

**STRATEGY FOR  
POPULATION HEALTH  
SURVEILLANCE  
IN NEW SOUTH WALES**

**Discussion Paper**

**DECEMBER 1997**

**NSW  HEALTH**

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*State Health Publication No:* (ESB) 970147  
*ISBN:* 0 7313 0698 8

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## **1. Purpose of this paper**

This discussion paper introduces the NSW Health Department's first comprehensive Strategy for Population Health Surveillance in NSW. It describes the context for population health surveillance in NSW and its current status. Further, it outlines priorities for improving population health surveillance in NSW, identifies areas where development is required, and sets out some recommended next steps. Initially, this paper was the result of consultation within the Public Health Division. It was then circulated for comment to interested individuals and groups throughout NSW and revised accordingly (see list at Appendix 2).

Anyone seeking further discussion of this document should contact Dr Louisa Jorm, Epidemiology and Surveillance Branch, on 02 9391 - 9221 (facsimile 02 9391 - 9232, Email [ljorm@doh.health.nsw.gov.au](mailto:ljorm@doh.health.nsw.gov.au)).

## 2. Summary and recommendations

Population health surveillance is the ongoing systematic collection, assembly, analysis, and interpretation of population health data, and the communication of the information derived from these data, to stimulate response to emerging health problems, and for use in the planning, implementation, and evaluation of health services and programs.

Ensuring better health for the people of NSW, enabling equity of access to a comprehensive range of services and improving the quality of service are the three principal goals of the NSW Health Department. Population health surveillance is a key element of the Department's role in monitoring and evaluating our progress towards these goals.

The NSW Health Department's strategy for population health surveillance concentrates on population health status and risks to health. This paper describes the context for population health surveillance in NSW and its current status. Surveillance gaps and deficiencies in data sets currently used for surveillance are identified, and ways in which surveillance needs might be prioritised are discussed. It explores our requirement to develop capacity to respond to emerging issues, and our needs to develop surveillance methods, improve the dissemination of surveillance information, and evaluate surveillance efforts.

The document makes the following recommendations:

**1. The following overall objective for population health surveillance in NSW should be adopted:**

*To ensure that we have appropriate, timely and valid population health information to monitor health status and respond to health problems and to support planning, implementation and evaluation of health services and programs in NSW.*

- 2. The Epidemiology and Surveillance Branch should coordinate the development of surveillance objectives for each of the key surveillance areas shown in Table 2.**
- 3. Initial priority should be given to addressing the information gaps listed in Table 2 that relate to National and State health improvement priority areas.**
- 4. The Epidemiology and Surveillance Branch should review objective methods for assessing future surveillance priorities, including use of aetiologic fractions to quantify the burden associated with health risk factors.**
- 5. The NSW Health Department should support the development and implementation of the Coronial Information System in NSW and should negotiate on-line access to this data for surveillance purposes. In the interim, development of the New Children's Hospital Department of Surgical Research's injury death monitoring system for this purpose should be investigated.**

6. **The Epidemiology and Surveillance Branch should review the use of sentinel events and networks of sentinel providers for surveillance of unexpected trends in severe illness, as part of the current Acute Care Surveillance Project.**
7. **Public Health Training and Development Branch should consider workforce needs to support population health surveillance including planning the evolution of the Public Health Officer training program.**
8. **The Epidemiology and Surveillance Branch and the Public Health Network should jointly develop a research program to address the priorities for surveillance methods listed in Table 5.**
9. **The Epidemiology and Surveillance Branch and other stakeholders should regularly evaluate the utility of the *NSW Public Health Bulletin* and *Report of the Chief Health Officer* and other information networks for delivery of population health surveillance information, by survey of their users.**
10. **The Centre for Research and Development should establish dialogue with editors of relevant peer-reviewed journals about conditions for publication of reports of surveillance information which do not prevent timely dissemination through other mechanisms.**
11. **The Epidemiology and Surveillance Branch should continue to consolidate and develop the Health Outcomes Information Statistical Toolkit (HOIST) system, with particular emphasis on tools for automated reporting and user “front ends” to simplify analysis. HOIST development and modifications should take into account feedback from regular evaluations and consultation with HOIST users and potential users.**
12. **The Epidemiology and Surveillance Branch should review the training needs of HOIST users, and arrange formal training sessions, coordinated through the Public Health Network’s Research and Epidemiology Special Interest Group.**
13. **The Epidemiology and Surveillance Branch should review the strategy for population health surveillance in NSW every three years.**
14. **The Epidemiology and Surveillance Branch should coordinate regular evaluation of those surveillance systems listed in Appendix 1 for which the Public Health Division is responsible. It should also provide feedback and recommendations on issues concerning other surveillance systems outside the Public Health Division.**

### 3. Introduction

Health policy makers, health service providers and consumers need access to timely, high quality information about population health to plan, implement and evaluate health services and make decisions. They need data about:

- ▶ the health status of the population; and
- ▶ potential risks to health, including biological, environmental and behavioural risks.

**Population health surveillance** is the mechanism that provides this essential information.

#### 3.1 Definition

The definition of population health surveillance used here (adapted from<sup>1</sup>) is:

*The ongoing systematic collection, assembly, analysis, and interpretation of population health data, and the communication of the information derived from these data, to stimulate response to emerging health problems, and for use in the planning, implementation, and evaluation of health services and programs*

#### 3.2 Scope

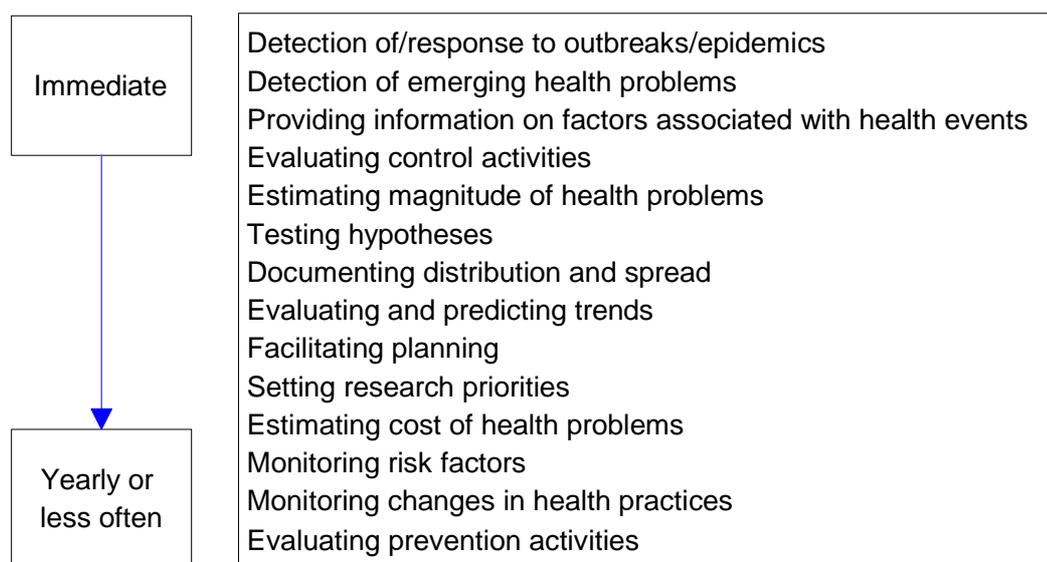
The potential domain of *health* surveillance is vast (Table 1). The NSW Health Department's strategy for population health surveillance concentrates on population health status and risks to health. It does not encompass monitoring of population structure, which is the province of other agencies, such as the Australian Bureau of Statistics (ABS). It does, however, cover monitoring of the *outcomes* of health systems, as reflected in changes in population health. In addition, population health surveillance frequently uses data collected by health systems (such as hospital morbidity data), as a proxy measure of disease incidence.

Traditionally, population health surveillance has concentrated mainly on health losses (disease and death), and within this, on acute information needs, such as immediate detection of infectious disease outbreaks. In line with the new public health priorities, it now also encompasses positive aspects of health and health risks relevant to acute problems (infectious diseases, injury and environmental hazards) as well as chronic diseases. The recent report, *Contemporary and emerging issues in public health and their implications for policy*<sup>2</sup>, describes this evolution. Therefore, the time frame for many uses of population health surveillance data is less urgent, requiring review and reporting yearly or even less frequently (Figure 1). This is particularly true for information relating to chronic diseases and risk factors for these diseases. Here we consider population health surveillance spanning the full range of uses shown in Figure 1.

**Table 1: Potential domain of health surveillance (modified from<sup>3</sup>).**

Population health surveillance			
Population structure/dynamics	Health status	Risks to health	Health systems
<b>A. Size and growth</b> 1. Fertility and mortality 2. "Momentum" of population growth  <b>B. Structure</b> 1. Sex ratio 2. Population aging 3. Ethnicity  <b>C. Spatial distribution and mobility</b> 1. Urbanization 2. Migration  <b>D. Family structure</b>	<b>A. Positive health</b> 1. Quality of life/well being 2. Growth and development 3. Non-morbid processes (eg. pregnancy, aging)  <b>B. Health losses</b> 1. Disease 2. Impairment, disability and handicap 3. Death  <b>C. Equity of health status</b>	<b>A. Biological</b> 1. Genetic 2. Physiological 3. Infectious agents  <b>B. Environmental</b> 1. Physical environment 2. Social and economic environment  <b>C. Behavioural</b> 1. Risk behaviours 2. Knowledge, attitudes, beliefs, skills	<b>A. Health services</b> 1. Accessibility 2. Utilisation 3. Quality 4. Efficiency 5. Equity of access  <b>B. Health care resources</b> 1. Human 2. Technological 3. Financial  <b>C. Health policies</b> including policies in other government departments (eg RTA, Department of School Education)

**Figure 1: Time frame for uses of population health surveillance data (adapted from<sup>4</sup>)**



## **4. Population health surveillance in NSW**

### **4.1 Context**

Ensuring better health for the people of NSW, enabling equity of access to a comprehensive range of services and improving the quality of service are the three principal goals of the NSW Health Department. Population health surveillance is a key element of the Department's role in monitoring and evaluating our progress towards these goals.

Several recent developments have created new demands for information about population health in NSW.

First, local Area Health Services in NSW are increasingly focussing attention on population health as they assume responsibility for the health of geographically defined populations, rather than the provision of services in their locality. The distribution of funds to Areas is moving towards a population-based, rather than activity-based model. Performance agreements with the NSW Health Department define obligations in health improvement and make Area health improvement strategies explicit. Therefore monitoring will have to include performance agreement indicators<sup>5</sup> and HOPIS (Health Outcome Performance Indicators)<sup>6</sup>.

As a result of these developments, surveillance information is increasingly required at the Area Health Service as well as Statewide level.

Second, the move towards a population-centred, rather than service-centred, approach is likely to enhance local commitment to prevention. Interventions that target population risk have the potential to prevent about 70 per cent of early deaths, while only 10 per cent can be prevented by treatment of disease<sup>7</sup>. Population-level measures of risk and health status are needed to evaluate our prevention efforts.

Third, we have a pressing need to measure progress in national health improvement priority areas (coronary heart disease, cancer, injury, mental health and diabetes)<sup>8</sup> and the additional NSW priority area of asthma. Contractual obligations for health improvement specified in the first round of Area Health Service performance agreements centre around these priority areas.

These new information requirements fall largely outside the traditional scope of population health surveillance, with its emphasis on acute health problems, particularly communicable diseases. While we need to maintain and strengthen these traditional areas of surveillance, we must now ensure that we also have comprehensive systems to cope with the new demands.

### **4.2 Current situation**

There are currently no specific objectives for population health surveillance in NSW. It relies on many data collections planned and conducted independently and generally not aggregated or presented together. Findings have been disseminated through the *NSW Public Health Bulletin* and its supplements, special reports in peer-reviewed journals and a range of Departmental reports. Only a few surveillance reports have appeared regularly, most notably reports of infectious diseases notifications in the *NSW Public Health Bulletin* and the annual *Report of the NSW Midwives Data Collection*.

The major *Report of the Chief Health Officer on the Health of the People of NSW*<sup>9</sup> was the first attempt to bring together surveillance data from a range of sources to give a global depiction of the health status of the people of NSW. Two earlier reports described health indicators drawn from a limited range of sources<sup>10</sup>.

The tables in Appendix 1 summarise the data sources currently used by NSW Health for surveillance of health status and risks to health. A number of surveillance **gaps** (ie areas with no current monitoring) are listed in Table 2. Table 3 lists additional **inadequacies** in the current surveillance data sets.

The key surveillance areas (KSA) used to construct Tables 2 and 3 were defined in accordance with the new and traditional information requirements described above (section 4.1) and also align with the work areas defined by the current structure of the Public Health Division of the NSW Health Department.

**Table 2: Important gaps in population health surveillance in NSW**

<b>Key Surveillance Area</b>	<b>Information Gap</b>
<b>General health status/quality of life</b>	Quality of life Self-assessed health status (eg SF-36) Prevalence of impairments, disabilities and handicaps Prevalence of musculoskeletal conditions Prevalence of chronic pain Kidney disease: incidence/prevalence Liver disease: incidence/prevalence Eye diseases: incidence/prevalence
<b>Cardiovascular disease</b>	Risk factors, including physiological measures (height, weight, blood pressure, plasma cholesterol) Cardiac arrest and cardiac chest pain presentations to Emergency Departments & General Practitioners
<b>Cancer</b>	Prevalence of cancers Projected cancer incidence and mortality at Area Health Service Level Colorectal and prostate cancer screening rates Quality of Life and pain assessment
<b>Mental health</b>	Timely data on incidence of suicide and attempted suicide Risk factors for child and adolescent mental illness, including very early risk factors for 0-4 year olds Data on the children of mentally ill patients Health impact of unresolved psychosocial and developmental problems in childhood Incidence of mental illness-related presentations to Emergency Departments and General Practitioners Prevalence of schizophrenia, depression, anxiety disorders <sup>11</sup>
<b>Injury</b>	Incidence and severity of injury presentations to Emergency Departments and General Practitioners Causes of injuries (eg product-related injuries) Injury: incidence/prevalence of paediatric trauma including child abuse
<b>Diabetes</b>	Incidence of diabetes Prevalence of diabetes Prevalence of undiagnosed diabetes (physiological measures needed) Incidence of blindness caused by diabetes Incidence of diabetes complications: eg diabetic retinopathy, neuropathy, foot problems, renal problems, ischaemic heart disease and other manifestations of macrovascular disease
<b>Asthma</b>	Incidence of asthma (or prevalence in children aged 5-7 years, as a proxy measure) Prevalence of asthma Incidence of severe asthma; incidence of asthma complications Incidence of presentations to Emergency Departments and General Practitioners for exacerbations or review of asthma
<b>Physical activity</b>	Prevalence of participation in sports
<b>Tobacco</b>	Passive smoking exposure in households containing infants/toddlers Attitudes (shopkeepers and community) to sales of cigarettes to minors

<b>Key Surveillance Area</b>	<b>Information Gap</b>
<b>Alcohol</b>	Prevalence of binge drinking Prevalence and Incidence of alcohol-related problems
<b>Illicit drugs</b>	Timely data on heroin fatal and non-fatal overdoses (deaths, ambulance calls, Emergency Department presentations) Prevalence of illicit drug use Prevalence of stimulant and polydrug use
<b>Pharmaceuticals</b>	Prevalence of prescription drug abuse
<b>Dental health</b>	Dental health status of adults and children who do not use public dental services (although SOKS should soon fill the child gap)
<b>Food health and Nutrition</b>	Breast feeding (3, 6 months) Growth and weight status of children Folate supplementation for women planning a baby Fat intake Intake of core food groups Meal patterns and dietary change patterns Regular surveys of food safety Incidence of food-borne illness Incidence of <i>Listeria</i> -related abortions
<b>AIDS and infectious diseases</b>	Immunisation status of adults Incidence of sexually-transmitted diseases (outside notifiable conditions) Incidence of and risk factors for hepatitis B, C, HIV Population data on safe sex behaviour
<b>Environmental health<sup>12</sup></b>	Public perceptions of amenity (how bad is the environment?) Waterborne illnesses related to the drinking of water Prevalence of elevated lead levels in children
<b>Health services use</b>	Indicators of delivery, use and quality - including patient satisfaction - of clinical health services - including outpatient services and community health
<b>Social Health-Equity</b>	Measures of socioeconomic status at the individual level Utilisation of and access to health services (eg preventive services, radiotherapy, oncology, palliative care) Measures of social health (eg family dysfunctioning, family violence, child abuse and sexual assault) Health differentials in the various KSAs (see above) for the following population subgroups: <ul style="list-style-type: none"> <li>- Aboriginal and Torres Strait Islander peoples<sup>13</sup></li> <li>- Specific non-English speaking background (NESB) groups</li> <li>- Low socioeconomic status groups</li> <li>- People with disabilities</li> <li>- Pregnant women</li> <li>- Youth/children<sup>14</sup> (especially pre-school age)</li> <li>- Older people</li> <li>- Homeless people</li> </ul>

**Table 3: Inadequacies in the main data sets used for population health surveillance in NSW**

<b>Dataset</b>	<b>Inadequacies</b>
<b>NSW Inpatients Statistics Collection (ISC)</b>	<p>Inadequate recording of Aboriginality and ethnicity</p> <p>Data quality including coding errors, ambiguities in determining principal diagnosis (eg. diabetes)</p> <p>Problems with addresses and correctly allocating cases to an Area Health Service</p> <p>Problems with the current E-codes which include (i) inadequate clarification between mechanism of the injury and intent (only partially remedied by ICD-10 codes), (ii) doubtful accuracy of coding at the fourth digit (iii) changes in coding over time</p> <p>Poor quality / Incompleteness of the recording of the Ambulance Service Client Number</p> <p>Poisoning codes inadequate for identification of specific substances (eg illicit drugs)</p>
<b>Australian Bureau of Statistics (ABS) Mortality Data</b>	<p>Need information on direct cause and the contributing causes of death (planned from 1995)</p> <p>Inadequate recording of Aboriginality (estimated to be only 40-60% complete<sup>15</sup>)</p> <p>Language spoken at home is not recorded</p> <p>Usual occupation before retirement should be recorded (most deaths occur in people over the age of 65 years; thus, the occupation recorded at the time of death for people of old age is usually pensioner which makes the information less useful)</p> <p>Recording of occupation for females is poor, especially in country areas.</p> <p>Inadequate identification of intent in injuries with E-codes (only partially remedied by ICD-10 codes): eg for motor vehicle related injuries -suicidal versus non-intentional -</p> <p>Poisoning codes inadequate for identification of specific substances (eg illicit drugs)</p> <p>Under-reporting and misclassification of diabetes</p>
<b>Emergency Department Data Collection (EDDC - formerly EDIS)</b>	<p>Inadequate recording of secondary and subsequent diagnoses</p> <p>Injury surveillance information collected by about half of the participating state hospitals emergency departments; lack of state level reporting</p> <p>Poor quality / Incompleteness of the recording of the Ambulance Service Client Number</p>
<b>NSW Central Cancer Registry</b>	<p>Inadequate recording of Aboriginality and ethnicity</p> <p>Inadequate recording of degree of spread/staging</p> <p>Recording of occupation</p> <p>Improve timeliness of data for surveillance purposes (eg Cancer Registry Data not helpful when investigating recent possible cancer clusters)</p> <p>Recording of occupation: include recording of occupation as current, 2 years ago, 5 years ago and 10 years ago.</p> <p>Language spoken at home is not recorded</p>

<b>Dataset</b>	<b>Inadequacies</b>
<b>Midwives data collection (MDC)</b>	Inadequate recording of mother's Aboriginality New form from January 1998 is more consistent with national minimum data set, including RACOG clinical indicators but still with no father demographic details (eg re Aboriginality) and no parental occupation details (could be obtained through linkage with ABS Births Registry)
<b>NSW Birth Defects Register (BDR)</b>	Birth defect cases underenumerated, particularly those resulting in terminations of pregnancy Need information on parental occupation
<b>Notifiable Diseases Database (NDD - formerly IDSS)</b>	Inadequate recording of Aboriginality and ethnicity Notification of foodborne illness not sufficiently timely
<b>HIV/AIDS Registers</b>	Aboriginality and ethnicity not recorded Incomplete reporting

## 4.3 Priorities

### 4.3.1 Content

Prioritising surveillance needs is difficult in the absence of any explicit objectives. A proposed objective for population health surveillance in NSW is shown in the box below.

*Objective: To ensure that we have appropriate, timely and valid population health information to monitor health status and respond to health problems and to support planning, implementation, and evaluation of health services and programs in NSW*

Given the above objective, national health improvement priority areas (coronary heart disease, cancer, injury, mental health and diabetes) and the additional NSW priority area of asthma are clearly priority areas also for population health surveillance.

It is hard to further prioritise the surveillance gaps listed in Table 2 in the absence of specific objectives for surveillance in each of the key areas. Such objectives should recognise that surveillance data needed for planning purposes may differ from those required for evaluation. Planning typically requires measures of population need, while evaluation requires indicators sensitive to the effects of the service or program in question. Surveillance objectives should be consistent with those developed at national level, where applicable (eg. for cardiovascular disease<sup>16</sup> and health promotion<sup>17</sup>). The NSW Food and Nutrition Monitoring project<sup>18</sup> is currently developing objectives for surveillance of nutritional status in NSW. These could provide a useful model for other key surveillance areas. A framework is also currently being developed by Public Health Division for surveillance of illicit drug use and harms in NSW.

Criteria for prioritising surveillance needs have been suggested (Table 4). However these focus on health conditions, rather than health risk factors, which can of course be associated with a range of adverse health events. Algorithms based on aetiological fractions such as those used in SAMMEC (Smoking-Attributable Mortality, Morbidity And Economic Costs)<sup>19</sup> and DIAS (Disease Impact Assessment System)<sup>20</sup> software can be used to quantify the *burden* (a composite of morbidity, mortality and costs) associated with both health conditions and risk factors. These methods are not yet sufficiently developed to allow comparisons to be made across the full spectrum of health conditions and risk factors, nor have they been extensively applied in Australia to date.

The gaps in population surveillance identified in Table 2 as well as the inadequacies in datasets currently used for surveillance listed in Table 3 could be addressed in a range of ways. The relationships between the organisational units involved in collecting and processing these data are complex. Joint processes, involving the various stakeholders, are needed to establish priorities and methods consistent with the needs and resources of each group, as outlined in a recent draft document by the National Public Health Partnership Working Group<sup>21</sup>.

**Table 4: Criteria for identifying high priority health conditions for surveillance (adapted from<sup>22,23</sup>)**

Criterion	Measure
<b>Burden</b>	Incidence Prevalence Mortality Years of potential life lost Case-fatality ratio Hospitalisation rate Average length of stay Disability rate Doctor/provider visits Years of healthy life <sup>24</sup> lost Self-assessed health status Direct Indirect
<b>Preventability</b>	Prevented fraction Years of potential life saved
<b>Communicability</b>	Potential for outbreaks
<b>Public interest</b>	Public perception of risk Public dread
<b>Legislative requirements</b>	Areas under legislation (eg Public Health Act; tobacco sales to minors; swimming pool legislation; passive smoking in public places; sun protection policies and practices in Local Government Areas, schools, workplaces; injury hazards; recreational and drinking water quality; food safety and nutritional value)

## Recommendations

- 1. The following overall objective for population health surveillance in NSW should be adopted:**

*To ensure that we have appropriate, timely and valid population health information to monitor health status and respond to health problems and to support planning, implementation and evaluation of health services and programs in NSW.*

- 2. The Epidemiology and Surveillance Branch should coordinate the development of surveillance objectives for each of the key surveillance areas shown in Table 2.**
- 3. Initial priority should be given to addressing the information gaps listed in Table 2 that relate to National and State health improvement priority areas.**
- 4. The Epidemiology and Surveillance Branch should review objective methods for assessing future surveillance priorities, including use of aetiologic fractions to quantify the burden associated with health risk factors.**

### 4.3.2 Increasing surveillance capacity

Though it is important to define priorities for population health surveillance, we must retain flexibility and capacity to detect and address emerging and unexpected issues. Surveillance systems must be sensitive to acute events, as even chronic processes may change surprisingly quickly (an example is the recent rapid rise in reports of prostate cancer).

Of particular concern is our ability to quickly detect and evaluate unexpected trends in deaths and serious illness that may be amenable to control and prevention (for example, drug-related deaths and injuries relating to specific products). At present this capacity is severely limited, as we rely on death data that are at least 12 months old and hospital data that are only slightly more timely. Data collected by the Emergency Department Data Collection (EDDC - formerly EDIS) are not sufficiently timely or complete. Fortnightly “dumps” of death data from the Registry of Births, Deaths and Marriages are not useful for this purpose because cause of death is not coded, and can only be examined using free text searches for conditions typified by specific words.

Many of the deaths of concern are referred to the Coroner for investigation, including more than 95 per cent of deaths due to motor vehicle traffic accidents, suicide, homicide, accidental poisoning, drowning, drug dependence and sudden infant death syndrome<sup>25</sup>. Timely access to Coronial data would thus be very valuable for surveillance purposes. This information is not yet readily accessible, due to delays in developing a Coronial electronic information system. A system developed by the New Children’s Hospital Department of Surgical Research to monitor paediatric injury deaths, using police reports, is a possible interim solution, as this has now been extended to include injury deaths among all age groups.

For surveillance of unexpected trends in severe illness, one option is to investigate further the use of sentinel events and networks of sentinel providers. The Centre for Research and Development is commencing an Acute Care Surveillance Project, which will consider these issues and develop a plan for enhancing the collection of surveillance data in emergency departments.

The recent establishment of the NSW Health Survey Program, which will use a computer-assisted telephone interview (CATI) system to conduct yearly population telephone surveys, represents an important enhancement to our surveillance capacity. Not only will it provide regular data on many of the key surveillance areas listed in Table 2, but it will allow rapid incorporation of new question modules to address emerging issues.

Linkage of records in unrelated datasets such as hospital morbidity and death data using probabilistic methods offers another way to increase surveillance capacity. The Centre for Research and Development staff have developed expertise in these methods, and their use to “add value” to existing datasets should be considered as an alternative to adding variables to routine administrative collections. The NSW Health Department’s *Information Privacy Code of Practice*<sup>26</sup> sets out procedures for approval of linkage projects which ensure that the privacy of individually-identifiable health information is protected.

A further issue for surveillance capacity is the need to ensure that the Public Health Network has sufficient personnel with skills in epidemiology and surveillance, and that surveillance systems are sustainable and not entirely dependent upon a few key individuals. The NSW Public Health Officer Training Program provides a potential mechanism for population health surveillance workforce development.

**Recommendations:**

- 5. The NSW Health Department should support the development and implementation of the Coronial Information System in NSW and should negotiate on-line access to this data for surveillance purposes. In the interim, development of the New Children's Hospital Department of Surgical Research's injury death monitoring system for this purpose should be investigated.**
- 6. The Epidemiology and Surveillance Branch should review the use of sentinel events and networks of sentinel providers for surveillance of unexpected trends in severe illness, as part of the current Acute Care Surveillance Project.**
- 7. Public Health Training and Development Branch should consider workforce needs to support population health surveillance including planning the evolution of the Public Health Officer training program.**

### 4.3.3 Data analysis and interpretation

With improvements in information systems and increasing quantities of data available for surveillance purposes comes an imperative to ensure that we have appropriate methods for its analysis and interpretation.

Particular priorities for surveillance methods identified by staff of Public Health Division are shown in Table 5.

**Table 5: Priorities for development of population health surveillance methods in NSW, as described by Public Health Division staff**

Methodologic areas
Definition and measurement of disease burden (eg DALYS)
Assessment of the accuracy, completeness and timeliness of surveillance data
Analysis of incomplete or missing data (eg. imputation methods)
Evaluation of spatial-temporal clusters (eg. scan statistic <sup>27</sup> )
Evaluation and prediction of trends (eg. time series modelling, projections)
Evaluation of small-area data (eg. use of empirical Bayesian approaches <sup>28</sup> )
Refinement of techniques to detect systematic variation in rates and other measures
Graphical display of surveillance data, including mapping
Maximise the use of record linkage techniques

### Recommendation

- 8. The Epidemiology and Surveillance Branch and the Public Health Network should jointly develop a research program to address the priorities for surveillance methods listed in Table 5.**

#### 4.3.4 Getting the information out

Communication of the information derived from surveillance data, for use in the planning, implementation, and evaluation of health services and programs, is an essential part of population health surveillance. Ensuring that this is done effectively requires a knowledge of the target audience, and their needs and expectations. It is important to get surveillance information to the interested parties in a timely and regular manner.

The *NSW Public Health Bulletin* and the *Report of the Chief Health Officer* are likely to continue as key mechanisms for delivery of population health surveillance information. An evaluation of the first Chief Health Officer's Report is underway. User comments to date suggest that future editions should adopt a more standardised approach, include more trend data and include comparisons with national data published as part of the *Population Health Indicators Project*<sup>29</sup> and in the *Australia's Health*<sup>30</sup> series of reports. Ongoing-regular evaluations of both publications by survey of their users will be supervised by the Public Health Division.

Reports in peer-reviewed journals are also an important means of delivering surveillance information. Publication in these journals helps to ensure that it reaches a wide audience. The peer-review process also assists in maintaining appropriate scientific standards. The long delays in publication of articles by peer-reviewed journals, however, can be a barrier to timely dissemination of surveillance information, as many journals will not publish material that has appeared elsewhere.

Developments in information technology will offer new possibilities for information delivery. Both the *NSW Public Health Bulletin* and the *Report of the Chief Health Officer* are already available in electronic form via the World Wide Web (WWW). The main limitation of the WWW as a public distribution media is the lack of widespread access by many sectors of society. This situation is likely to change over the next few years with a dramatic increase in the number of public access Internet facilities (in public libraries, schools, government offices and public areas). There is also likely to be a convergence of cable television and Internet access services which will enable WWW access through televisions sets without the need for a personal computer. These developments will have major implications for the delivery of public health and health promotion information. Although there are no published data relating specifically to public health and health planning and policy professionals, anecdotal evidence suggests that a large proportion of these groups already have Internet access or are planning to acquire it in the near future.

Over the last several years, Epidemiology and Surveillance Branch has developed the Health Outcomes Information Statistical Toolkit (HOIST) system, a population health data warehouse and analysis facility. Many routine analytic and reporting functions, including many of the tasks required to produce the biennale *Report of the Chief Health Officer*, can be partially or completely automated using this facility. When combined with electronic methods of information delivery such as the WWW, the HOIST system allows new reporting paradigms to be adopted. For example, because the marginal cost of producing and providing access to electronic "pages" is very small, it becomes possible to construct reports which go into far greater detail than is possible with traditional typeset and printed documents. It is also possible to provide menu-driven facilities which allow reports to be generated on an ad hoc basis by people who may not have any expertise in data analysis or manipulation. We are currently trialling two prototype menu-driven "front ends" for analysis of injury surveillance data and for reporting on the Midwives Data Collection. The existence of these facilities creates a new challenge of how best

to assist users in the correct interpretation of results, a task which cannot so easily be delegated to a computer programme. Further HOIST development and modifications should take into account feedback from regular evaluations (eg user survey) and from consultation with HOIST users and potential users.

Users of surveillance data will need to acquire new skills to make use of these innovations in information delivery. This needs to be considered in curriculum development for the PHO training program and other public health training programs. In the case of HOIST, much can be achieved by providing detailed on-line documentation, but provision of formal training for new users is also required. This is one of the objectives of the newly created Public Health Network's Research and Epidemiology Special Interest Group.

### **Recommendations:**

- 9. The Epidemiology and Surveillance Branch and other stakeholders should regularly evaluate the utility of the *NSW Public Health Bulletin* and *Report of the Chief Health Officer* and other information networks for delivery of population health surveillance information, by survey of their users.**
- 10. The Centre for Research and Development should commence dialogue with editors of relevant peer-reviewed journals to establish conditions for publication of reports of surveillance information which do not prevent timely dissemination through other mechanisms.**
- 11. The Epidemiology and Surveillance Branch should continue to consolidate and develop the Health Outcomes Information Statistical Toolkit (HOIST) system, with particular emphasis on tools for automated reporting and user "front ends" to simplify analysis. HOIST development and modifications should take into account feedback from regular evaluations and consultation with HOIST users and potential users.**
- 12. The Epidemiology and Surveillance Branch should review the training needs of HOIST users, and arrange formal training sessions, coordinated through the Public Health Network's Research and Epidemiology Special Interest Group.**

#### **4.3.5 Evaluation**

Given the rate of change within the NSW health system, and in information technology, population health surveillance in NSW will require regular reassessment of objectives and methods. Specific surveillance systems will require formal evaluation to assess data relevancy, coverage, quality, acceptability, timeliness, accessibility and usability<sup>31</sup>. Guidelines for the evaluation of surveillance systems have been published, and these could form the basis for such evaluation<sup>23</sup>.

#### **Recommendations:**

- 13. The Epidemiology and Surveillance Branch should review the strategy for population health surveillance in NSW every three years.**
- 14. The Epidemiology and Surveillance Branch should coordinate regular evaluation of those surveillance systems listed in Appendix 1 for which the Public Health Division is responsible. It should also provide feedback and recommendations on issues concerning other surveillance systems outside Public Health Division.**

## 5. References

1. Thacker SB, Berkelman RL. Public health surveillance in the United States. *Epidemiol Rev* 1988;10:164-90.
2. Hall J, Haas M, Leeder S. Contemporary and emerging issues in public health and their implications for policy. Centre for Health Economics Research and Evaluation and Department of Public Health and Community Medicine, University of Sydney. Report commissioned by the Commonwealth Department of Health and Family Services, January 1997.
3. Sepúlveda J, López-Cervantes M, Frenk J, Gómez de León J, Lezana-Fernández MA and Santos-Burgoa C. Key Issues in public health surveillance for the 1990s. *MMWR* 1992; 41 Suppl: 61-76.
4. Thacker SB, Stroup DF. Future directions for comprehensive public health surveillance and health information systems in the United States. *Am J Epidemiol* 1994;140:383-397.
5. Performance Agreement between Director General of NSW Health Department and Area Health Service. Performance Management Division, NSW Health, July 1997.
6. Health Outcome Performance Indicators (HOPIs): Monitoring Health Improvement. Health Improvement Branch, May 1997.
7. McGinnis JM, Foege WH. Actual causes of death in the United States. *JAMA* 1993;270:2207-2212.
8. Better Health Outcomes for Australians. National Goals, Targets and Strategies for Better Health Outcomes into the Next Century, CDH &FS, Canberra, AGPS, 1994.
9. Public Health Division. The Health of the People of NSW - Report of the Chief Health Officer. Sydney: NSW Health Department, 1996.
10. Health Indicators for NSW. NSW Public Health Supplements; no. 3, October 1992 and no. 2, April 1994.
11. Goals and Targets: Applications for the Greater Murray Area Health Service. South West Centre for Public Health, 1996. (Mental Health section, pages 26-27)
12. Services Plan. Public Health Unit, Hunter Area Health Service, June 1996. (Chapter 5 - Environment and Health).
13. Aboriginal and Torres Strait Islander Health Information. This time, let's make it happen. Aboriginal and Torres Strait Islander Health and Welfare Information Unit, ABS and AIHW, October 1997
14. Alperstein G, Thomson J, Crawford J. Health Gain for Children and Youth of Central Sydney, Strategic Plan, Health Services Planning Unit and Division of Population Health, CSAHS, November 1996. (Chapter 6. Baseline data needs for health issues)

15. Anderson P, Bhatia K, Cunningham J. Mortality of Indigenous Australians 1994. Canberra: Aboriginal and Torres Strait Islander Health and Welfare Information Program, Australian Bureau of Statistics and Australian Institute of Health and Welfare, 1996. ABS Cat. No. 3315.0. AIHW Cat. No. IHW1.
16. Bennett S, Dobson A, Magnus P. Outline of a national monitoring system for cardiovascular disease. Canberra: Australian Institute of Health and Welfare, 1995 (Cardiovascular Disease Series; no. 4).
17. NHMRC Health Advancement Standing Committee. Health Australia - Promoting Health in Australia (discussion paper). Canberra: Department of Human Services and Health, 1995.
18. Stickney B, Webb K, Flood V, Hewitt M. The NSW Food and Nutrition Monitoring Plan, Department of Public Health and Community Medicine, University of Sydney and NSW Health, 1997.
19. Cigarette smoking attributable mortality and years of potential life lost - United States 1990. Morbidity and Mortality Weekly Reports 1993;42:645-649.
20. Sainfort F, Remington PL. The Disease Impact Assessment System (DIAS). Public Health Reports 1995;110:639-644.
21. A Planning and Practice Framework for Public Health. Draft, National Public Health Partnership Working Group, September 1997.
22. Teutsch SM. Considerations in planning a surveillance system. In Teutsch SM, Churchill RE (eds) Principles and Practice of Public Health Surveillance. New York: Oxford University Press, 1994, pp 18-28.
23. Klaucke DN. Evaluating Public Health Surveillance. In Teutsch SM, Churchill RE (eds) Principles and Practice of Public Health Surveillance. New York: Oxford University Press, 1994, pp 158-174.
24. Erickson P, Wilson R, Shannon I. Years of healthy life. Statistical Note Number 7, Centres for Disease Control, National Centre for Health Statistics, April 1995.
25. Stewart G. Coronial surveillance system: provisional estimates of utility (internal report). Evaluation and Epidemiology Section, Centre for Mental Health, NSW Health Department, 1996.
26. Privacy of Information Committee. Information Privacy Code Of Practice. Sydney: NSW Health Department, 1996 (Health Department Circular CPR 96/34).
27. Stroup DF, Wharton M, Kafadar K, Dean AG. Evaluation of a method for detecting aberrations in public health surveillance data. Am J Epidemiol 1993;137:373-380.
28. Stroup DF. Special analytic issues. In Teutsch SM, Churchill RE (eds) Principles and Practice of Public Health Surveillance. New York: Oxford University Press, 1994, pp 136-49.

29. Population Health Indicators Unit. Report on a review of the Population Health Indicators Project. Canberra: Australian Institute of Health and Welfare, 1995.
30. Australian Institute of Health and Welfare. Australia's Health 1996. Canberra: Australian Government Printing Service, 1996.
31. Feinleib M. From information to knowledge: assimilating public health data. *Am J Public Health* 1993;83:1205-1207.

## 6. Appendix 1: Data sources currently used for population health surveillance by the NSW Health Department

<b>Key surveillance area</b>	<b>Page</b>
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Key Surveillance Area	Centre/Unit	Topic area	Data set	Data set sponsor	Reporting
<b>General health status/quality of life</b>	Epidemiology and Surveillance Branch / PHD	Mortality - all causes	ABS Mortality data	Australian Bureau of Statistics	CHO report
		Morbidity	Inpatient Statistics Collection	Director, Information Services	CHO report
			Medicare Data	Health Insurance Commission	
		Health status, health risk factors, use of health services	NSW Health Survey Program	Manager, Epidemiology and Surveillance	New collection (will commence 1997)
			NSW Health Promotion Survey 1994	Manager, Health Promotion	Data book, topic-specific reports
			National Health Survey 1989/90, 1995	Australian Bureau of Statistics	Various ABS reports
		Health status (mothers and infants)	Medicare Data	Health Insurance Commission	
			Birth Defects Register	Manager, Epidemiology and Surveillance	BDR Report (PHB Supplement)
			Midwives Data Collection	Manager, Epidemiology and Surveillance	MDC report (PHB Supplement)
			Surveillance of SIDS database	Manager, Epidemiology and Surveillance	

Key Surveillance Area	Centre/Unit	Topic area	Data set	Data set sponsor	Reporting
<b>Cardiovascular Disease</b>	Centre for Clinical Policy and Practice (CCPP) / Chronic Diseases Unit	Mortality	ABS Mortality data	Australian Bureau of Statistics	CHO report
		Morbidity	Inpatient Statistics Collection	Director, Information Services	CHO report
			Ambulance case sheets data	Chief Executive Officer, NSW Ambulance	
		Prevalence, risk factors	NSW Health Survey Program	Manager, Epidemiology and Surveillance	New collection (will commence 1997)
			NSW Health Promotion Survey 1994	Manager, Health Promotion	Data book, topic-specific reports
			National Health Survey 1989/90	Australian Bureau of Statistics	Various ABS reports
National Heart Foundation Risk Factor Prevalence Surveys	National Heart Foundation	National Heart Foundation reports			

Key Surveillance Area	Centre/Unit	Topic area	Data set	Data set sponsor	Reporting
<b>Cancer</b>	CCPP/Cancer Unit	Incidence	Central Cancer Registry	Head, NSW Central Cancer Registry	CHO Report, Cancer registry annual report
		Mortality	Central Cancer Registry	Head, NSW Central Cancer Registry	CHO Report, Cancer registry annual report
		Risk factors	NSW Health Survey Program	Manager, Epidemiology and Surveillance Branch	New collection (will commence 1997)
			NSW Health Promotion Survey 1994	Manager, Health Promotion	Data book, topic-specific reports
		National Health Survey 1989/90, 1995	Australian Bureau of Statistics	Various ABS reports	
<b>Mental health</b>	Centre for Mental Health	Morbidity	Inpatient Statistics Collection	Director, Information Services	CHO report
		Suicide and critical incidents among known mental health clients	Critical Incidents Reporting System	Performance Management Division	
		Suicides	ABS Mortality data	Australian Bureau of Statistics	CHO report
			NCH Department of Surgical Research's Trauma Death Registry	Department of Surgical Research, New Children's Hospital	
Prevalence of mental illness and risk factors for mental illness	National Mental Health Survey	Commonwealth Department of Health and Family Services	Survey underway		

Key Surveillance Area	Centre/Unit	Topic area	Data set	Data set sponsor	Reporting
<b>Injury and Poisoning</b>	Centre for Disease Prevention and Health Promotion (CDPHP) /Injury Prevention Unit	Mortality	ABS Mortality data	Australian Bureau of Statistics	CHO report
			NSW Trauma Deaths Registry	Dept of Surgical Research, New Children's Hospital, Westmead	
			NSW Drowning Statistics	Royal Life Saving Society of Australia	Annual report
			Traffic Accident deaths	NSW RTA	Annual report
			Trauma Registries (designated hospitals in Sydney and Newcastle)	Statewide Services Development Branch	Annual report
		Morbidity	Inpatient Statistics Collection	Director, Information Services	CHO report
			Emergency Department Data Collection (EDDC - formerly EDIS)	Director, Information Services	
			NSW Ambulance Service case reports	CEO, NSW Ambulance Service	
			Trauma Registries (designated hospitals)	Statewide Services Development Branch	Annual report
			Workcover data	Workcover	
			NSW Poisons Information Centre	Director, Toxicology Unit, RPAH & NCH	Annual report
			NSW Health Survey Program	Manager, Epidemiology & Surveillance	Starting 1997
			NSW Health Promotion Survey 1994	Manager, Health Promotion	Specific reports
			National Health Survey 1989/90, 1995	Australian Bureau of Statistics	Various reports
			Alleged child abuse notifications	DOCS	CHO Report
Domestic violence notifications	Bureau of Crime Statistics and Research				

Key Surveillance Area	Centre/Unit	Topic area	Data set	Data set sponsor	Reporting
<b>Diabetes</b>	CCPP/Chronic Diseases Unit	Mortality	ABS Mortality data	Australian Bureau of Statistics	CHO report
		Morbidity	Inpatient Statistics Collection	Director, Information Services	CHO report
		Prevalence, risk factors	NSW Health Survey Program	Manager, Epidemiology and Surveillance	New collection (will commence 1997)
			NSW Health Promotion Survey 1994	Manager, Health Promotion	Data book, topic-specific reports
		National Health Survey 1989/90, 1995	Australian Bureau of Statistics	Various ABS reports	

Key Surveillance Area	Centre/Unit	Topic area	Data set	Data set sponsor	Reporting
<b>Asthma</b>	Epidemiology and Surveillance Branch / PHD	Mortality	ABS Mortality data	Australian Bureau of Statistics	CHO report
		Morbidity	Inpatient Statistics Collection	Director, Information Services	CHO report
			Emergency Department Data Collection (EDDC - formerly EDIS)	Director, Information Services	
		Prevalence, risk factors	NSW Health Survey Program	Manager, Epidemiology and Surveillance	New collection (will commence 1997)
			NSW Health Promotion Survey 1994	Manager, Health Promotion	Data book, topic-specific reports
National Health Survey 1989/90, 1995	Australian Bureau of Statistics	Various ABS reports			
<b>Physical activity</b>	CDPHP/Physical activity and sun protection	Physical activity	NSW Health Survey Program	Manager, Epidemiology and Surveillance	New collection (will commence 1997)
			NSW Health Promotion Survey 1994	Manager, Health Promotion	Data book, topic-specific reports
			National Health Survey 1989/90, 1995	Australian Bureau of Statistics	Various ABS reports
			Physical Activity Benchmark Survey 1996	Manager, CVD and Diabetes Unit, CCPP	Survey underway
		Physical activity (years 7-11)	School Survey 1996	Director, CDPHP	Survey underway

Key Surveillance Area	Centre/Unit	Topic area	Data set	Data set sponsor	Reporting
Tobacco	CDPHP/Tobacco	Tobacco use (adults)	National Household Survey	Australian Bureau of Statistics	Various ABS reports
			NSW Health Survey Program	Manager, Epidemiology and Surveillance Branch	New collection (will commence 1997)
			NSW Health Promotion Survey 1994	Manager, Health Promotion	Data book, topic-specific reports
			National Health Survey 1989/90, 1995	Australian Bureau of Statistics	Various ABS reports
		Tobacco use (ages 14+ years)	National Drug Survey	Commonwealth Department of Human Services and Health	
		Tobacco use (years 5 and 6)	Primary School Survey 1983, 1986, 1989 1992, 1996	Director, CDPHP (formerly, Director Drug and Alcohol Directorate [DAD])	DAD monographs, statistical bulletins and journal articles
		Tobacco use (years 7-11)	School Survey 1983, 1986, 1989 1992, 1996	Director, CDPHP (formerly, Director Drug and Alcohol Directorate [DAD])	DAD monographs, statistical bulletins and journal articles

Key Surveillance Area	Centre/Unit	Topic area	Data set	Data set sponsor	Reporting
Alcohol	CDPHP/Alcohol	Alcohol consumption (adults)	National Household Survey	Australian Bureau of Statistics	Various ABS reports
			NSW Health Survey Program	Manager, Epidemiology and Surveillance Branch	New collection (will commence 1997)
			NSW Health Promotion Survey 1994	Manager, Health Promotion	Data book, topic-specific reports
			National Health Survey 1989/90, 1995	Australian Bureau of Statistics	Various ABS reports
		Alcohol consumption (ages 14+ years)	National Drug Survey	Commonwealth Department of Human Services and Health	
		Alcohol consumption (years 5 and 6)	Primary School Survey 1983, 1986, 1989 1992, 1996	Director, CDPHP (formerly, Director Drug and Alcohol Directorate [DAD])	DAD monographs, statistical bulletins and journal articles
		Alcohol consumption (years 7-11)	School Survey 1983, 1986, 1989 1992, 1996	Director, CDPHP (formerly, Director Drug and Alcohol Directorate [DAD])	DAD monographs, statistical bulletins and journal articles
		Infringements of alcohol licensing laws		Department of Gaming and Racing	
Alcohol-related crime		NSW Police Service			
Alcohol-related traffic offences		Roads and Traffic Authority			

Key Surveillance Area	Centre/Unit	Topic area	Data set	Data set sponsor	Reporting
Illicit drugs	CDPHP/ Illicit drugs (DAD)	Illicit drug use among persons aged 14+ years	National Drug Survey	Commonwealth Department of Human Services and Health	
		Illicit drug use	Alcohol and Drug Information Service (ADIS) call register	Alcohol and Drug Information Service	Annual report to DAD
		Use of opiates, cocaine, amphetamines, cannabis	Illicit Drug Reporting System (components include key informant interviews, survey of injecting drug users, other surveys, admissions and deaths, drug seizures and drug prices)	Commonwealth Department of Human Services and Health	Original IDRS discontinued in 1992. Report of trial of components of revised system published by National Drug and Alcohol Research Centre in 1996.
		Illicit drug use (years 5 and 6)	School Survey 1983, 1986, 1989, 1992, 1996	Director, CDPHP	Monographs, statistical bulletins and journal articles
		Illicit drug use (years 7-11)	School Survey 1983, 1986, 1989, 1992, 1996	Director, CDPHP	Monographs, statistical bulletins and journal articles
		Prevalence of drug addiction/ use of services	Methadone Program database	Chief Pharmacist	
			Needle and syringe exchange program	Director, AIDS and Infectious diseases	
Mortality (opiates)	ABS Mortality Data	Australian Bureau of Statistics	CHO report		

Key Surveillance Area	Centre/Unit	Topic area	Data set	Data set sponsor	Reporting
<b>Pharmaceuticals</b>	CCPP/ Pharmaceutical services	Prescriptions for drugs of addiction	Authorities to prescribe drugs of addiction database	Chief Pharmacist	Regular activity / Statistical reporting
		Methadone prescriptions	Methadone Program database	Chief Pharmacist	Regular activity / Statistical reporting
		Prescription of stimulants for attention deficit disorder	Stimulants for attention deficit disorder notification scheme	Chief Pharmacist	Regular activity / Statistical reporting
<b>Dental Health</b>	CDPHP/Dental Services	Dental health (children)	Child oral health database (SOKS)	Director, Dental Services	New system
		Dental health of adults using public dental services	Community dental service database	Director, Dental Services	Regular activity reports
		Dental health of children using public dental services	School dental service database	Director, Dental Services	Regular activity reports

Key Surveillance Area	Centre/Unit	Topic area	Data set	Data set sponsor	Reporting
<b>Food health and nutrition</b>	CDPHP/Food and Nutrition Unit	Nutrition	NSW Health Survey Program	Manager, Epidemiology and Surveillance	New collection (will commence 1997)
			NSW Health Promotion Survey 1994	Manager, Health Promotion	Data book, topic-specific reports
			National Health Survey 1989/90, 1995	Australian Bureau of Statistics	Various ABS reports
		Nutrition (years 7-11)	National Nutrition Survey	Australian Bureau of Statistics	Survey underway
			School Survey 1996	Director, CDPHP	Survey underway
		Food poisoning outbreaks	Notifiable Diseases Database (NDD -formerly IDSS)	Director, AIDS and Infectious Diseases	
			Food Poisoning Complaints File	Director, AIDS and Infectious Diseases	
			Salmonella serotyping and phage typing reports	Microbiological Diagnostic Unit, Melbourne University	
		Food premises, inspections, complaints	State Food Surveillance Information Network	Chief Food Inspector	None. Network still in early stages of development.
			Prosecution records (Food Act)	Chief Food Inspector	Monthly statistical report to Chief Health Officer

Key Surveillance Area	Centre/Unit	Topic area	Data set	Data set sponsor	Reporting
<b>Food health and nutrition</b> (continued)		Chemical status of food for human consumption	Results of food analyses	Officer in Charge, General Chemistry Laboratory, DAL	Monthly report to Chief Health Officer and annual report
		Trace metals in food and environmental samples	Trace metals laboratory results	Officer in Charge, Trace Metals Laboratory, DAL	Monthly report to Chief Health Officer and annual report
		Pesticide residues in food	Results of pesticide residue analysis	Officer in Charge, Pesticide Residues Laboratory, DAL	Monthly report to Chief Health Officer and annual report

Key Surveillance Area	Centre/Unit	Topic area	Data set	Data set sponsor	Reporting
<b>AIDS and Infectious Diseases</b>	CDPHP/AIDS and Infectious Diseases Branch	Hazardous incidents (needlestick injuries etc)	Occupational health database (chest clinic database)	Director, AIDS and Infectious Diseases	33 sites participating in current trial
		Childhood immunisation	National Childhood Immunisation register	Director, AIDS and Infectious Diseases	New system
			OASIS schools surveillance	Director, AIDS and Infectious Diseases	New system
			SSISS (sentinel surveillance in child care centres)	Director, AIDS and Infectious Diseases	
		Incidence of notifiable infectious diseases	Notifiable Diseases Database (NDD -formerly IDSS)	Director, AIDS and Infectious Diseases	Public Health Bulletin monthly report, Annual Report (irregular), CHO Report
			Statewide sentinel systems: GPs (influenza), STD clinics (non-notifiable STDs)	Director, AIDS and Infectious Diseases	Public Health Bulletin monthly report, Annual Report (irregular)
Food poisoning outbreaks	Food Poisoning Complaints File	Director, AIDS and Infectious Diseases			

Key Surveillance Area	Centre/Unit	Topic area	Data set	Data set sponsor	Reporting
<b>AIDS and Infectious Diseases</b> (continued)	CDPHP/AIDS and Infectious Diseases Branch	Incidence of HIV and AIDS	HIV/AIDS registers	Director, AIDS and Infectious Diseases	Annual Report (irregular), CHO Report
		HIV/AIDS risk behaviours	Regular survey	Macquarie Centre for Social Research	
		Needle and syringe exchange program	Director, AIDS and Infectious Diseases		
	Arbovirus disease surveillance	NSW Arbovirus Disease Control and Mosquito monitoring Program	Medical Entomology Department, ICPMR, Westmead Hospital	Annual Report	
		Sentinel chicken programs	National program	Annual Report	

Key Surveillance Area	Centre/Unit	Topic area	Data set	Data set sponsor	Reporting	
<b>Environmental Health</b>	CDPHP/ Environmental Health	Air quality	Air quality monitoring data	Environmental Protection Agency (EPA)	EPA reports, State of The Environment Report, HARP newsletters	
		Incidence of Legionella in the environment	Legionella laboratory results	Officer in Charge, Microbiology Laboratory, DAL	Monthly report to Chief Health Officer and annual report	
		Hospital cooling towers	Legionella laboratory results	Officer in Charge, Microbiology Laboratory, DAL		
	Water quality	Water quality: - Drinking - Recreational		Microbiological analyses of water supplies	Officer in Charge, Microbiology Laboratory, DAL	Annual Report and Report to Chief Health Officer
				Chemical and Physical analyses of water supplies	Officer in Charge, Water Chemistry Laboratory, DAL	Annual Report and Report to Chief Health Officer
				Pesticides analyses of water supplies	Pesticides Laboratory, DAL	Annual Report and Report to Chief Health Officer
			High blood lead levels	Notifiable Diseases Database (NDD - formerly IDSS)	Director, AIDS and Infectious Diseases	New notifiable condition
	Amenity	Community attitude survey	EPA	EPA reports, State of The Environment Report		

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