA Conference in late 2004<sup>4</sup>; and presentations of completed HIAs and case studies delivered at both these conferences.

### EMERGING TRENDS IN HIA ACROSS AUSTRALIA

- Intersectoral action and partnership working— this is occurring at two levels: organisational and professional. At the organisational level, consortia of organisations such as local and state governments, developers, researchers and community representatives are working together to explore the health impacts of large urban developments, including developmental work in NSW and Queensland. At the professional level, individuals and teams of people (for example, land use planners, statutory planners, strategic planners, public health planners and community health planners) are beginning to work together as the links between their respective roles is increasingly being articulated, both within and between organisations.
- A focus on community regeneration—exploration of the role of HIA in the planning stages of state government regeneration schemes in disadvantaged communities, particularly developmental work in NSW

(see Harris-Roxas and Simpson in this issue), as well as increased understanding of the role that HIA can play in community decision making about factors affecting the community's health, particularly in Victoria and Western Australia.

- Development of new frameworks for applying HIA and strengthening the focus on the determinants of health through the development of an equity-focused HIA framework (by ACHEIA)<sup>5</sup>; the strengthening of HIA guidelines (through enHEALTH<sup>3</sup>); refinement of the legislative and administrative guidelines, both of which are still being refined (through NPHP); and coordination of state level activity (in states such as Queensland) and increased attention to incorporating Aboriginal health needs and interests in health policies, programs, services and strategies through the routine use of, for instance, the NSW Health Aboriginal Health Impact Statement.<sup>6</sup>
- Investment in HIA research and developmental projects. This includes funding by Queensland Health for projects that improve the uptake of HIA methodologies in government (for example, the development of a toolkit<sup>7</sup>), funding in New South Wales to undertake developmental projects and build capacity, and a research grant in Victoria to consider the role of HIA in local government planning processes. Ongoing investment in the professional development of staff with portfolio responsibilities for HIA, health inequalities and interdepartmental links, continues in most states.
- Increased attention to integrated approaches through exploration of the potential links between different forms of impact assessment (for example, social impact assessment, human impact assessment, integrated impact assessment and strategic environment assessment); through strengthening health components in environmental impact assessment practices, particularly in Tasmania, South Australia and Western Australia; and through the application of HIA in non-health-sector policy contexts in South Australia and the Northern Territory.
- Exploration of the options for the application of HIA in local government in Victoria and Queensland.
- Increased focus on building capacity and sharing experiences, particularly through: the Brisbane conference; the equity-focussed HIA workshop; jurisdictional meetings; the HIA *enews* and other resources available through the specialist websites (see list at the end of this paper); and increased enrolment and demand for training programs. All states have been represented at each of the main HIA events in the last 12 months and jurisdictional meetings have focussed on shared information and the developments occurring within each state and territory.

As well as ongoing developments within each of these themes, there are two issues that will need to be urgently addressed by most jurisdictions as interest in HIA grows. The development of appropriate training, workforce

development programs and broader capacity within organisations to undertake HIA is a growing concern. Similarly, the development of formal and informal routes into key areas of decision making within government that have the potential to impact on health, and which are outside of traditional inter-sectoral links, will continue to be a challenge for many departments of health. We continue, with the generous support of international organisations and individuals, to learn from the experiences of others who have faced these challenges and succeeded.

For more information on:

- specific HIA activities in each state of Australia, see *enews* and the HIA poster at <http://chetre.med.unsw.edu.au/hia>
- the equity-focused workshop, including access to the framework document and the literature review, refer to Aldrich et al, 'Building an equity focus in health impact assessment' in this issue of the *NSW Public Health Bulletin*
- the national HIA workshop in Brisbane, contact Queensland Health.

See also the HIA website at Deakin University at [www.deakin.edu.au/hia](http://www.deakin.edu.au/hia), accessed 4 November 2005.

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# HEALTH IMPACT ASSESSMENT IN NEW ZEALAND

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New Zealand has a history of the assessment of projects for their potential impact on health in the context of the *New Zealand Resource Management Act 1991*. Health impact assessment (HIA) at policy level is very new, and focuses on high-level policies from outside the health sector. It has largely developed since the Public Health Advisory Committee published its guidance to policy makers in 2004<sup>1</sup>, followed by intensive promotion, capacity building and support to agencies undertaking HIA. (The Public Health Advisory Committee was established under the *New Zealand Health and Disability Act 2000* to provide the Minister of Health with independent public health advice.) It is 'work in progress' and, as such, the Committee has not yet published any results. The Committee is also collaborating with the Wellington School of Medicine and Health Sciences, and Quigley and Watts Ltd, with advice and support from Deakin University, to deliver HIA training and to support agencies that undertake an HIA. The Committee will review uptake in the second quarter of 2006, the reasons for agencies choosing (or not choosing) to undertake HIA and what changed as a result.

The momentum for applying HIA across sectors has been assisted by a number of recent legislative and policy changes that have increased interest from agencies that recognise HIA as a tool to help them meet their legislative requirements. For example, HIA assists the transport sector in meeting the new public health objectives of the *New Zealand Transport Strategy*.<sup>2</sup> Local governments are seeing its value in assisting them to address the requirement of the *Local Government Act 2002*, 'to promote the social, cultural, environmental and economic wellbeing' of their communities, and in developing the community outcomes required by the Act. It also sits well with other government policy directions such as the encouragement of 'whole of government' approaches, reducing inequalities, and sustainable development, and it provides a vehicle for community consultation and collaboration across sectors.

## ESSENTIAL INGREDIENTS FOR SUCCESS

The HIA work in New Zealand has reinforced international findings about the essential ingredients for successful HIAs:

- Public health expertise and specific HIA advice is crucial, particularly in the planning stages of an HIA and before capacity for HIA has been built in an agency.

- Although ideally applied early in the policy development process, the policy options need to be sufficiently well developed, with clear expected outcomes.
- A degree of public health understanding in the policy agency is needed, including knowledge of the wider determinants of health. The term 'wellbeing' resonates in agencies outside health.
- Collaboration across sectors is important, especially at the appraisal stage of the process.
- A dedicated HIA support unit is needed to promote, encourage and support HIA.

## ISSUES FOR HIA IN NEW ZEALAND

The sustainability of HIA in New Zealand will depend on support at central government level, accessibility of funding streams, building an HIA history, and on building capacity in the public health and other sectors. HIA is gaining momentum in the regions, with public health services and local government working together to undertake HIAs on urban growth strategies and plans, on regional land transport strategies and urban design models. While this work has been dependent upon public health leadership and funding, it is gaining momentum through capacity building in the local government and public health sectors.

At the central government level, HIA has been developing more slowly. Some government departments are considering HIA, and an HIA on the building standards for New Zealand is being planned for next year. HIA at this level will be dependent upon political support and a greater understanding by other sectors of the potential impact that their policies have on health and wellbeing.

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# THE ART OF THE POSSIBLE: EXPERIENCE AND PRACTICE IN HEALTH IMPACT ASSESSMENT IN NEW SOUTH WALES

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Richard Seymour was appointed the first Inspector of Nuisances in Sydney in 1884. His work approving and inspecting opium dens, privies, abattoirs and tanneries contained many of the elements we now call health impact assessment (HIA). Indeed the entire corpus of planning and environmental protection legislation and the building codes have encoded provisions which are a distillation of the accumulated wisdom and prejudice formed in doing these assessments. In this article I have attempted to distil some of the lessons learned in the commissioning and conduct of environmental health impact assessments in NSW since 1990, in the hope that some of these at least will be of direct relevance to the conduct of HIA in other settings.

Officers within state and local government have long been asked for their views about the potential impacts of all types of development. These opinions became a *de facto* part of a legislative process with the passage of the NSW *Environmental Planning and Assessment Act* in 1979. Health advice was regularly sought in relation to air and water quality issues and chemical and physical hazards such as noise, radiation and odour.

Tasmania is the only state in Australia where health impact assessment (HIA) is mandated for certain categories of development under planning legislation. It is not clear if this step is necessary or even desirable. In other states environmental impact assessments (EIAs) have become increasingly complex and costly procedures done by specialised companies that can draw on vast technical expertise. If specified appropriately, EIAs can improve the integration of health goals into planning decisions and achieve greater transparency and public involvement. Critics of EIA have pointed to this complexity, to limited and adversarial public participation, and to the emphasis on procedure over substance as arguments against the effectiveness of EIA and, by analogy, HIA.<sup>1</sup>

A number of large infrastructure projects in NSW have attracted forceful community opposition on health grounds. This is not new. In Sydney between 1910 and 1930 there was intense opposition to the building of the sewer system because of fears about the health effects of sewer gas.<sup>2</sup> Some of the projects in NSW over the past 15 years involving complex health risk assessments are listed in Box 1. The potential for health issues to become the focus if not the substance of opposition to major infrastructure projects<sup>3,4</sup> has in recent times triggered consultation among the proposing agencies within government.

HIAs done in the context of an EIA to this point have focussed on the real and present dangers of microbial contamination and noise, and on air and water quality.

Increasingly it has been possible in projects such as the Lane Cove and proposed M4 tunnel, and the Port Botany expansion, to consider a broader range of impacts on public and active transport, community connectivity, open space utilisation, physical activity and access to services.

HIA holds great promise<sup>5</sup> to enhance recognition of social and environmental determinants of health and to engage health and other professionals and the community in transparent dialogues about the broad health impacts of government policy. But there are also potential pitfalls<sup>5</sup>: a misplaced emphasis on sins of commission rather omission, a false implication that health is the only or pre-eminent consideration in policy making, the potential to become red tape rather than a genuine participatory exercise, and cost.

In Australia there is a wealth of experience in the practice of environmental HIA but there are a number of lessons to be learned which are equally applicable to HIAs not linked to the built environment.

## **Trust**

In the absence of mandated impact assessments, trust is crucial to successful collaboration within government.<sup>6</sup> There are two important dimensions of trust. One is between the agencies of government at officer, executive and ministerial levels. The other is between agencies and community. Both need to be built and maintained through partnerships, communication and responsiveness.

## **Fidelity to technical merits**

EIAs and HIAs are essentially technical documents that should establish an information base upon which to make

### **BOX 1**

#### **SOME MAJOR PROJECTS INVOLVING DETAILED HEALTH RISK ASSESSMENT IN NSW, 1990–2005**

3rd runway at Sydney Airport  
Eastern distributor  
Rhodes peninsula rehabilitation and development  
Botany groundwater contamination  
Cross city tunnel  
Medical waste treatment facility, Newcastle  
2nd airport proposal at Badgerly's Creek  
M5 East tunnel and stack  
Northside storage (sewerage) tunnel  
Western Sydney orbital  
Lane Cove tunnel  
Hexachlorbenzene and Geomelt disposal technology  
Reopening of the copper smelter in Port Kembla  
Picnic Point to Haymarket 330 kV line



informed choices. There are real challenges both for health professionals and the public in accepting the validity of some of this information. For example, air quality modeling, which is now well established as the basis for decision making in relation to air pollution control, is for most health professionals a black box.<sup>7</sup> If we expect the community to accept the results of HIAs and to maintain fidelity to the technical merits of scientific arguments then there is an obligation to define and produce information that is comprehensible and meaningful.

### **Learning by doing**

EIA or HIA can and should be used to demonstrate how the benefits of a proposal or policy can be maximised. Modifications can sometimes be achieved with surprising ease. The Picnic Point to Haymarket 330kV cable was proposed to improve energy security for the Sydney central business district. Residents living close to the proposed route expressed concerns about exposure to electromagnetic fields. After an HIA, field strength was able to be halved using several mitigation strategies, including moving the cables closer together.

### **Costs and benefits**

The cost of modifications to large projects can be high. A recent assessment of the relative costs of three options for the configuration of an overhead electricity cable, each conferring a small difference in field strength at ground level, was presented to government.<sup>8</sup> Cost differentials were in excess of \$30 million.

Large infrastructure projects in NSW are defined as those which cost more than \$100 million. If health issues threaten to jeopardise the acceptability and final approval of the project or policy then the acceptable costs of modifications will rise accordingly. It is often difficult to assess the validity of the costs the proponent ascribes to suggested project modifications. Recently a number of proponents have commissioned independent costings of design options, and this does assist decision making.

## **CONCLUSION**

There is an art in conducting HIAs, an art of the possible, and much is to be learned by doing. Experience has shown that the scope of admissible health issues can broaden over time, just as it has with environmental issues in EIA. For example, as the evidence linking transport choice and levels of activity grows it should be possible to distill these findings into firm requirements for transport developments.

The rehabilitation of highly contaminated foreshores on the Rhodes Peninsula is a good example of an HIA done in collaboration with all arms of government and with the community. A summary is provided in Box 2.

The Centers for Disease Control Agency for Toxic Substances and Disease Register maintains an information

## **BOX 2**

### **HEALTH IMPACT ASSESSMENT ON THE RHODES PENINSULA REDEVELOPMENT**

The Rhodes Peninsula and adjacent parts of Homebush Bay have had significant dioxin contamination from previous industrial activity. The proposal to clean the land and bay sediments to allow residential redevelopment of the peninsula required use of HIA from two perspectives:

#### **1. Suitability of the site for future residents**

This included describing potential activities that may affect dioxin exposure, such as contact with bay sediments when wading or boating, ingestion of bay water during boating or swimming, and access to residual contamination in soils around the medium density development. Once the range, frequency and likelihood of such activities was established then potential exposure to dioxin was able to be estimated, and appropriate clean-up goals, or restrictions to access, recommended.

#### **2. Impact of the remediation on existing residents**

The contaminated site, where the full remediation process is to occur, is separated by less than 100 metres from the nearest existing residents. The HIA had to consider potential exposure of current residents to air emissions from the treatment plants, offsite spread of disturbed contaminated sediments and soil, and noise from the excavation and treatment processes. Uses of the residential sites on the peninsula could include growing vegetables, keeping poultry and children playing in soil, and these uses could influence exposure to contaminated air and dust spread from the site. The HIA was able to identify the key risks for human exposure to these hazards and recommend where controls should be placed to reduce this risk, and a monitoring regime to check on the control strategies. The HIA also identified that with appropriate control strategies in place the risk from the remediation to existing residents was low, and feedback and reassurance to the community was able to be provided.

base<sup>9</sup> on public health investigations in the United States. The World Health Organization maintains an international website for HIA. There may be value in extracting from these sources a compilation of national experience in conducting these assessments as a guide for practitioners in this emerging discipline in Australia.

## ACKNOWLEDGEMENTS

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## BUILDING AN EQUITY FOCUS IN HEALTH IMPACT ASSESSMENT

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Health impact assessment (HIA) is underpinned by equity as a core value in its conventions and objectives.<sup>1</sup> However, there has been debate on whether an explicit assessment of impacts on health inequalities is required to characterise the differential distribution of impacts on health that might result from a policy, planning or service decision. The Jakarta Declaration<sup>2</sup> and the United Kingdom's Independent Inquiry into Inequalities in Health<sup>3</sup> called for equity-focused HIA and health inequalities impact assessment respectively (reiterated in the Bangkok Charter on Health Promotion in a Globalised World<sup>4</sup>). Attendees at a methodological seminar in 2001 in the United Kingdom assembled to discuss this issue decided, however, not to

differentiate health inequalities impact assessment from health impact assessment, instead concluding that every HIA should be a health inequalities impact assessment.<sup>5</sup> Here we describe the development of a framework to guide equity-focussed HIA. Although the terms 'equity-focussed HIA' and 'health inequalities impact assessment' have been used synonymously in the literature, our collaboration used the term 'equity-focussed health impact assessment' instead of 'health inequalities impact assessment' as we wished to communicate that assessment of equity impacts was integral to HIA instead of a different process.

A review of 30 reports in the literature describing HIAs found that in practice few had explored equity impacts routinely or systematically, although some tools for health inequalities impact assessment had emerged.<sup>6</sup> This reinforced our commitment to develop and pilot a framework for equity-focused health impact assessment that could be *integral* to the HIA, and used to explicitly consider the impacts on health inequalities that may result from a policy, plan or program.

In 2002, building on our work to develop policy-linked HIA<sup>7</sup> and also on using socioeconomic evidence in health decision-making<sup>8</sup>, researchers from the Newcastle Institute of Public Health (NIPH), the Centre for Health Equity Training, Research and Evaluation (CHETRE) and the Health Impact Assessment Research Unit at Deakin University established the Australasian Collaboration for Health Equity Impact Assessment (ACHEIA). Together with our case-study partners and international advisors from the Cochrane and Campbell Collaborations and from

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HIA centres of excellence in the United Kingdom and New Zealand, we developed our framework. We then undertook the following five equity-focussed HIAs:

1. Healthy eating action policy (New Zealand Ministry of Health)
2. Dietary guidelines for older Australians (National Health and Medical Research Council)
3. Continuing education and professional development program for rural medical specialists (Royal Australasian College of Physicians)
4. Community funding program of health promotion grants and sponsorships (Australian Capital Territory Health Promotion Board)
5. Outpatient cardiac rehabilitation program (John Hunter Hospital, Newcastle, NSW).

Our framework differs from other tools for health inequalities or equity impact assessment in that the framework is *embedded* in conventional HIA. To each HIA step we added discrete questions or processes that triggered the exploration of critical equity considerations. A copy of the equity-focussed health impact assessment framework and reports on selected equity-focussed health impact assessments can be found at [http://chetre.med.unsw.edu.au/files/EFHIA\\_Framework.pdf](http://chetre.med.unsw.edu.au/files/EFHIA_Framework.pdf) or [www.deakin.edu.au/hia](http://www.deakin.edu.au/hia).

In undertaking the equity-focussed health impact assessments we found that we were able to:

- identify in a proposal its potential for unintended anti-equity consequences
- generate recommendations that enhanced the potential for equity to be realised, potentially leading to a reduction in health inequalities.

Two examples illustrate the diverse settings in which equity-focussed health impact assessment might illuminate the health equity impacts of a proposal or plan. The Royal Australasian College of Physicians' equity-focussed health impact assessment found that while videoconferencing was widely regarded as having the potential to improve professional development for rural medical specialists, equity issues arose where access to videoconferencing was limited by technology. Where technology in rural areas does not keep pace with emerging Internet-based programs, a professional development program based on videoconferencing or internet programs may actually widen the educational gap between urban and rural specialists, with a flow-on effect to the communities they serve.

The equity-focussed health impact assessment of the New Zealand policy for healthy eating found that the policy development process had the potential to make it more difficult for certain groups to contribute to policy development, potentially resulting in a healthy eating policy that was limited in effectiveness for those groups, and particularly for Maori. As a result of the equity-

focussed health impact assessment, recommendations were developed that focussed both on changing the approach to policy and strategy development within the New Zealand Ministry for Health, and on ensuring that equity issues were addressed as the healthy eating policy was implemented.

While equity remains a key principle of HIA, a more explicit analysis of the social and geographic distribution of the health impacts, and an assessment of the fairness of this distribution, is usually required. The equity-focussed health impact assessment framework is useful in these situations because it provides practitioners with guidance on how to systematically address equity in each step of HIA.

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# THE NSW HEALTH IMPACT ASSESSMENT PROJECT

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The NSW Health and Equity Statement recommended that processes be developed for undertaking both rapid health impact appraisals and comprehensive health impact assessments (HIAs) of new government policy initiatives.<sup>1</sup> The goal was to develop a range of standardised approaches that could be used to assess proposed initiatives for their potential to redress health inequities.

To address this goal, the Centre for Chronic Disease Prevention and Health Advancement within the NSW Department of Health commissioned the Centre for Health Equity Training, Research and Evaluation (CHETRE) to undertake a program of capacity building work on health impact assessment. The program was called the NSW Health Impact Assessment Project (NSW HIA Project). As organisational change is usually regarded as progressing in stages<sup>2,3</sup>, a phased approach was adopted, which recognised the need for initial exploration followed by stages of awareness, adoption, implementation and institutionalization.

This paper describes the activities undertaken during the first two phases of the NSW HIA Project and the five sites in NSW where HIA was trialed in 2004. It also introduces Phase 3 of the project, which commenced this year.

## PHASE 1: EXPLORING

The initial phase of the NSW HIA Project sought to:

- raise awareness of the concepts and current issues in HIA
- identify mechanisms by which HIA could be further developed
- ascertain the workforce capacity implications of HIA's use.

Workshops were held with representatives from across NSW Health to increase awareness of HIA and of the steps involved. An electronic newsletter on HIA was developed and continues to be distributed widely across NSW, interstate and internationally.<sup>4,5</sup> Phase 1 also included consultation with a number of key stakeholders from NSW Health to develop a consensus on how to proceed with introducing HIA.<sup>6</sup>

## PHASE 2: TRIALING

It became clear during Phase 1 of the NSW HIA Project that there was a need for the NSW Health workforce to gain

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experience in undertaking HIA as there was uncertainty about how HIA might be utilised within NSW. The State has a well developed planning process, particularly in relation to the consideration of the environmental impacts of physical developments.<sup>6</sup> The question of how the broader application of HIA, one that moved beyond established approaches to the assessment of physical developments, would work in NSW remained unanswered.<sup>7,8,9</sup> There was also interest in how a structured, sequential HIA process could fit into existing planning and policy development processes<sup>10</sup> and a need to identify the areas where workforce capacity to undertake HIAs currently existed within NSW Health and those areas where capacity needed to be developed.

A key component of Phase 2 was its 'learning by doing' approach. This involved NSW Health employees at five developmental HIA sites undertaking training in HIA and applying this learning by simultaneously undertaking HIAs.

## 2004 DEVELOPMENTAL HIA SITES

A call for submissions to undertake an HIA as a developmental site was sent to area health service chief executive officers and branch directors within the NSW Department of Health. Five developmental HIA sites were selected from the submission by a panel of NSW Department of Health representatives. The sites selected covered a diverse range of proposals and were drawn from a number of areas within NSW Health. Box 1 contains a summary of each of the 2004 developmental HIA sites and the concluding recommendations.

CHETRE supported the developmental sites in the following ways:

- *A five-day training program.* The members of the project teams for each HIA site attended the five-day training whilst simultaneously doing their HIAs. The first two days focused on screening and scoping for HIA. Following this the sites undertook the screening and scoping steps of their HIA. The subsequent two days of training occurred four weeks later and covered identifying and assessing potential impacts and developing recommendations. The final day of training was held two months later and involved the sites presenting on their HIAs and establishing mechanisms for evaluation and monitoring. Interviews were conducted with the HIA sites before the commencement of training and again two to three months after training was completed. The purpose of the first round of interviews was to build a profile of the sites, including their capacities, training needs and expected outcomes from the HIA. These interviews informed the development of the training program
- **Participant observers.** Additional key staff from across the NSW health system also attended the training.



## BOX 1

### A SUMMARY OF THE FIVE HIA DEVELOPMENTAL SITES TRIALED IN 2004 FOR THE NSW HIA PROJECT

#### 1. Centre for Chronic Disease Prevention and Health Advancement, NSW Department of Health: An integrated chronic disease prevention social marketing campaign.

The aim of the campaign was to decrease the prevalence of chronic disease in NSW. The target of the proposed campaign was people aged 35 to 55 years, with a focus on disadvantaged groups.

**Sources of information:** A community demographic profile, a literature review and data from key informant interviews.

**Recommendations:** That the campaign's audience be involved in decision making to ensure that the campaign was responsive to the context of their daily lives. Additionally, the HIA recommended that the scope of the campaign needed to be broader than primary prevention as people within the target group may be more receptive to secondary or tertiary prevention messages.

#### 2. Illawarra Area Health Service: The Shellharbour City Council management plan for the Shellharbour foreshore.

The proposal aimed to conserve and beautify the foreshore while encouraging public use. The management plan was an environmental management tool with no funding attached. The plan was intended to be implemented over a period of several years, as funding became available. The HIA was undertaken in conjunction with Shellharbour City Council with a view to influencing implementation of the plan.

**Sources of information:** A community demographic profile, literature review, policy review, environmental audit and key informant interviews.

**Recommendations:** To promote the positive impacts of the proposal by prioritising implementation of those aspects of the Plan that would have the greatest positive impact on levels of physical activity and social cohesion.

#### 3. Mid West Area Health Service: Moving health promotion services from a geographically centred 'patch' approach to a more strategic capacity building approach.

The proposal aimed to encourage all health services and programs to work within a health promoting framework. The HIA assessed the potential health impacts of this proposed model for delivery of health promotion services and compared them with those of the existing approach.

**Sources of information:** A survey of health service and program managers from a number of area health services, a literature review and key informant interviews.

**Recommendations:** The proposal would have an impact on health outcomes, though due to the indirect nature of these impacts their scope and nature were hard to predict. The recommendations were that the strategic approach be adopted with a focus on contributing to Area-wide plans and policies and ensuring that these explicitly address the needs of vulnerable groups and address equity issues.

#### 4. Mid North Coast Area Health Service: Transitional residential aged care services.

A proposal for transitional residential aged care services in the Great Lakes local government areas was submitted to the NSW Department of Health and the Commonwealth Department of Health and Ageing.

**Sources of information:** A series of focus groups, key informant interviews and a literature review.

**Recommendations:** There are positive health outcomes from short-term, intensive transitional care being available in residential care and home settings. The HIA also found that the negative and unintended impacts of this type of proposal, such as the impact on carers, have rarely been considered. Due to human resource constraints the HIA was not completed.

#### 5. Primary Health and Community Partnerships Branch, NSW Department of Health: NSW non-emergency health-related transport policy framework

The proposal put forward a new framework for funding and delivering non-emergency health-related transport across the state. It substantially altered the funding arrangements that existed for non-NSW Health transport providers and emphasised the importance of non-emergency transport in determining health outcomes.

**Sources of information:** Consultation with key stakeholders and a review of the policy framework.

**Recommendations:** The screening step established that there was insufficient scope to amend the proposal, as a long process of consultation and development had already been undertaken. A screening report, including some minor recommendations, was produced.

Consistent with the objective that all participants gain experience in undertaking an HIA, each person was linked to a developmental site as a participant observer. Participant observers attended steering committee meetings, commented on draft reports and were available to discuss issues with the developmental sites. They became an additional resource for each site.

- **A helpdesk.** An HIA helpdesk was established. Sites were able to contact the project team by telephone or email with queries and for support in undertaking their HIAs. Regular contact with the sites was maintained by telephone and site visits.
- **Electronic resources.** A website on HIA was developed. This included reviews of key guidelines and 'how-to' manuals on HIA.<sup>11</sup> Sites also received an electronic newsletter on HIA every two months, which provided overviews of local and international developments.<sup>4,5</sup>

## CAPACITY AND HIA

There were a number of capacity building outcomes of the developmental sites. Firstly, the developmental sites provided practical examples of how HIA might be used to inform the development of proposals. Secondly, they ensured that a number of people from across diverse areas within the NSW health system had knowledge and experience in undertaking an HIA. The developmental sites also highlighted a number of lessons on conducting an HIA.

## LESSONS LEARNT

### Why do an HIA?

The developmental sites found that the initial screening step was crucial to establish a clear rationale for why the HIA should proceed. The developmental sites found that proceeding with an HIA was not always the best option, particularly if there was insufficient opportunity to alter a proposal. However, it is sometimes possible to make recommendations in a screening report that can influence the development or implementation of a proposal without requiring an HIA to be undertaken.

### Doing an HIA

The developmental sites highlighted the need to scope realistically. Being pragmatic about what information can be gathered and what will be useful is important in ensuring the completion of an HIA. The sites found that developing ways of using existing information was helpful but problems existed where no relevant information was available. This necessitated the development of methods for assessing potential health impacts where precise information on the likelihood, severity and nature of the impacts was not available.

### Making sense of the information

A major challenge faced by all the sites was how they could integrate disparate and often contradictory information to

inform the recommendations from their HIAs. This raised questions about how we value evidence within HIA. Given that the goal of an HIA is to recommend how a proposal can be improved, applying traditional hierarchies of evidence may not necessarily be appropriate.<sup>12,13</sup> This is because issues of acceptability, salience and appropriateness may be as important to decision-makers as issues of efficacy and cost-effectiveness, suggesting the need for expanded typologies of evidence to be used.<sup>14,15</sup>

### The 'So-what?' nature of findings

The findings from each of the 2004 HIAs may not seem unusual or unexpected and raise the question of why one might bother doing HIA. However, what the HIAs provided was an opportunity for proponents to examine their proposals in a structured and considered way prior to implementation—an 'amber light' principle.<sup>16,17</sup> As a result of the HIA, proponents were able to consolidate their information and evidence in order to present the case to decision makers about why and how the proposal might be amended.

### About learning by doing

The 2004 developmental sites found learning by doing to be an effective, albeit time consuming, approach to learning about HIA. Learning by doing also helped to create a cohort of advocates for HIA within NSW Health, some of whom have been involved in initiating subsequent HIAs.

## PHASE 3: EMBEDDING

Phase 3 of the NSW HIA Project, which commenced in early 2005, focuses on a number of activities designed to 'embed' HIA within NSW Health and to support engagement with other sectors. Further awareness of HIA and consensus on its use are to be developed through a series of senior manager workshops as well as through a colloquium and a conference. Capacity to undertake HIA will be developed through six further developmental HIA sites, which commenced in 2005 (see Table 1) and eight are planned for 2006. The 2005 developmental sites are predominantly larger intersectoral proposals and will benefit from the lessons learnt from the 2004 developmental HIA sites. In addition, a Masters-level module on HIA will be designed and trialed. To assist staff, a manual is being developed on how to undertake HIA. Engagement with key stakeholders is continuing and is being expanded to incorporate other sectors.

A key challenge to HIA's future use will be its sustainability in practice. The NSW HIA Project includes a range of activities designed to maximise capacity building and stakeholder involvement. It is hoped that by the end of this project, HIA will assume its place as an important and routinely used aid to decision making in the NSW health system. The developmental HIA sites and participant observers have responded positively to the challenge represented by HIA's use, reflecting the strengths that

TABLE 1


## 2005 DEVELOPMENTAL HEALTH IMPACT ASSESSMENT SITES

Proposal assessed	Site	Stakeholders involved
Lower Hunter Regional Strategy	Hunter New England Area Health Service	Department of Infrastructure, Planning and Natural Resources The Premier's Department Members of the Regional Coordination Management Group
Population growth and urban development in Greater Western Sydney	Western Sydney Regional Organisation of Councils	Sydney West Area Health Service Sydney South West Area Health Service NSW Department of Health
Greater Granville regeneration plan	Western Sydney Area Health Service	NSW Department of Housing Parramatta City Council
Population growth plan for Bungendore	Greater Southern Area Health Service	Palerang Council
Indigenous environmental health workers proposal	North Coast Area Health Service	Centre for Aboriginal Health, NSW Department of Health
Health home visiting program North Sydney	Northern Sydney Central Coast Area Health Service	–

exist within the system in terms of willingness to learn and commitment to better practice.

Further information on the NSW HIA Project, including the developmental sites' case study reports, is available online at HIA Connect ([chetre.med.unsw.edu.au/hia](http://chetre.med.unsw.edu.au/hia)).

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# CONSTRUCTING A DATABASE OF DEVELOPMENT APPLICATIONS CONSIDERED BY PUBLIC HEALTH UNITS IN NSW

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In NSW a formal assessment is required prior to any significant development (such as a residential development or new industry) to ensure it complies with relevant planning controls and to confirm it is environmentally and socially sustainable.<sup>1</sup> The level of assessment required is dictated by state, regional and local planning legislation, which also outlines who is responsible for assessing and granting consent to the development, be it the local council or the NSW Minister for Planning. The NSW *Environmental Planning and Assessment Act 1979* (EP&A Act)<sup>1</sup> provides the legislative framework to assess the environmental impact of development proposals. This article describes a survey of public health units in NSW that informed the development of a database designed to support environmental risk assessment.

In NSW an environmental impact statement (EIS) must be prepared for designated developments, that is, those that are considered to be 'high impact' or are likely to significantly affect the environment. Although non-designated developments (smaller and low impact developments) do not require an EIS, the consent authority is still required to consider the likely impacts on the environment if it grants development consent. Within the EP&A Act, therefore, there is a formal requirement for proponents and approval authorities to consider the environmental implications of development proposals, whether an EIS is undertaken or not.

Prior to the preparation of an EIS a proponent may hold a planning focus meeting. The planning focus meeting acts as a forum for identifying key issues of concern relating to the development and allows matters that may otherwise hold up the assessment process to be dealt with early. After the planning focus meeting the proponent usually requests requirements from the Department of Planning for the preparation of the EIS; these are called Director General's Requirements. In 2005 the EP&A Act was modified in an attempt to streamline the planning process. Although still under development, it is expected that there may be less opportunity for NSW Health to be involved in the review of development applications, increasing the impetus for NSW Health to be involved at the planning focus meeting and Director General's Requirements stage.

## THE ROLE OF NSW HEALTH

Under the EP&A Act the environment includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings. Thus, social and health issues need to be considered in the development approval process. NSW Health does not have

a statutory role under planning legislation in NSW, that is, NSW Health does not have authority to approve or reject a development. However, NSW Health, other government agencies and the general public may provide comment on any designated development application during the public exhibition period.

Development applications may be formally referred to NSW Health for advice on the potential for the development to impact on human health. NSW Health may also be invited to participate in the planning focus meeting and in contributing to the Director General's Requirements for an EIS, although participation at this stage of the process is at the discretion of the consent authority.

Public health units—the public health agencies from which health advice is generally sought—report that they experience challenges in providing comment on development applications. In general, comment on a development application must be provided within 30 days of public exhibition. This time pressure may place considerable strain on those charged with assessing the proposal, especially when highly technical processes require assessment. The development applications (and the associated EISs) are often complex, lengthy and difficult to read. However, they frequently do not provide enough information to adequately assess potential impact on human health, particularly the health promoting or limiting potential of the development. Furthermore, within the public health units there may not be adequate expertise in highly specialised areas such as risk assessment.

## OBJECTIVES

We sought to compile a database of examples of environmental risk assessments undertaken by NSW Health to assist public health units in reviewing development applications. The database provides examples of comment on development applications for public health units that are reviewing similar applications. We also sought to obtain an understanding of the range of issues in development applications reviewed by NSW Health. This project is not designed to influence the way in which NSW Health becomes involved in the development assessment process.

## METHODS

At the time of study, NSW Health comprised 17 area health services that were responsible for discrete geographical areas. A public health unit was located within each of these. All rural and metropolitan public health units in NSW were surveyed. We asked public health units to list all development applications that had been referred to them for comment in the previous 12 months. For each development application the public health unit was then required to outline:



- the key health issues for consideration in the development
- whether comment was provided on the application
- whether the unit encountered any difficulties in commenting on the application
- what the outcome of their comment had been.

Three and six months after the initial mail-out, non-responders were followed up by email and telephone.

## RESULTS

Ten of the 17 public health units responded to the survey: four of the nine metropolitan and six of the eight rural public health units. Public health units reported that they had reviewed between none and thirty development applications (or related issues) in the previous 12 months. These applications had been sent to public health units by local councils and the state government planning agency. The median number reviewed was eight and the average was nine. Public health units commented on a total of 89 environmental health risk assessment issues: 34 from rural public health units and 55 from metropolitan public health units.

The types of developments reported included proposals to construct new industry; adjustment to existing industry; remediation of contaminated land; use of drinking water supplies for recreation; recreational water quality; waste treatment facilities; local environment plans; and infrastructure developments. The types of developments and issues that were considered varied considerably between units. Table 1 provides a comparison of the primary types of issues considered by rural and metropolitan area health services.

Environmental health professionals require expertise in a variety of content areas in order to examine development applications. The content areas contained within the reported development applications are summarised in Table 2 for both metropolitan and rural locations. Public health units, particularly rural public health units, are frequently required to comment on issues related to water. Other environmental health content areas frequently covered are local and state planning regulations, air quality, land contamination and waste.

Difficulties encountered by public health units in commenting on development applications include insufficient time for providing a response, difficulty finding information in the EIS, and complexity of issues in the EIS. Specific technical problems also include:

- requirements for effluent management
- local planning ordinances, for example path width, shade provisions, traffic
- waste water quality requirements and water treatment technology
- air pollution from bushfires

- effect of traffic on health
- hazardous chemicals and site contamination
- pest control.

The examples provided by public health units have been compiled into a database. Environmental health professionals in public health units will be able to use the database to obtain information on similar issues encountered by other public health units. Any public health unit will be able to access the examples in the database or contact other public health units directly for assistance and information. Table 3 provides an example of the information provided in the database.

**TABLE 1**

### THE PRIMARY ISSUE ADDRESSED IN EACH DEVELOPMENT APPLICATION ASSESSED BY RURAL AND METROPOLITAN AREA HEALTH SERVICES IN NSW

Issue or type of development	Public health unit		
	Rural n	Metropolitan n	Total n
Agriculture	3	2	5
Commercial and industrial	5	8	13
Contaminated sites	1	15	16
Land use and local environmental plans	1	3	4
Mining	0	1	1
Multiple chemical sensitivity	1	0	1
Residential	5	2	7
Tourism (other than eco)	1	2	3
Transport	1	1	2
Waste disposal/treatment	4	10	14
Waste to energy	0	2	2
Water: drinking and recreational	3	0	3
Wastewater re-use	7	4	11
Other	1	2	3

**TABLE 2**

### CONTENT AREAS CONSIDERED WITHIN THE REPORTED DEVELOPMENT APPLICATIONS FOR METROPOLITAN AND RURAL AREAS

Content considered	Metropolitan areas	Rural areas	Total
	n	n	n
<b>Content considered</b>	<b>55</b>	<b>34</b>	<b>89</b>
Air quality	14	8	22
Water quality	14	27	41
Land contamination or chemicals	14	2	16
Noise	1	5	6
Local/state planning	7	14	21
Waste	6	9	15
Arbovirus	1	9	10
Food	0	4	4
Note:	More than one content area may be assigned to a single development application.		

**TABLE 3**

**EXTRACT FROM THE ENVIRONMENTAL RISK ASSESSMENTS DATABASE, DEMONSTRATING FIELDS**

Title	Issue	Classification	Public health unit	Action
Rural town livestock exchange	Emergency management plan Odour Q fever (vaccinations) Treatment and reuse of waste Food outlets Pest control	Agriculture	Rural	Comment provided Approval pending
Site management plan for contaminated site	Odour Noise Contaminated dust exposure Warning signs Protective equipment for workers	Contaminated site	City	Comment provided Outcome unknown

**DISCUSSION**

This project provides a nucleus for an expanding database of environmental risk assessment issues. The database forms a resource for the NSW public health units that may facilitate communication and collaboration on areas of mutual interest; however, the utility of the database should be evaluated.

Only 10 of the 17 area health services responded to the survey, thus generalisations about results are limited. Also, the examples obtained from the survey are unlikely to be a complete list of issues that a public health unit has been asked to comment on. There is considerable variability between public health units in relation to the types of issues examined. This variability may be due to differences in risk assessment issues in different public health unit regions (such as urban and rural, industrial and agricultural), or the limited survey period (only one year of risk assessments). It is also possible that issues referred to public health units from local government are driven by historical relationships and interest and enthusiasm within public health units and local government about particular issues. However, the survey has provided a useful overview of the types of issues that some public health units are receiving and providing population health advice on. This understanding has implications for the training and professional development of environmental health professionals in public health units. This project confirms anecdotal reports of difficulties experienced by public health units in meeting deadlines for comment and examining complex risk assessment issues.

This survey shows that the majority of development applications commented on by NSW Health concern health protection, such as air and water quality, rather than health promotion, such as environmental constraints to physical activity. This may indicate that consent authorities do not recognise the potential relevance of urban development to health, or have been unable to engage NSW Health about

these issues in the past. Greater involvement by health promotion practitioners may provide a more comprehensive response to proposed developments with an appropriate emphasis on the potential ‘positive’ health benefits of proposals.

While NSW Health does not have a statutory role, comment on development applications provides the potential to intervene in the planning process to protect and promote human health, rather than simply react to minimise harm. The greatest potential for input into a development comes with early involvement in the planning process, even before the consent authority receives the application.

This database has been designed to provide support to public health units so that these measures may be undertaken more effectively. However, there is a need for additional analysis of the process of involvement of NSW Health in development assessments such that the potential of NSW Health to engage effectively with the planning process is maximised.

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# HEALTH IMPACT ASSESSMENT CASE STUDY: WORKING WITH LOCAL GOVERNMENT TO OBTAIN HEALTH BENEFITS

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This paper provides a brief overview of an intermediate health impact assessment (HIA) conducted collaboratively with local government. The focus is on the lessons learnt; the full details of the process and findings have been described elsewhere.<sup>1,2</sup>

## BACKGROUND TO THE HIA

In 2001 the Illawarra Division of Population Health (in the former Illawarra Health) identified the broader environmental determinants of health as a service-wide priority. Environmental determinants were identified as those amenable to intervention, of regional interest and reliant on the development of strong intersectoral cooperation to achieve mutually desired outcomes between sectors: health and local government in particular.

This priority led to a number of inter-agency projects. However, one of the limitations identified as a barrier to effective intersectoral programs was the lack of staff trained in and with knowledge of HIA. Early in 2004 a strategic opportunity arose to address these limitations when, concurrent to Phase 2 of the NSW HIA Project (see Harris-Roxas and Simpson, 'The NSW Health Impact Assessment Project', in this issue), a local council released

a management plan that aimed to conserve and beautify an area of foreshore while encouraging and supporting appropriate public use. The Illawarra Division of Population Health and the Council agreed to conduct a collaborative six-month intermediate HIA on the plan.

## OVERVIEW OF THE HIA

To drive the HIA and establish the supporting values a Steering Committee was established. The Committee included representation from the Council (a social planner and an environmental health officer) and the Area Health Service (public health and health promotion staff) and undertook a step-wise process of screening, scoping, assessment, negotiation and decision-making. During the scoping phase the Steering Committee acknowledged a broad definition of health. However, due to resource considerations and service priorities the health-related issues identified were limited to physical activity and social cohesion.

During the assessment phase the following were performed: a community profile, a literature review, a policy review, a recreational environment audit, and interviews with key informants. Differential impacts on population subgroups were considered.

A process whereby the evidence obtained during the assessment phase was weighted according to its relative contribution to the potential 'health impacts' supported the negotiation phase. This was undertaken using a typology of evidence matrix. Consensus was gained from the Steering Committee on the values placed on each source of evidence. For example, the findings from the key informants were deemed important in addressing questions on appropriateness, satisfaction, salience and acceptability. In contrast, the literature review was ranked highly when addressing questions of effectiveness.

To assist in the decision-making phase, priority matrices were applied for each initiative in the management plan, which considered the nature, likelihood and relative size of the potential health impacts. This enabled the Steering Committee to prioritise particular aspects of the plan.

The final report provided a summary of findings, a prioritisation for the implementation of different aspects of the plan and options to maximise the potential positive and minimise the potential negative impacts. The findings were presented to the Mayor at a Council meeting.

## BENEFITS AND BARRIERS

A process evaluation was conducted to reflect upon the value and feasibility of conducting a HIA on the plan. The HIA was generally well received by Council and members of the Steering Committee. There were many lessons learnt (see Box 1), one being that considerable resources, skills and knowledge are required to conduct intermediate HIAs.

### BOX 1

#### ADVICE TO OTHERS UNDERTAKING AN INTERMEDIATE HIA, BASED ON LESSONS LEARNT WHILE UNDERTAKING AN HIA ON THE SHELLHARBOUR FORESHORE MANAGEMENT PLAN

We recommend that others undertaking an intermediate HIA:


1. gain commitment from senior management from each organisation to ensure access to people with the range of skills required for undertaking an HIA
2. follow a step-wise approach to conducting an HIA
3. establish a steering committee with representatives from each organisation and relevant body
4. ensure at least one person on the Steering Committee has undertaken training, or has experience, in conducting an HIA
5. dedicate a project manager to the HIA who can commit significant time to the process
6. be aware of the time and resources required when undertaking an HIA.

Indeed, the resources required to conduct an HIA and the likely outcomes need to be weighed by managers prior to embarking upon an HIA. An important part of the screening process should be consideration of the balance between the resources required to undertake the HIA and the likelihood of influencing outcomes and affecting significant health gain. Indeed, the resource issue is critical to the viability of integrating HIA into core health service activities.

The HIA did, however, provide a useful framework for strengthening the collaborative relationship between the Council and the Division of Population Health. It improved both organisations' understanding of each other's business, the broader definition of health and, specifically, the inter-relationship between the environment and physical activity and social cohesion. The process also helped to up-skill staff and facilitated the sharing of information and resources. Successful completion of the project also led to ongoing local developments, including a current HIA using

a different methodology with a different local council. This current HIA is being conducted on a capital works program with similar environmental features and aims to assess and compare HIA methodologies (desk-based versus intermediate) with a view to evaluating the feasibility of methods and providing recommendations on when to apply particular approaches.

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## HEALTH IMPACT ASSESSMENT ON AN INTEGRATED CHRONIC DISEASE PREVENTION CAMPAIGN

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A priority in the NSW Chronic Disease Prevention Strategy 2003–2007<sup>1</sup> is to: *Design, test, develop and evaluate a state-based pilot of an overarching 'integration' strategy to draw together existing programs and activities dealing with tobacco, alcohol, nutrition, physical activity and mental health promotion with a view to progressing state-wide implementation if the evaluation results are favourable.*

It is proposed that this priority be addressed through a chronic disease prevention campaign promoting changes in knowledge, attitudes and practices on contributory risk factors to decrease the prevalence of chronic disease among 35–55 year olds. For the purposes of this campaign, chronic diseases include cardiovascular diseases, cancers, chronic lung diseases and type 2 diabetes.

The proposed campaign underwent a health impact assessment (HIA) between February and October 2004 by the Health Promotion Strategies and Settings Branch in the NSW Department of Health's Centre for Chronic Disease Prevention and Health Advancement.

### WHAT WAS DONE

The HIA of the proposed chronic disease prevention campaign was undertaken using the procedures described by Scott-Samuel et al: screening, scoping, assessment, negotiation and decision making, and evaluation.<sup>2</sup>

### WHAT WAS FOUND

Screening identified that the proposed campaign was suitable for an HIA: it was in an early stage of development and so able to be influenced by recommendations; it had a well-defined program structure of aims, goals, and targets; and there were indications from available evidence that the proposed strategies of social marketing and complementary initiatives would have a positive effect in reducing the risk of chronic disease.

As part of the scoping phase an existing, informal steering group for the HIA was formally appointed as such. It included representation from the Centre for Chronic Disease Prevention and Health Advancement, the Centre for Aboriginal Health, and Population Health from the then Wentworth Area Health Service. Key questions identified for the HIA were (i) Are lifestyle risk factor campaigns effective at changing behaviours? and (ii) Are population subgroups differently affected by lifestyle campaigns? Data type and sources to answer these questions were identified, and included NSW population health data, literature reviews, and the opinion of key informants.

Assessment of the sources of data determined that the NSW population is at risk of chronic disease arising from the identified risk factors; that health status and



prevalence of chronic disease risk factors are associated with disadvantage; and that chronic disease risk factors are interactive and synergistic in effect. It was found that social marketing campaigns are more effective at promoting one-off rather than sustained behaviour changes; evidence is conflicting with regard to the effectiveness of integrated versus individual risk factor-focused campaigns; inter-sectoral partnerships improve campaign sustainability, duration and effect; and campaigns must address the socio-economic issues specific to disadvantaged populations if those members of the community are to be reached. No potentially harmful effects of the campaign were identified.

Recommendations arising from the HIA included that the proposed campaign:

- deliver separate risk factor message streams under a coordinated program, thus combining individual and integrated approaches
- be tailored to subgroups in the population, and focus on low socio-economic status groups in its communication
- incorporate stress as a risk factor to be addressed
- focus on influencing the priming steps of behaviour change, rather than behaviour change itself
- establish partnerships with primary health care stakeholders
- use messages that are positive, confidence-building, simple and catchy
- ensure rigour in its evaluation to contribute to the evidence base.


### DID THE HIA MAKE A DIFFERENCE?

The recommendations made by the HIA confirmed the key directions of the proposed campaign, in particular the feasibility and value of mounting an integrated response to chronic disease prevention. The recommendations also defined greater clarity for the proposed campaign's implementation foci, and increased its potential effectiveness to reach and influence disadvantaged populations.

All recommendations arising from the HIA were accepted by the Health Promotion Strategies and Settings Branch, and are planned for incorporation in the proposed campaign.

Funding approval for the proposed integrated chronic disease prevention campaign is pending, and remains a priority in the NSW Chronic Disease Prevention Strategy 2003–2007.

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**NSW HEALTH**

# NSW HEALTH ABORIGINAL HEALTH IMPACT STATEMENT

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Health outcomes for Aboriginal people remain significantly poorer than those for the general population. For example, the average life expectancy is 56 years for Aboriginal men and 64 years for Aboriginal women. This is approximately 20 years less than the life expectancy for the general population.<sup>1</sup>

There has been little improvement in recent decades in the health of Aboriginal and Torres Strait Islander peoples, in contrast to the progress that has been made in improving the health of indigenous peoples in countries such as New Zealand, the United States and Canada. It is widely recognised that public health strategies can play a key role in improving the health of indigenous peoples.<sup>2</sup>

Within the health system, an important mechanism for improving Aboriginal and Torres Strait Islander health is the availability of comprehensive primary health care services. Increasing the level of resources to reflect the higher level of need of Aboriginal and Torres Strait Islander peoples; improving access to both mainstream and Aboriginal and Torres Strait Islander specific health and health-related programs which reflect the higher level of need; joint planning processes and improved data collection and evaluation<sup>3</sup> are a priority for all governments.

However, health strategies, policies and programs often reflect the values and culture of the decision-makers and other senior managers who design them. Consequently, principles and guidelines are needed to assist in the development of policies and programs that reflect the values and needs of the Aboriginal community.<sup>3</sup>

To meet this need, the Centre for Aboriginal Health at the NSW Department of Health developed the NSW Health Aboriginal Health Impact Statement (the Statement).<sup>4</sup> This was done in partnership with the Aboriginal Health and Medical Research Council of NSW, a peak body representing the Aboriginal community controlled health sector in NSW, Area Directors of Aboriginal Health from the area health services in NSW, and other stakeholders. The Statement is based on the core Aboriginal health principles, which are designed to guide all relevant health policy initiatives: a whole-of-life view of health, self-determination, partnership, cultural understanding and recognition of loss and trauma.<sup>5</sup> The Statement drew upon the National Public Health Partnership's *Guidelines for the development, implementation and evaluation of national public health strategies in relation to Aboriginal and Torres Strait Islander peoples*<sup>6</sup>, which were released in February 2002,

The purpose of the Statement is to ensure that the needs and interests of Aboriginal peoples in NSW are integrated into the policy, program and service development process. It is also used to identify any effects that an initiative is likely to have on Aboriginal health outcomes and to ascertain what additional resources may be needed to address the effects.

Effective Aboriginal and Torres Strait Islander representation is central to the success of Aboriginal specific strategies.<sup>2</sup> The Statement therefore contains a series of questions to help determine whether appropriate Aboriginal consultation and negotiation processes have taken place.

Completing a Statement is mandatory for all NSW Health staff and consultants who have been engaged by NSW Health in the development, implementation or evaluation of policies, services or programs that may have direct or indirect effects on Aboriginal health.

The approach taken by the Aboriginal Health Impact Statement is also consistent with the NSW Government's 10-year Aboriginal Affairs Plan, *Two Ways Together*<sup>6</sup>, which requires all government agencies to develop policies, procedures and protocols recognising Aboriginal culture, needs and aspirations.

A trial implementation phase for the NSW Health Aboriginal Health Impact Statement has been completed and the Statement has been redrafted. Full statewide implementation is planned by June 2006.

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# COMMUNICABLE DISEASES REPORT, MAY AND JUNE 2005

For updated information, including data and facts on specific diseases, visit [www.health.nsw.gov.au](http://www.health.nsw.gov.au) and click on **Infectious Diseases**.

## TRENDS

Tables 2 and 3 and figure 4 show reports of communicable diseases received through to the end of May and June 2005 in NSW by area health service.

## MENINGOCOCCAL DISEASE

### Cluster 1

In late May, the Sydney office of the South Eastern Sydney Illawarra Public Health Unit reported a cluster of two cases of meningococcal disease in students residing on the same floor of a university residential college.

Case 1 was a university student who was admitted to hospital in late May with a three-day history of an influenza-like illness and vomiting. On presentation the student was found to have a petechial rash and the clinical diagnosis of meningococcal septicaemia was confirmed by a positive polymerase chain reaction blood test for meningococcus serogroup B. Following treatment for a relatively mild illness, the patient was discharged.

Case 2 presented to hospital the day after case 1, also with a three-day history of an influenza-like illness, which progressed to rigors, headache and nausea. A day later, case 2 developed a purpuric rash on the forearms and this spread to the legs. The patient's condition rapidly deteriorated and the patient required admission to an intensive care unit. The clinical diagnosis of meningococcal septicaemia was confirmed by blood culture to be meningococcus serogroup B. The patient recovered and was discharged.

Case 2 attended the same university faculty as case 1 but did not share any university classes or tutorials with case 1. However, both cases resided on the same floor of a four-floor college. There were approximately 70 other students on that floor. The cases reported no direct contact with each other, although both had attended the same entertainment venue at one point during the previous week.

On the advice of a rapidly convened advisory panel (that included expertise in microbiology, public health, and the university health service) the public health unit provided information to all the college's residents via email and noticeboards in common areas. In collaboration with the university's health service, the public health unit established a clinic at the college that offered antibiotic prophylaxis (ciprofloxacin) to all other residents of the same college floor. No further cases were identified.

### Cluster 2

Northern Sydney/Central Coast Public Health Unit reported a cluster of meningococcal disease due to serogroup B

meningococci in June. Case 1, a teenager, was admitted to the local hospital and the diagnosis was confirmed on polymerase chain reaction of spinal fluid. A second student, case 2, developed symptoms consistent with bacterial meningitis two days after case 1, and the diagnosis of serogroup B was subsequently confirmed by polymerase chain reaction of spinal fluid. Public health unit staff arranged for counselling and antibiotic prophylaxis for close contacts of both cases, letters to be sent home to parents of other children at the school, and advised local emergency departments to be alert for further cases.

Cases 1 and 2 were in different years at the school. Although initially no obvious links between the students could be found (such as common classes or sporting teams) it emerged that they travelled on the same school bus across several suburbs each day. The public health unit arranged for clinics to be held at the cases' school and at one of the other schools involved to provide antibiotic prophylaxis to other children and the drivers who had travelled with the cases on the bus.

The public health unit subsequently received a report from a laboratory that a third student from the cases' school had a positive serological test (IgM) for meningococci. This student had onset of fever, headache, drowsiness, vomiting, sore throat and erythematous rash seven days after onset of case 2 and was treated with antibiotics as a precaution. The student had travelled on the same bus as cases 1 and 2, but had not attended the clinic for prophylaxis because of illness. Although blood cultures and polymerase chain reaction testing were negative for meningococcal disease, counselling and antibiotic prophylaxis was arranged for close contacts. However, subsequent testing of convalescent sera showed a decline in IgM antibody levels, which was not supportive of the diagnosis of meningococcal disease, and the diagnosis remains unclear.

This investigation is important for several reasons. First, it serves as a reminder that while household contacts of a case are at highest risk of disease, transmission in other settings can occur on rare occasions. Transmission of meningococcal disease has previously been reported among children who shared a school bus in the United States<sup>1</sup> and in two adults who crossed the Pacific by aeroplane to Sydney.<sup>2</sup> Second, where clusters are identified, a thorough search for common links is vital for a better understanding of the group of contacts who are at increased risk of disease. In this case, the link was not apparent until the cases were asked directly if they knew each other. Secondary informants (even parents) may not be able to reliably identify all the relevant contacts of cases. Third, communication to those at higher risk of the disease can help with early identification and treatment of related cases.

The transmission of meningococcal disease can sometimes be unpredictable. Those at greatest risk include household



contacts; however, occasionally clusters can occur in institutional settings such as residential colleges. Specific recommendations for the control of clusters can be found in: *Guidelines for the early clinical and public health management of meningococcal disease in Australia* (see: [www.health.gov.au/internet/wcms/Publishing.nsf/Content/cda-pubs-other-mening.htm](http://www.health.gov.au/internet/wcms/Publishing.nsf/Content/cda-pubs-other-mening.htm)).

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#### PERTUSSIS REPORTS ON INCREASE

Case reports of **pertussis** have begun to increase in recent months. By date of onset of illness, case notifications last peaked in September 2004 (553 cases), and subsequently declined to a low of 300 cases in March 2005. The resurgence in cases appears to have begun in May 2005 and at the time of writing 388 cases reporting onset in June were notified (although because of delays in patients seeing their doctor and a diagnosis being made, the number of these notifications is likely to increase substantially).

In 2005, of 2158 pertussis cases notified to 29 June, 6% were in preschool-aged children, 9% in school-aged children and 85% in people over 18 years of age. The proportion of cases among primary-school-aged children has declined gradually in the past few years from 24% in 2000 to 16% in 2003 and 4% so far in 2005. This trend is probably related to a cohort effect following the introduction of pre-school age booster dose of diphtheria-tetanus-pertussis (DTP) vaccine in 1994. The proportion of cases among high-school-aged children declined more sharply from 18% in 2000 and 19% in 2003 to 5% in 2005 so far. This trend is probably related to NSW Health's high-school immunisation program, which vaccinated over 330,000 NSW students between May 2004 and June 2005.

Pertussis is an unpleasant disease to experience at any age, but especially dangerous for babies. Babies are particularly prone to infection until they have received two or three doses of pertussis-containing vaccine (DTPa at two, four and six months). They are also at risk of developing severe disease because of their small airways. To protect them, parents should keep their babies away from people with coughing illnesses and ensure that their baby—and everyone else in the household (including older siblings, grandparents, and the parents themselves)—is fully vaccinated. An adult formulation of the pertussis vaccine is available (as dTpa) and is recommended for new parents and grandparents, as well as anyone who deals with small children, such as health care and child care workers.

#### ENTERIC DISEASE

The number of notifications of patients with **cryptosporidiosis** increased further in May (105 cases), with the majority of patients residing in metropolitan areas of NSW (69%). A large proportion of patients were residents of southeastern Sydney (24 cases) and northern Sydney (23 cases). Public health unit staff routinely interview cases where a cluster is identified and, in addition, have been asked to interview all cases reported in NSW since 1 May. Interviews with patients identified no common sources; however, 30% reported contact with another person with diarrhoea and 52% reported swimming at a pool during the previous two weeks. Seven different pools in the metropolitan area were mentioned as common swimming spots by clusters involving at least two cases. While this information does not prove that these pools were the source of infection, as a precaution they were reviewed for compliance with NSW Health's guidelines *Minimising the risk of cryptosporidium contamination in public swimming pools and spa pools* (see: [www.health.nsw.gov.au/public-health/ehb/general/pools/cryptopools.pdf](http://www.health.nsw.gov.au/public-health/ehb/general/pools/cryptopools.pdf)).

Forty-one cases of **salmonellosis** caused by infection with **Salmonella Typhimurium phage type 9** were reported to the NSW Department of Health in May and June. Of these, 18 reported eating pork or chicken rolls or other food from a bakery in the Sydney West area in the three days before onset of illness. Another five cases of gastroenteritis (cause not confirmed, but who ate with some of the confirmed cases) were linked to this bakery. Of the 18 cases, 14 reported consuming these products between May 10 and 13. Another case of *S. Typhimurium* phage type 9 reported consuming a pork roll from a different bakery in the Sydney South West area during the incubation period. In addition, five other confirmed cases reported consuming food on a single day in late May at a club in the Sydney West area in the three days before onset of their illness. The NSW Food Authority evaluated these three facilities and found that they shared a common egg supplier. The egg supplier's farm was also evaluated and *S. Typhimurium* phage type 9 was isolated from a rinse from a soiled egg collected at the farm.

A multi-state investigation of **S. Hvitvingfoss** infections began in June following an increase in notifications from eastern Australia, including 10 from NSW (six in May and four in June). Hypothesis-generating interviews were conducted with eight NSW cases. No likely cause has been identified, and the number of notifications has since declined.

To date, relatively few cases of **gastroenteritis in institutions** have been reported in 2005 compared with 2004, when a large number of outbreaks was reported, particularly from aged care facilities.



## COMMUNICABLE ENTERIC DISEASES: 2004 IN REVIEW

NSW recently reviewed notifiable enteric diseases reported in 2004, using data derived from routine surveillance and outbreak investigations undertaken by public health unit staff in area health services and the Communicable Diseases Branch. The collection of these data is facilitated by Australian Department of Health and Ageing resources provided through the OzFoodNet surveillance program. Notifiable enteric disease highlights in NSW in 2004 included:

- a 16% increase in notifications of all conditions (including salmonellosis, listeriosis, shigellosis, haemolytic uraemic syndrome, verotoxigenic *Escherichia coli* infections, typhoid and paratyphoid)—2346 compared with 2014 notifications in 2003. Salmonellosis was the most frequently notified, accounting for 91% of these conditions
- a 14% increase in notifications of salmonellosis (2127 cases, a rate of 31.5 per 100,000 population, compared to 1864 cases in 2003, a rate of 27.9 per 100,000). The reason for this increase is unclear
- a higher crude rate of *Salmonella* notifications in rural areas (39.8 per 100,000) compared with urban areas (28.9 per 100,000)
- the most commonly identified *Salmonella* serovar was *S* Typhimurium, which accounted for 54% of all *Salmonella* notifications in 2004. The most common *Salmonella* infection was *S* Typhimurium phage type 170/108, which accounted for 29% of all *S* Typhimurium notifications and for 16% of all *Salmonella* notifications in NSW in 2004
- a 29% increase in typhoid notifications, largely related to travel to countries where typhoid is endemic
- a 70% increase in shigellosis notifications. No links were identified among cases, and the reason for the increase remains unclear
- reports from public health units of 496 enteric disease outbreaks. Of these:
  - 44 (9%) were reported to be foodborne in origin, but the causative agent could not be identified for 70% of outbreaks.
  - 452 were reported to be non-foodborne in origin: more than six times the number reported in 2003 (71). While for 77% the causative agent was not identified, most were probably caused by norovirus infections that spread rapidly through residential facilities. The increase may have been related to the emergence of a new strain of norovirus to which much of the community had little immunity.<sup>1</sup>

These data indicate that communicable enteric diseases continue to cause widespread illness in the community. Improved surveillance and investigation of outbreaks

in recent years may have contributed to more complete reporting of cases of specific diseases. However, the true incidence of various conditions can be expected to fluctuate from year to year, depending on a range of factors, including the emergence of new strains of pathogens and changing food manufacturing, distribution and handling practices. To help improve the detection, investigation and control of food borne diseases in the State, NSW Health, in collaboration with OzFoodNet and NSW Food Authority, conducted a two-day training workshop on food borne disease investigations for public health unit staff.

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## GASTROENTERITIS OUTBREAK AT A RESIDENTIAL COLLEGE LINKED TO A SELF- SERVE FOOD BAR

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In May 2005, Sydney South West (Eastern Zone) Public Health Unit was notified by the staff of a local hospital that five people who lived in a university residential college had presented to the emergency department with symptoms of gastroenteritis. The public health unit was also informed by hospital staff that other college residents were unwell with similar symptoms. Here we detail the investigations and actions undertaken to limit the outbreak following the notification.

The residential college is located in an inner west suburb of Sydney and is home to 173 residents, the majority of whom study at the adjacent university campus. All meals are provided in a common dining area and are prepared by staff employed by a large commercial catering company. There is a common self-serve salad bar used by all students at every meal.

### Initial response

Public health unit staff, with the cooperation of the college administration, initially conducted interviews with those residents known to be unwell with gastroenteritis using a standardised hypothesis-generating questionnaire. This did not reveal any specific foods or meals shared by all cases, but did demonstrate onset times that were spread over a period of three days. Catering staff and management were interviewed by the public health unit regarding any recent gastrointestinal illness. All staff denied having any current or recent symptoms suggestive of gastroenteritis, and stool samples were not requested from them. NSW Food Authority staff inspected the college's food preparation and serving areas and interviewed catering staff about food handling practices. Food samples were collected and

analysed for bacterial pathogens. Environmental health officers assessed the hygienic state of the bathroom and toilet facilities.

The pattern was initially suggestive of person-to-person transmission rather than a food-borne outbreak. Infection control and personal hygiene education, in the form of fact-sheets, were given to college residents and staff and the public health unit gave short talks to the students on two occasions about minimising person-to-person transmission. Despite these initial infection control measures, the outbreak of gastroenteritis continued over the next week and we decided to undertake a case-control study among all residents of the college.

### Cohort study

We developed a standardised written questionnaire that collected information on residents' demographic characteristics, onset and nature of symptoms, and which meals they had eaten in college over the week commencing three days prior to the first case of illness.

A case was defined as a resident of the college who developed vomiting or diarrhoea between 1 and 14 May 2005. Questionnaires were distributed to college residents during meals in the dining hall as well as through personally addressed envelopes. To improve response the questionnaires were sent electronically one week later to those college residents who had not yet returned a questionnaire (personal details were provided by college

administration). Data were entered onto and analysed using *Epi Info*™ for Windows version 3.3. Frequencies of responses were tabulated and strengths of associations between variables were analysed using the  $\chi^2$  statistic.

Stool samples collected from patients presenting to the emergency department were sent to the Area's laboratory service for microscopy, culture and sensitivity tests, and viral studies.

### Results

Ninety-two of the 173 residents returned completed questionnaires (response rate 53%). Of these, 37 (40%) met the case definition and 53 were well. The remaining two residents complained of diarrhoea and vomiting but their dates of onset were 22 and 26 April 2005, respectively. The epidemic curve is shown in Figure 1.

Among the cases there was a wide variation in the time and date of symptom onset, with the first resident becoming unwell on 22 April 2005 and the last on 12 May 2005. There was a cluster of cases on and around 5 May 2005. The most common symptom was vomiting (85%), followed by fever (82%), nausea (82%), abdominal cramps (82%), headache (79%) and diarrhoea (64%). The majority of cases' illnesses lasted approximately 24–48 hours. There were no significant differences in the age or sex of cases and other residents. No statistically significant associations were found between the meals that were eaten and the development of symptoms (Table 1).

FIGURE 1

CASES OF GASTROENTERITIS OCCURRING IN 37 RESIDENTS OF A UNIVERSITY COLLEGE, NSW, APRIL–MAY 2005

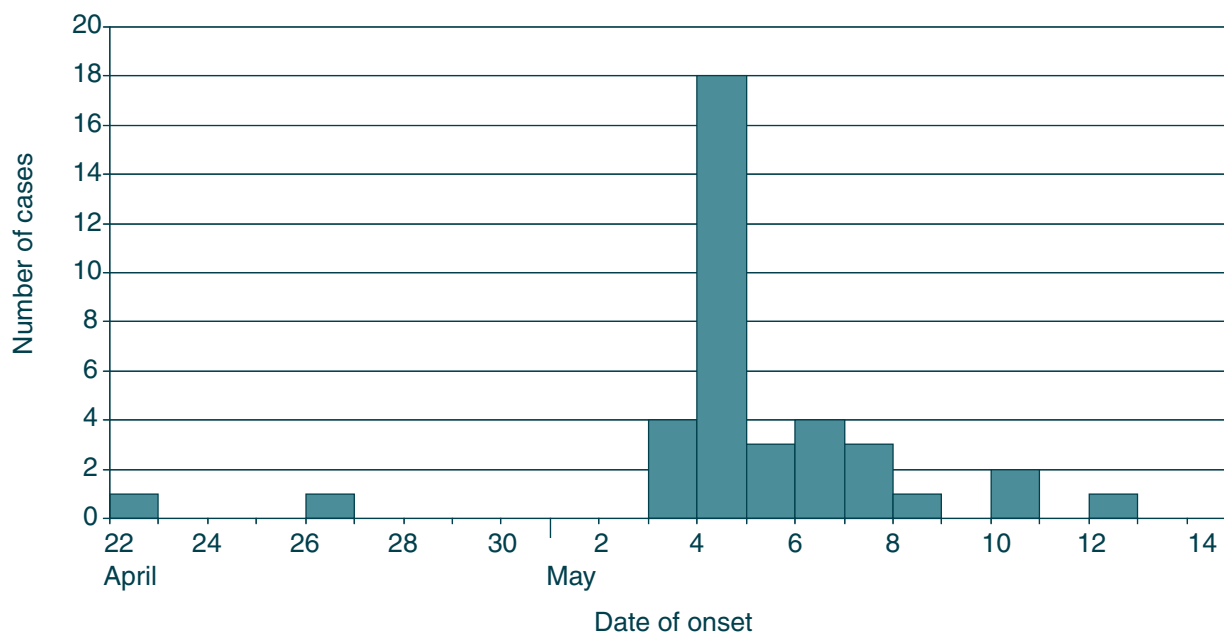


TABLE 1

**CHARACTERISTICS AND REPORTED EXPOSURES AMONG RESIDENTS WITH GASTROENTERITIS AND WELL RESIDENTS AT A UNIVERSITY COLLEGE IN NSW, APRIL–MAY 2005 (N=92)**

Characteristic or exposure		Cases		Well residents		Relative risk		p
		(n=39)	%	(n=53)	%	95% CI*		
Mean age (years)		19.46		19.49		t-test, t = -0.057		0.95
Sex	Male	21	54	36	68	1.4	0.9–2.2	0.17
	Female	18	46	17	32			
Drank from water fountain		31	80	33	63	1.5	0.8–2.8	0.16
Ate any meals in college	Breakfast	32	82	41	74	1.2	0.6–2.3	0.58
	Lunch	35	90	47	89	1.1	0.5–2.4	0.87
	Dinner	35	90	47	89	1.1	0.5–2.4	0.87
Ate all meals in college		3	8	6	11	0.8	0.3–2.0	0.56
Ate no meals in college		0		1	2	Undefined		0.58

\*confidence interval

Laboratory results from stool specimens on four patients were negative for bacterial pathogens on microscopy and culture, and negative for norovirus on enzyme immunoassay. The laboratory did not refer the specimens for polymerase chain reaction because the enzyme immunoassay was negative, as per their internal protocol.

Food samples from the self-serve food bar were positive for *E. coli* spp but negative for any other bacterial pathogen. The remainder of food samples were negative for all bacterial pathogens. As there were no clinical specimens positive for norovirus, the food samples were not tested for norovirus.

#### Implications and further action

It is possible that this gastroenteritis outbreak was of viral origin resulting from person-to-person spread coupled with contamination of food occurring at the self-serve bar. Viral gastroenteritis is known to be associated with vomiting, nausea, abdominal pain, headaches and diarrhoea<sup>1</sup>, and the presence of coliforms in food handled directly by college residents implies faecal contamination.<sup>2</sup> It is possible that residents unwell with or recently recovering from viral gastroenteritis (and continuing to shed infectious particles in their stool) inappropriately handled food on the self-serve bar. This, combined with poor personal hygiene practices, may have resulted in food contamination and spread of illness to other residents.

Self-serve food bars have been implicated in a number of previous outbreaks of gastroenteritis.<sup>3,4,5,6</sup> These outbreaks, as well as this most recent one, highlight the need for greater vigilance of self-serve bars to reduce inappropriate handling and resultant contamination of food. In addition, those living in institutional settings, such as residential colleges, should be given regular education regarding personal hygiene and infection control measures. Used together, it is hoped these actions will prevent, or at least lessen the impact of, further outbreaks of gastroenteritis in such settings.

In light of our concerns about the self-serve food bar being a possible nidus for transmission, arrangements were made with college administration for residents who were unwell to receive their meals in their rooms, rather than attending the dining hall. We also recommended that there be increased supervision by catering staff of the self-serve food bar, in particular ensuring the hygienic use of utensils by residents.

#### Acknowledgements

We would like to acknowledge the assistance of Brett Campbell, Food Safety Officer, NSW Food Authority, and Geoff Tan, Environmental Health Officer, Sydney South West (Eastern Zone) Public Health Unit in conducting food and environmental inspections, and the administration, staff and residents of the college for their cooperation and assistance in this investigation.

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## DECLINE IN SEROGROUP C MENINGOCOCCAL DISEASE IN CHILDREN AGED 0–18 YEARS

Lindy Fritsche, Katie Irvine, Melanie Boomer  
Centre for Health Protection

Meningococcal disease is a serious illness that usually manifests as meningitis and/or septicaemia. In previous years in NSW, about half of the cases of meningococcal disease were caused by infection with serogroup B meningococcus and about a third by serogroup C.

In 1999, the United Kingdom introduced meningococcal serogroup C conjugate (MCC) vaccine<sup>1</sup> for children aged up to 18 years. An evaluation of this program showed that vaccine effectiveness was high (>83%) in all children who received MCC vaccines in the catch-up campaign at age 5 months to 18 years.<sup>2</sup>

In October 2002 the Australian Government announced funding over a four-year period for a national meningococcal C vaccination program, commencing in early 2003, for all people 1–19 years of age.<sup>3</sup> In NSW a school-based immunisation program commenced in August 2003 and was completed in December 2004. During this time, a total of 349,758 high school students and 401,363 primary school students received the meningococcal C vaccination through the school-based clinics (a coverage rate of 76% for high school students and 76% for primary school students). In addition, data from the Australian Childhood Immunisation Register showed that on 31 May 2005, 76% of NSW children aged 3 years and under, and 61% of NSW children aged four to seven years had received a vaccination through their routine vaccination providers.<sup>4</sup>

There were concerns that serogroup B infection would increase to fill the ecological niche previously occupied

by serogroup C infection prior to the vaccination program. Here we compare the age-specific rates of meningococcal disease notifications in NSW after the completion of the vaccination program with rates preceding and during the program.

### Methods

In NSW, hospitals and laboratories are required to notify their local public health unit of the diagnosis of meningococcal disease. Case notifications are recorded onto the Notifiable Diseases Database (NDD). Meningococcal disease notifications (excluding conjunctivitis) were analysed by age group and period of notification. Period of notification was categorised as pre-vaccination program (May 1998 to April 2003) or mid-program (May 2003 to April 2004) and compared to the most recent 12 months of notification data (May 2004 to April 2005). Age-specific incidence rates were calculated using population estimates as at 30 December. Populations from December 2000 were used for pre-vaccination program rates, and from December 2003 and 2004 for the subsequent rates.

Rates of meningococcal serogroup C and B notifications were fitted using poisson regression models. The covariates were notification period (pre-vaccination program, mid-program and post-program) and a binary variable for the target age group (0–18 years). An interaction term was used to assess evidence for a differential change in rates for the age group targeted by the vaccination program. Analysis was conducted using STATA /SE 8.2.

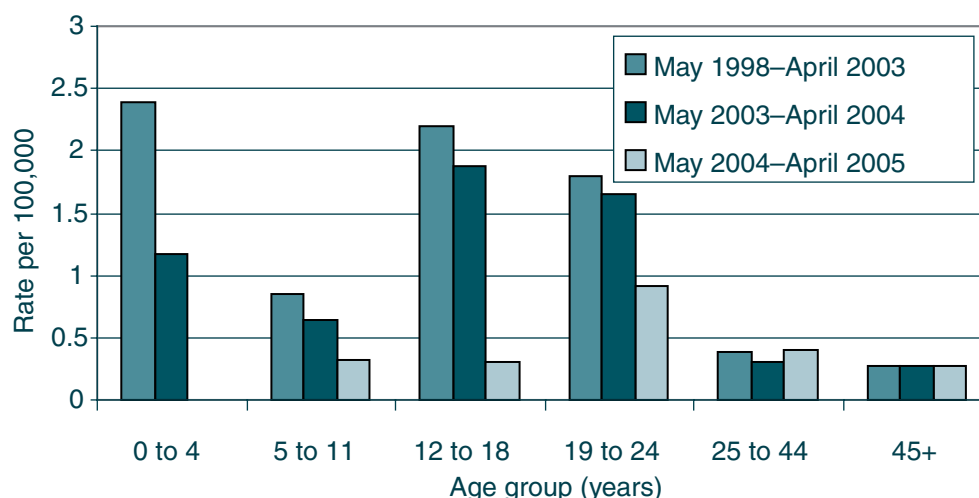
### Results

#### Serogroup C disease

Age-specific rates of serogroup C meningococcal disease notifications are shown in Figure 2. Rates in the target age

FIGURE 2

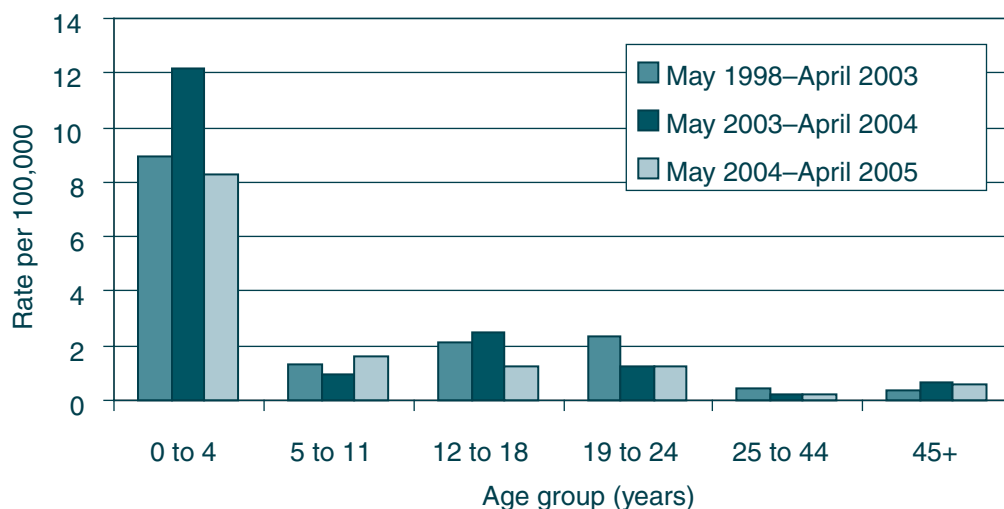
NOTIFICATIONS OF PATIENTS WITH MENINGOCOCCAL DISEASE DUE TO *NEISSERIA MENINGITIDIS* SEROGROUP C, NSW, MAY 1998 TO APRIL 2005





**FIGURE 3**

**NOTIFICATIONS OF PATIENTS WITH MENINGOCOCCAL DISEASE DUE TO *NEISSERIA MENINGITIDIS* SEROGROUP B, NSW, MAY 1998 TO APRIL 2005**



groups for the period May 2004 – April 2005 were 0 cases per 100,000 for 0–4 year olds and 0.3 per 100,000 for 5–11 and 12–18 year olds. Prior to the vaccination program rates of serogroup C notifications in these age groups were 2.4 cases per 100,000 for 0–4 year olds, 0.9 per 100,000 for 5–11 year olds and 2.2 for 12–18 year olds. There was a significant decrease in the notification rate for the target age group 0–18 years ( $p < 0.001$ ) but little evidence of a change in rates for people aged 19 years and over.

*Serogroup B disease*

Rates of serogroup B meningococcal disease notifications are shown in Figure 3. There is little evidence that rates in the most recent period (April 2004 to May 2005) differ from the pre-program rate (May 1998–April 2003). There is also little evidence of a differential change in rate among the target age group, which was observed for serogroup C.

**Discussion**

Rates of meningococcal disease notifications typically have a bimodal distribution, with peak incidence in young children (0–4 years) and adolescents.<sup>2,5</sup> Following the Meningococcal C Vaccination Program in NSW, rates of serogroup C notifications have decreased sharply among 0–18 year olds. International studies of MCC vaccine campaigns have also reported dramatic reductions in this age group.<sup>1,2</sup> To date, there is little evidence that decreases in serogroup C meningococcal disease in NSW have coincided with increased notifications of serogroup B disease.

In the UK, vaccine coverage was quite high in all age groups that were targeted (coverage rates generally exceeded 80%) and up to the end of 2001 there were 25 confirmed and one probable vaccine failure.<sup>1</sup> The impact of MCC vaccines on the incidence of meningococcal disease

serogroup C in the UK has been substantial: a comparison of laboratory-confirmed reports of meningococcal disease, serogroup C in 1999 and 2001 shows a reduction for the targeted age groups of 86.7%.<sup>1</sup> Meanwhile there was no change in the incidence of serogroup B disease in the target age group prior to 2002.<sup>1</sup>

Rates of meningococcal disease serogroup C have decreased in NSW since the introduction of the vaccination program. Continued surveillance of the epidemiology of the disease and long term evaluation studies measuring the effectiveness of the meningococcal C vaccination program are required to adequately monitor the outcomes of the program and to monitor any effects of the vaccination program on infection with serogroup B.

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**FIGURE 4**

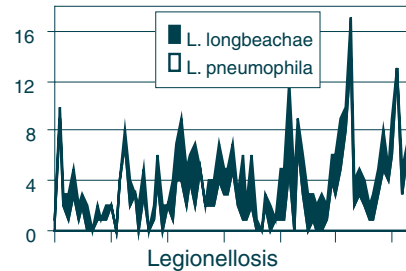
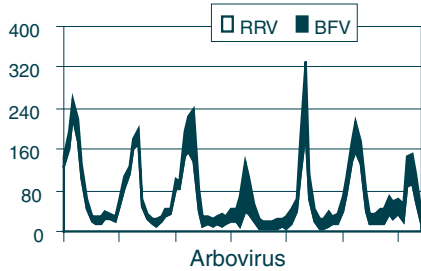
**REPORTS OF SELECTED COMMUNICABLE DISEASES, NSW, JAN 1999 TO JUNE 2005, BY MONTH OF ONSET**

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 from other institutions

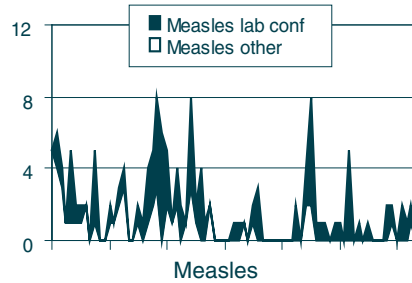
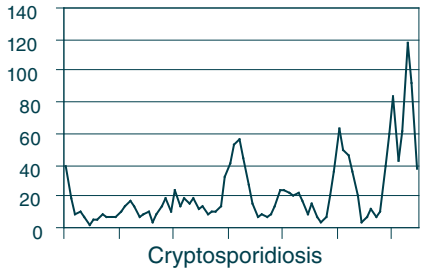
NSW population	
Male	50%
<5	7%
5-24	28%
25-64	52%
65+	13%
Rural*	42%

Apr 05-Jun 05	
Male	50%
<5	1%
5-24	8%
25-64	80%
65+	11%
Rural	96%



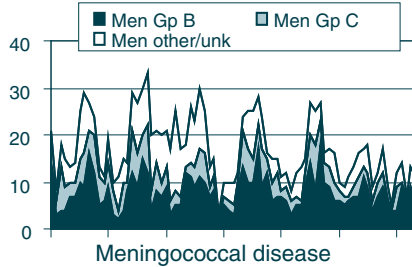
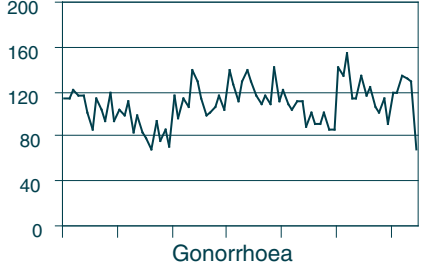
Apr 05-Jun 05	
Male	57%
<5	0%
5-24	0%
25-64	43%
65+	57%
Rural	29%

Apr 05-Jun 05	
Male	52%
<5	50%
5-24	23%
25-64	26%
65+	1%
Rural	20%



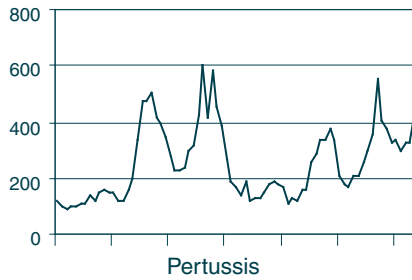
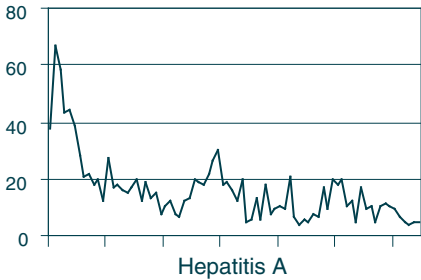
Apr 05-Jun 05	
Male	100%
<5	0%
5-24	50%
25-64	50%
65+	0%
Rural	0%

Apr 05-Jun 05	
Male	88%
<5	0%
5-24	28%
25-64	72%
65+	0%
Rural	18%



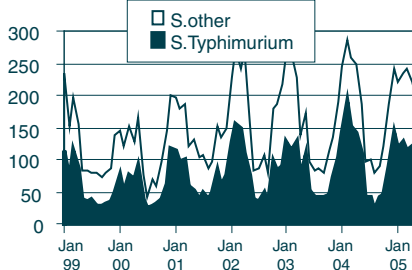
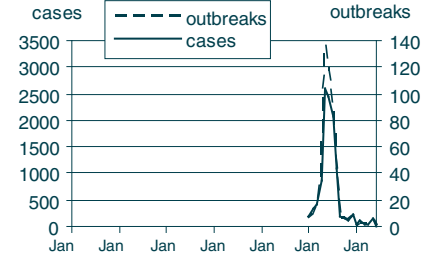
Apr 05-Jun 05	
Male	46%
<5	24%
5-24	46%
25-64	24%
65+	6%
Rural	21%

Apr 05-Jun 05	
Male	71%
<5	7%
5-24	36%
25-64	57%
65+	8%
Rural	14%



Apr 05-Jun 05	
Male	40%
<5	6%
5-24	17%
25-64	68%
65+	9%
Rural	32%

Apr 05-Jun 05	
All outbreaks	8
Nursing homes	4
Hospitals	1
Child care	3
Schools	0
Other	0



Apr 05-Jun 05	
Male	51%
<5	24%
5-24	27%
25-64	41%
65+	8%
Rural	33%

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

Condition	Area Health Service (2005)																	Total for May+	To date+
	Greater Southern		Greater Western		Hunter / New England		North Coast		Northern Syd / Central Coast		South Eastern Syd / Illawarra		Sydney South West		Sydney West		JHS		
	GMA	SA	FWA	MAC	MWA	HUN	NEA	MNC	NRA	CCA	NSA	ILL	SES	CSA	SWS	WEN	WSA	JHS	
<b>Blood-borne and sexually transmitted</b>																			
Chancroid*	-	-	8	14	39	-	31	45	50	37	77	45	114	94	69	-	-	-	-
Chlamydia (genital)*	42	28	-	-	-	93	31	45	2	1	3	6	29	32	7	-	-	-	-
Gonorrhoea*	2	-	-	1	-	3	4	2	2	1	-	-	-	-	-	-	-	-	-
Hepatitis B-acute viral*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hepatitis B-other*	5	5	1	3	1	11	-	4	1	4	32	5	24	49	64	4	52	4	-
Hepatitis C-acute viral*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hepatitis C-other*	15	18	5	4	27	32	7	36	43	36	24	25	43	49	83	10	53	14	-
Hepatitis D-unspecified*	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Syphilis	-	1	3	1	2	4	2	2	4	3	6	4	15	17	18	1	6	1	-
<b>Vector-borne</b>																			
Barmah Forest virus*	3	-	-	-	-	4	1	46	20	-	-	-	-	1	-	1	-	-	-
Ross River virus*	4	2	1	-	-	17	7	37	14	2	-	-	1	-	-	1	-	-	-
Arboviral infection (other)*	1	-	-	-	-	-	-	-	1	-	3	-	-	-	-	-	-	-	-
Malaria*	-	-	-	1	-	1	-	1	-	1	3	-	2	1	-	-	-	-	-
<b>Zoonoses</b>																			
Anthrax*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brucellosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leptospirosis*	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	2
Lyssavirus*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Psittacosis*	-	-	-	-	-	1	1	1	1	-	-	1	1	-	2	5	2	-	-
Q fever*	-	1	1	2	-	-	1	2	4	1	-	-	-	-	1	-	-	-	13
<b>Respiratory and other</b>																			
Blood lead level*	-	-	-	-	2	2	-	1	-	-	1	-	2	3	1	-	-	-	-
Influenza*	-	-	-	-	-	1	-	-	2	2	6	1	30	2	2	-	14	-	-
Invasive pneumococcal infection*	1	1	-	1	-	3	-	3	-	2	5	1	4	2	3	2	3	-	-
Legionella longbeachae infection*	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	2
Legionella pneumophila infection*	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2	1	-	5
Legionnaires' disease (Other)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Leptosy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Meningococcal infection (invasive)*	-	-	-	-	-	1	-	-	-	-	-	-	4	1	2	1	1	-	10
Tuberculosis	-	-	-	-	1	5	-	2	-	-	1	-	4	3	-	2	11	-	25
<b>Vaccine-preventable</b>																			
Adverse event after immunisation**	3	-	-	-	1	-	-	-	-	-	-	-	4	-	-	-	-	-	8
<i>H. influenzae</i> b infection (invasive)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Measles	1	-	-	-	-	-	-	-	1	1	7	-	1	2	-	-	1	-	15
Mumps*	10	7	3	13	2	23	3	20	14	9	52	16	87	48	29	15	63	-	414
Perussis	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Rubella*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
Tetanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
<b>Enteric</b>																			
Botulism	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cholera*	2	3	1	-	-	4	4	2	3	6	23	2	24	5	10	5	11	-	105
Cryptosporidiosis*	5	5	1	9	1	8	4	3	-	4	23	4	1	9	8	2	15	-	102
Giardiasis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Haemolytic uraemic syndrome	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
HepatitisA*	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	1	-	3
HepatitisE*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Listeriosis*	-	-	-	-	-	1	-	-	-	-	-	-	1	-	1	-	1	-	4
Salmonellosis*	3	3	1	4	4	5	5	16	16	4	24	8	29	19	19	9	47	-	217
Shigellosis*	-	1	3	2	-	-	-	-	1	-	1	-	1	-	-	-	-	-	9
Typhoid and paratyphoid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
Verotoxin producing <i>E. coli</i> *	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
<b>Miscellaneous</b>																			
Creutzfeldt-Jacob disease	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Meningococcal conjunctivitis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

\* lab-confirmed cases only + includes cases with unknown postcode \*\* HIV and AIDS data are reported separately in the Public Health Bulletin quarterly  
 \*\* AEFI 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 Public Health Bulletin in 2004.  
 N.B: From 1st Jan 2005, Hunter/New England AHS also comprises Great Lakes, Gloucester & Greater Taree LGAs; Sydney West also comprises Greater Liffgow LGAs

GMA = Greater Murray Area    MAC = Macquarie Area    NEA = New England Area    CCA = Central Coast Area    SES = South Eastern Sydney Area    WEN = Wentworth Area  
 SA = Southern Area    MWA = Mid Western Area    MNC = North Coast Area    NSA = Northern Sydney Area    CSA = Central Sydney Area    WSA = Western Sydney Area  
 FWA = Far West Area    NRA = Northern Rivers Area    ILL = Illawarra Area

**TABLE 3**

**REPORTS OF NOTIFIABLE CONDITIONS RECEIVED IN JUNE 2005 BY AREA HEALTH SERVICES**

Condition	Area Health Service (2005)																	Total for June+	Total To date+	
	Greater Southern GMA	Greater Southern SA	Greater Western FWA	Greater Western MAC	Greater Western MWA	Hunter / New England HUN	Hunter / New England NEA	North Coast MNC	North Coast NRA	Central Coast CCA	Northern Syd / Central Coast NSA	South Eastern Syd / Illawarra ILL	South Eastern Syd / Illawarra SES	Sydney South West CSA	Sydney South West SWS	Sydney West WEN	Sydney West WSA			JHS
<b>Blood-borne and sexually transmitted</b>																				
Chancroid*	40	14	7	13	29	96	19	46	37	42	99	39	170	105	53	21	59	1	908	5720
Chlamydia (genital)*	1	-	-	1	7	7	2	1	2	1	7	2	54	25	7	1	5	-	119	744
Gonorrhoea*	3	2	1	-	3	3	3	4	3	7	50	3	29	57	110	6	36	1	322	1936
Hepatitis B-acute viral*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hepatitis B-other*	12	9	2	9	12	29	14	25	21	29	36	35	56	70	81	22	32	2	499	3208
Hepatitis C-acute viral*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hepatitis C-other*	1	-	1	4	1	4	-	1	2	1	10	1	27	15	23	3	15	-	110	530
Syphilis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Vector-borne</b>																				
Barmah Forest virus*	1	-	-	-	-	1	1	13	12	-	2	1	-	-	-	1	1	-	33	280
Ross River virus*	1	-	2	-	2	7	-	11	5	2	-	-	-	-	1	1	-	-	32	329
Arboviral infection (other)*	-	1	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	5	23
Malaria*	-	1	-	-	-	-	-	-	1	-	1	-	1	-	-	1	4	-	9	148
<b>Zoonoses</b>																				
Anthrax*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brucellosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leptospirosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23
Lyssavirus*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Psittacosis*	3	-	-	-	1	-	-	-	-	-	-	2	-	-	-	2	-	-	8	67
Q fever*	1	1	-	-	2	4	1	-	3	1	1	1	-	1	-	-	-	-	15	69
<b>Respiratory and other</b>																				
Blood lead level*	-	-	-	-	2	2	-	-	-	6	2	-	1	1	7	2	-	-	23	117
Influenza*	1	-	-	1	-	3	1	2	1	6	-	-	13	4	2	-	9	-	43	498
Invasive pneumococcal infection*	5	5	1	1	1	7	1	6	3	7	8	3	5	5	9	7	9	-	83	273
Legionella longbeachae infection*	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	2	9
Legionella pneumophila infection*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	34
Legionnaires' disease (Other)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Leprosy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Meningococcal infection (invasive)*	-	-	-	-	1	-	-	-	-	4	-	-	3	-	-	-	2	-	10	65
Tuberculosis	-	-	-	-	-	3	-	-	-	2	1	-	6	3	-	-	-	-	15	178
<b>Vaccine-preventable</b>																				
Adverse event after immunisation**	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	1	-	4	50
H. influenzae b infection (invasive)*	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	4
Measles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Mumps*	-	-	1	-	-	-	-	-	1	-	2	-	2	-	-	-	2	-	8	65
Pertussis	11	7	-	24	7	42	10	24	18	12	57	22	99	43	65	26	88	-	555	2242
Rubella*	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	8
Tetanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Enteric</b>																				
Botulism	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cholera*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptosporidiosis*	5	-	-	2	1	14	2	-	1	5	30	1	22	14	13	17	21	-	149	475
Giardiasis*	2	3	-	4	4	10	3	4	-	6	29	1	19	9	16	15	32	-	157	791
Haemolytic uraemic syndrome	-	-	-	-	-	-	-	-	-	-	2	-	-	2	1	-	1	-	6	40
HepatitisA*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
HepatitisE*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
Listeriosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
Salmonellosis*	3	3	-	-	-	12	5	1	13	4	16	1	11	11	16	9	22	-	127	1296
Shigellosis*	-	-	-	-	-	-	-	1	-	-	1	1	2	-	-	-	-	-	5	70
Typhoid and paratyphoid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	2	21
Verotoxin producing E. coli*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
<b>Miscellaneous</b>																				
Creutzfeldt-Jacob disease	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	2
Meningococcal conjunctivitis	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	1

\* lab-confirmed cases only + includes cases with unknown postcode \*\* HIV and AIDS data are reported separately in the Public Health Bulletin quarterly  
 \*\* AHS 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 Public Health Bulletin in 2004.  
 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

GMA = Greater Murray Area	MAC = Macquarie Area	NEA = New England Area	CCA = Central Coast Area	SES = South Eastern Sydney Area	WEN = Wentworth Area
SA = Southern Area	MWA = Mid Western Area	MNC = North Coast Area	NSA = Northern Sydney Area	CSA = Central Sydney Area	WSA = Western Sydney Area
FWA = Far West Area	HUN = Hunter Area	NRA = Northern Rivers Area	ILL = Illawarra Area	SWS = South Western Sydney Area	JHS = Justice Health Service