

3.07 Public Health

Public Health aims to promote health and prevent illness and injury by working with populations. Public Health services are funded directly by the MOH. The Regional Public Health Service, provided by the provider-arm of the Auckland DHB, covers the geographical zones of each of the three Auckland regional DHBs: Auckland, Waitemata and Counties-Manukau. The Regional Public Health Service is divided into Health Promotion and Health Protection services. This section focuses on Regional Public Health Promotion services. Health protection services are included in the Environmental Health section that follows.

In addition to the Regional Public Health Service, health promotion services are also provided by Maori and Pacific health service providers, general practitioners, practice nurses etc and a number of NGOs in the Auckland region. The vast majority of services and programmes, such as smoking cessation programmes, are profiled in other sections of this report.

There is a strong focus on health promotion in the government's 13 population health objectives. In order to help advance these objectives, public health services need to be planned and co-ordinated at a regional level to reduce unnecessary duplication and fragmentation of service.

Regional Public Health Service – Health Promotion

Public Health Infrastructure

There are four Public Health Promotion Resource Centres whose goal is to ensure that health professionals and the public have access to health information and other public health advice and assistance that they need. The resource centres provide a public focus for access by health providers and the community to all public health activities.

Health professionals have identified a need to update and translate existing material into languages other than English. It is imperative to provide culturally appropriate information. However, simple translation of written material is not always appropriate or the best way of meeting this need. Indeed, face-to-face educators, and visual resource materials such as pamphlets that relay public health messages through pictures, cartoons, mobiles and stickers may be more appropriate and effective in the education process.

An ongoing issue remains in co-ordinating and distributing resources developed by other providers of public health services in the region.

Communicable Disease Control

In the Auckland region, with the notable exception of pertussis, the levels of communicable disease have remained stable or declined slightly in recent times. Most communicable diseases occur in epidemics (eg food-borne infections, hepatitis A, measles etc).

New Zealand has a relatively low immunization rate and an ongoing cycle of epidemics of vaccine-preventable disease. Parents of young children need to have ready access to reliable information about the benefits of immunization. There is an ongoing need to provide information and promote immunization in the region.

Meningococcal disease has been epidemic for ten years in New Zealand and it is unclear whether the epidemic has peaked (see Child Health section for details). Public Health was notified of 160 cases in the six months to Dec 2000. The epidemic is likely to continue to some extent, until there is an effective intervention available. There is a continuing need for community-based meningococcal disease awareness programmes.

There is increasing demand for up-to-date knowledge of communicable disease outbreaks overseas. People who wish to travel overseas want to know what illnesses are occurring at their destinations. Private medical clinics have been established in recent years but they have not reduced the continuing demand for advice from doctors, practice nurses and the general public.

The incidence of TB notifications in Auckland continues to be of concern. Public Health works with clinical services to achieve cures in as many cases as possible, in order to prevent the spread of multi-drug resistant strains of the disease.

Paediatric TB has increased in Auckland in recent years and child patients require assessment and prophylactic treatment at the clinic at Starship (see Child Health section for details). Miliary and meningitic disease is rare in young children, but it still occurs in Auckland. The Middlemore Hospital neonatal BCG vaccination programme services less than a third of all neonates in the region. The hospitals in the Auckland DHB and Waitemata DHBs have no systematic vaccination programme.

The WHO has called for as many patients as possible to be on directly observed therapy programmes. The work undertaken to manage the disease in the local community is labor-intensive. Indeed, contact tracing and the ongoing supervision of medication for cases and contacts by Public Health requires considerable resource. Public Health contract with community providers to assist in this endeavour. TB awareness campaigns have been completed in the largest Pacific communities in the Auckland region, but need to be extended to Asian and African communities.

HIV-infected children come from families with extensive social problems and require a long course of treatment. There is currently no community support or medication compliance monitoring for these children, as there is for children with TB.

Non-Communicable Disease Programme

The incidence of melanoma and other skin cancers continues to be unacceptably high in New Zealand, particularly in Auckland. New Zealand has the highest death rate from melanoma in the world, recently surpassing Australia. Each year about 200 people in New Zealand die from melanoma, and another 50 die from other preventable skin cancers. It is the most common cancer in people aged 20-39 years and the number of

cases has doubled in the past 30 years. The risk factors for skin cancers are environmental, genetic and lifestyle-related.

New Zealand has a high UV radiation (UVR) exposure for its latitude because of the ellipticity of the earth's orbit, lack of cloud cover and a depleting ozone layer. UVR exposure has increased over the years due to the action of CFCs on the integrity of the ozone layer. Even with full compliance from international CFC emission accords, the ozone layer is expected to continue to decrease at the current rate well into the next century.

Due to the increased harshness of solar radiation, arising from increasing ozone depletion in the stratosphere, what may have been an acceptable level of exposure several decades ago, is now potentially hazardous. In environments outside people's immediate control (eg public places like schools) it is important to develop strategies that endorse Sunsmart environments and promote the need for adequate protection from the sun's harmful rays.

It is also important to recognize that a higher risk of melanoma is associated with a lighter skin colour, regardless of ethnic origin. Higher risk is therefore not only associated with New Zealanders of European descent, but anyone who has a light skin colour, including those who identify as Maori, Pacific or Asian in the population. Melanoma prevention strategies must therefore include all ethnic groups.

The outdoors lifestyle, attitudes to tanning and beach/water-related recreation and sport are important issues, especially in Auckland. It has been estimated that on a sunny weekend in summer, about three quarters of the population are outside for prolonged periods of time. The Auckland region has a large population, with a climate and physical geography that encourages outdoor activity. There is a need to develop Sunsmart strategies to reduce the risk of population exposure to harmful UV radiation and to minimise the effects of exposure when it does occur.

Injury Prevention

In New Zealand, injury is the leading cause of death for people under forty years of age. In addition, injuries account for more potential years of life lost than cancer and heart disease combined. Injury also ranks second only to complications of childbirth and pregnancy as a cause of morbidity, making it one of our most serious public health concerns.

Unintentional Injury

Unintentional injury places a significant demand on health and other resources in the Auckland region. Unintentional injury (not including road crashes) is estimated to be the fifth leading cause of life lost for the total population in New Zealand. Road crash injury alone is estimated to be the second and third leading causes of years of life lost for New Zealand males and females, respectively.

In order to reduce unintentional injury in the Auckland region, it is commonly accepted that a collaborative effort must be made on the part of all major stakeholders.

Children feature prominently in injury statistics, due to a wide variety of contributing factors. Beyond infancy, injury is the leading cause of death and the second most common cause of hospitalisation for children in the Auckland region. Accidental injuries account for approximately 85-90 percent of all injury deaths and approximately 95 percent of all injury hospitalisations for children 0-14 years. Conservatively, the financial cost of treating unintentional injuries in children is estimated to be in excess of ten million dollars each year.

Falls among older adults are also a major injury problem in New Zealand, yet the National Health Committee has stated that falls prevention programmes are uncommon. A consultation document produced in June 1997 reported that falls in older adults are common. The report found that one in three people aged 65 years or more, living in the community, will fall in any one year, and the evidence is growing that falls are preventable. Allocating resources to falls prevention programmes would likely not only reduce the risk of injury, trauma and death in older adults, but also likely save resources through fewer hospital admissions and reductions in the use of support services. There would also likely be fewer nursing home days.

The Road Safety Action Plan for the Auckland region emphasizes a number of priorities that have the potential to successfully address the region's road safety problems. The Road Safety Action Plan will guide road safety planning and priority setting for Public Health. Programmes need to be developed and appropriate partnerships fostered to reduce injuries and the effects of injury on older adults, young people and children and people affected by road traffic injury.

Intentional Injury

The level of domestic violence in the community has been profiled in a variety of New Zealand studies. The most common injuries from domestic violence include facial fractures, concussion, head and spinal injuries, miscarriage and gynaecological problems. Associated health problems include depression, suicide, attempted suicide and chronic stress related disorders. Effects on children include violent and aggressive behaviour, inability to form relationships with other children or adults and an inability to concentrate on education. Studies have shown that the severity and frequency of abuse tends to increase over time. Intergenerational transmission of abuse is of growing concern in New Zealand.

There is an ongoing need to support anti-violence initiatives and to work collaboratively with other agencies in the Auckland region (see Violence section for further details).

Community Development

The Regional Public Health Service seeks to strengthen and support social environments in the community. The service works to reduce social and economic inequalities in the community. In addition, the service is involved in community development and supports Maori and Pacific self-realization initiatives. Health promotion services are provided in schools and the regional service supports Healthy Cities and Safer Community initiatives.

Immigrant Health

See Refugee, Asian and Pacific people's sections.

Food

See Environmental Health section

Key Issues:

- Need to plan and co-ordinate public health promotion services at a regional level in order to help advance the 13 health objectives and other priority areas;
- Need to translate public health resource materials into a variety of other languages and develop materials that are culturally appropriate and communicate public health messages through innovative means;
- There is an ongoing issue with the co-ordination and distribution of public health resource materials;
- There is a continuing need for meningitis awareness programmes;
- There is increasing demand for information on communicable disease outbreaks overseas;
- Need for TB awareness programmes in African, Asian communities;
- TB work is labour intensive - ongoing demand for TB services;
- Currently - no community support or medication compliance programmes for children with HIV;
- Ongoing need to promote immunization in the community;
- Need to develop SunSmart strategies and programmes to reduce population exposure to UV radiation - Melanoma mortality rates in NZ are the highest in the world;
- Develop programmes and foster relationships with other sectors to reduce injuries and the effects of injury on older adults (65yrs+), young people and children in the community;
- Ongoing need to support anti-violence initiatives and to work collaboratively with other agencies in the Auckland region.

3.08 Environmental Health

Humans experience the environment in which they live as an assemblage of physical, spiritual, social, cultural and economic conditions that differ according to the local geography, infrastructure, season, time of day and activity undertaken. This section focuses on aspects of the physical, chemical and biological environment within the Auckland DHB zone, and public health protection service need.

Hazardous substances, organisms and urban development threaten the conditions of our Land, Water and Air, posing a risk to human health. These health risks can be categorised into "traditional hazards" associated with a lack of development, and "modern hazards" associated with unsustainable development. Future development of the urban region will create further pressures on air quality, water quality, habitats and open space.

The Auckland DHB Public Health Protection Unit provides regional services to the Auckland region. In addition to the Public Health Protection Unit, local Authorities in the Auckland region, emergency services and the Land Transport Authority also provide health protection services to the community. Public Health currently works collaboratively with these agencies, as required, in order to protect and promote public health. There is an ongoing need for this type of inter-agency communication and collaboration.

It is worth noting that the purpose of this section of the report is to identify potential or real environmental hazards and the implications for the population served by the DHB. A detailed analysis of identified hazards, the evidence for health effects, dose-response, exposure assessment and risk characterisation is beyond the scope of this report, as is formal risk assessment.

The Urban Environment

The urban environment poses multiple health risks. Urban growth increases and concentrates human activities and outputs. The Auckland population is growing at approximately 2.6 percent per year. The Regional Growth Strategy suggests that the population of Auckland City could reach 492,000 by the year 2021, compared to the 2000 June estimate of 386,100 (ACC, 2001).

Increased urban intensification may result in the location of residential populations adjacent to industrial zones and the creation of mixed land-use zones. Both of these scenarios could result in potential exposures of residential populations to hazardous substances.

The amount of urban land available for business, residential and recreational use is reducing. Since 1996, vacant business land has decreased from over 2,600 ha down to 2188 ha, a decrease of 16 percent. At this rate there is approximately 5-6 years before all

available land is developed. Land prices and population growth has led to residential intensification (ARC, 1998).

Table 124: Leisure and open space

City	Public Open Space (ha)	Population	Public Open Space Per 1,000 Pop. (ha)	Regional Parks (ha)	DOC land (ha)
Auckland	2,179	354,532	6.2	295	21,864
Manukau	1,557	254,603	6.1	3,780	573
North Shore	1,341	171,494	7.8	113	52
Waitakere	1,089	154,386	7.1	16,259	101
Wellington	2,881	166,800	17.3	289	6
Christchurch	1,459	324,300	4.5	n/a	n/a

Data Source: Auckland Public Health Protection Unit, 2001.

This growth has increased pollution, contributed to the degradation of the air, water and soil quality and has overloaded the transport infrastructure, parks and open spaces, telecommunications, sewerage systems, storm water drainage systems, piped water and gas, electricity and waste disposal services. The utility networks that provide these services require major upgrades and with continued urban sprawl, must be extended. In recent years the Auckland region has faced health threats from water shortages, floods and power cuts (New Zealand Ministry for the Environment, 1997).

Examples of transport overloading are (ARC, 1999):

- 136,000 vehicles a day crossed the Harbour Bridge in 1996. Put end to end, a line of 136,000 vehicles would stretch for nearly 500 kilometres;
- on the day of the 1996 Census, about 64 percent of Auckland employees drove to work in a car. A further six percent were passengers in these same cars, while just six percent used public transport to get to work;
- the average length of the journey to work in Auckland increased 29 percent between 1981 and 1996, from 10.8 km to 13.9 km - equivalent to an extra 2.5 million vehicle-kilometres a day.

The population health threats from transport in the region include:

- injuries from motor vehicle accidents;
- degradation of air quality;
- noise.

The cost of all reported motor vehicle crashes in the region is estimated at over \$1 billion a year by the Land Transport Safety Authority.

The Auckland Regional Council is currently formulating the Auckland Regional Plan. This plan will set Air Quality Targets for 2010 that will provide guidance and assistance

with the management of air quality in the region. In order to minimise the effects there is a need to:

- ❑ minimise motor vehicle travel;
- ❑ minimise congestion;
- ❑ increase use of alternative modes of transport;
- ❑ encourage/implement cleaner emission technology and regular servicing of vehicles.

Air Quality

Air quality can be degraded by the presence of pollutants causing adverse effects on exposed populations. Pollutants of most concern are:

- ❑ carbon monoxide;
- ❑ nitrogen oxides;
- ❑ particulate matter (PM10);
- ❑ volatile organic compounds such as benzene;
- ❑ ground level ozone.

Lead, sulphur dioxide, total suspended particulates and smoke are not currently a significant problem.

Exposure to high ambient levels of carbon monoxide has been demonstrated to increase the signs and symptoms of cardiovascular illness, hospital admissions, and mortality. Elevated levels of nitrogen dioxide have been shown to exacerbate respiratory symptoms for those with respiratory disease and increase the incidence of acute respiratory illness in children. Particulate matter increases the incidence of respiratory symptoms, asthma attacks, work and school absenteeism, healthcare utilisation, mortality and decreased lung function. Ground level ozone has been linked to reductions in lung function, increased bronchial reactivity, admissions to hospital, and possibly to increases in mortality. Volatile organic compounds include a wide range of compounds with varying effects, for example, benzene, which has been shown to be carcinogenic. Other compounds may cause chromosomal aberrations and depression of blood cell formation.

Certain populations may be more vulnerable to such air pollutants. For example, asthmatics and people suffering chronic inflammatory and obstructive pulmonary disease are more susceptible to the adverse health effects resulting from exposure to particulates and nitrogen dioxide. Children may be particularly vulnerable to the adverse health effects of air pollutants, however this has not been well studied at this time (WHO, 1999).

At present there is a lack of information on exposure to different air pollutants in the ambient air in the Auckland region. However, in 1999, there were 57 days where parts of Auckland exceeded WHO guidelines for air safety. This year to August, there have been 36 days where air pollution levels have exceeded WHO guidelines. There are

approximately 13 continuous ambient air-monitoring sites in the Auckland Region (ARC, 2001).

These sites are located at:

- Peak traffic and Central Business District (CBD) sites - Hobson St, Queen St,
- Sky Tower, Kyber Pass;
- Residential sites - Mt Eden, Northcote, Takapuna, Henderson;
- Industrial – Penrose;
- ‘Remote’ sites - Musik Point, Whangaroa, Pukekohe.

During 1999, the carbon monoxide Ambient Air Quality Guideline was breached at all traffic sites and alert levels were reached in residential sites. Breaches of the Guidelines are considered unacceptable by national and international standards, and alert levels require action in order to prevent breaches occurring.

There were breaches of the nitrogen dioxide Guideline at the Khyber Pass site in 1999, with alert or action levels forty percent of the time. There were breaches of the PM guideline at residential and traffic sites more than ten percent of the time in 1999, and alert levels were reached at all sites including rural sites. Alert levels of ground level ozone were reached at all monitoring sites during 1999. Continuous monitoring of volatile organic compounds does not yet take place. It is likely that adverse health effects are occurring from exposure to high levels of pollutants.

Motor vehicles cause eighty percent of the air pollution in the Auckland region. They are the major source of ambient carbon monoxide and nitrogen dioxide. Auckland's transport system produces about 1.9 million tonnes of the greenhouse gas, carbon dioxide each year. This represents about 40 percent of all carbon dioxide produced in Auckland. It is estimated that without any serious intervention carbon dioxide emissions are likely to increase to 2.9 million tonnes per year by the year 2021 (ARC, 2001). Motor vehicles are an important source of the portion of particulate matter that is respirable (PM10), with diesel vehicles producing disproportionately more particulate matter than petrol vehicles.

Ground level ozone is formed when volatile organic compounds react with nitrogen oxides in the presence of sunlight. Motor vehicles are an important source of some volatile organic compounds. For example, 86 percent of benzene released into the atmosphere has been estimated to come from petrol.

Statistically significant associations have been observed between ambient air pollutants and hospital admissions, emergency department and GP visits for respiratory and cardiovascular diseases (Burnett, 1997; Jorgensen et al., 1996; Hajat et al., 1999; Seethaler R., 1999). Recent research assessing the public health costs of total and traffic-related air pollution in Austria, France and Switzerland has suggested that about six percent of annual deaths are attributable to outdoor air pollution. About half of all the mortality caused by air pollution was attributed to motorized traffic (Kunzli et al., 2001). In the Auckland region, the number of deaths attributable to vehicular emissions is at least equivalent to deaths from traffic accidents.

The makeup of fuel directly affects the type and quantity of emissions from vehicles. Substantial health gains could be made if fuel specifications were changed to lower the limits of some pollutants. For example, New Zealand has significantly higher sulphur levels (2,300 ppm) in diesel fuel than Australian (1,300ppm) and European (350ppm) specifications allow (ARC, 2001). It has been estimated that New Zealand could have the cleanest fuel in the world for a one-off cost of \$130M.

It is important to reduce sulphur, benzene and other volatile organic compounds. Particulate levels should also be lower than recommended by the Ministry of Economic Development in its current review of the Petroleum Products Specifications Regulations.

It is also suggested that health authorities should be involved in transport-related decision-making processes, and in particular, should advocate for transport control authorities to examine the effects of vehicle emissions on air quality in all transport planning. Catalytic converters fitted to vehicles can reduce toxic emissions (e.g. carbon monoxide, nitrogen dioxides, hydrocarbons) by up to 90 percent. Such converters are not yet compulsory in New Zealand, but are required on new vehicles in most of the western world. At present, there are no specific legal requirements setting out vehicle construction standards for exhaust emissions in New Zealand transport law, regulations or rules. As of March 2001, improved regulations have been implemented that are designed to address the issue of excessively smoky vehicles on the road. This regulation has been referred to as the "10 second rule". The ten-second rule does not address vehicle construction standards, rather it focuses on improving vehicle operation. Local and national government bodies could show their support for this issue by ensuring that their vehicle fleets and transport policies support the reduction of motor vehicle emissions.

Noise

Community noise (also called environmental noise, residential noise or domestic noise) is defined as noise emitted from all sources except noise in an industrial workplace. Main sources of community noise include road, rail and air traffic; industries; construction and public work; and the neighbourhood. Major sources of indoor noise include ventilation systems, office machines, home appliances and neighbours.

In Auckland, environmental noise pollution continues to grow and it is accompanied by an increasing number of complaints from the people exposed. Noise is associated with direct, as well as cumulative, adverse health effects such as hearing impairment, sleep disturbance, reduced physiological and work performance and increased psychological distress. Vulnerable population subgroups include:

- People with particular diseases or medical problems (e.g. high blood pressure);
- people in hospitals or rehabilitating at home;
- people dealing with complex cognitive tasks;
- the blind;
- people with hearing impairment;

- fetuses, babies and young children;
- the elderly in general.

Drinking Water

The Drinking Water Standards for New Zealand (2000) provide criteria for the quality and safety of drinking water including maximum concentrations of chemical, radiological and microbiological contaminants acceptable for public health (MOH, 2000). In New Zealand, contamination of drinking water supplies is most likely to be associated with microbiological organisms, rather than due to toxic chemicals. Reticulated mains water supply has barriers to contamination including access to secure ground water filtration systems, disinfection via chlorination, ozone and ultra-violet light and measures to stop further contamination of distribution systems.

The vast majority of people (333,000 from the 1996 Census) in the Auckland DHB zone are serviced by reticulated water (Figure 104) which has Aa grades (uppercase represents the source and treatment, lowercase represents the distribution zone). Water is supplied from protected catchment lakes in the Hunua and Waitakere Ranges and it is treated in plants at Huia, Waitakere and Ardmore.

In mid-2002, water supplies from the Waikato River will augment supplies to the Auckland DHB zone. A state of the art treatment plant will be used, producing water that exceeds the already high quality of the existing major supplies.

The Gulf Islands population uses household supplies, generally roof water tanks. Illness causing organisms including *salmonella* and *campylobacter* have often been isolated from such supplies and it is likely that gastro-enteric illness occurs in these areas as a result of poorly managed and maintained supplies. *Giardia* and *cryptosporidium* are also likely contaminants as roof collected water is subject to faecal contamination from birds, cats, and possums (Auckland Healthcare Services, 2000).

Waiheke Island is also at high risk of water borne disease than those on reticulated town supplies. Evidence suggests that individual water supplies are not adequately disinfected. It is important that households on individual water supplies treat their water prior to consumption.

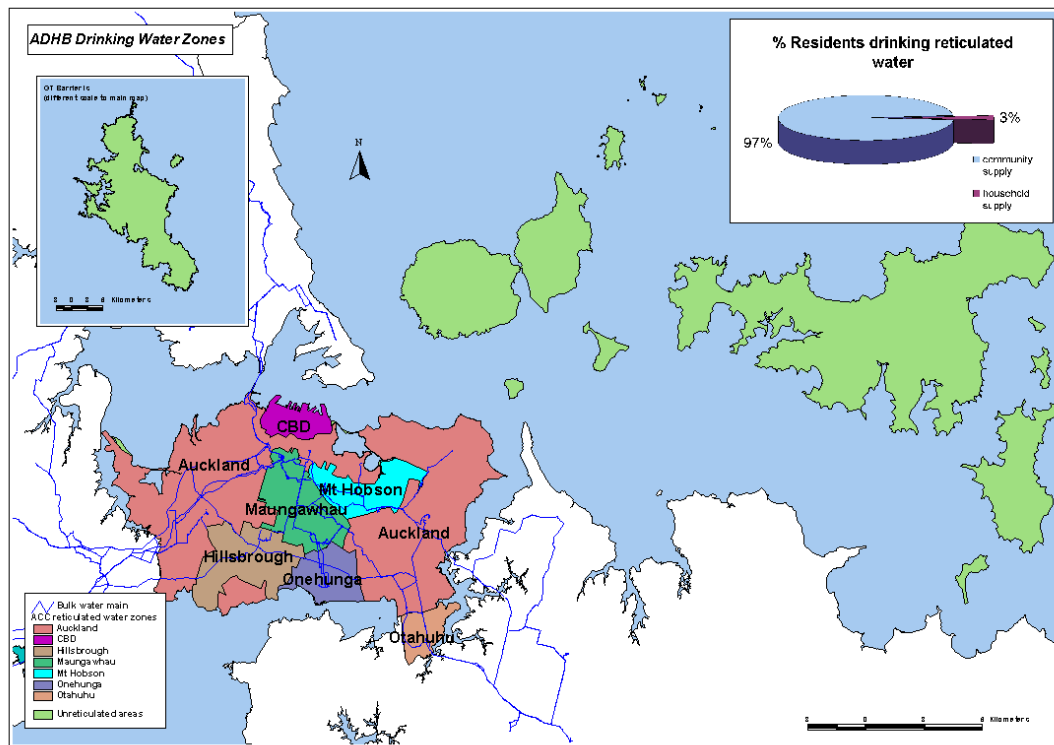
Indeed, a Roof Collected Rainwater Study conducted in 1996-1998 showed that 56 percent of samples analyzed exceeded the microbiological criteria for faecal contamination. The study also found that 17.6% of samples exceeded one or more of the maximum acceptable values for chemical determinants of the New Zealand Drinking Water Standards. Lead was the most common chemical contaminant. The Roof Collected Rainwater Study showed that roof collected water provided a water supply of poor physiochemical and microbiological quality (Simmons G et al., 1997).

E.coli 0157 is an emerging drinking water health issue. This organism has been located in a small number of household supplies in the Auckland region and is significant because

of its potential to cause severe illness, and in some cases death. It highlights the importance of proper management of household water supplies.

Cattle are the main carriers of VTEC. Therefore rural areas should be aware of the risk of using water contaminated with this bacterium. VTEC can cause serious illness including haemolytic uraemic syndrome, and in some cases it can be fatal.

Figure 104: Drinking water zones in the Auckland DHB zone, 2001.



Data Source: Auckland Public Health Protection Unit, 2001.

Fluoridation of Reticulated Water Supplies in the Auckland Region.

Dental disease is one of the most common and costly diseases to treat in New Zealand. Social implications of poor oral health include lowered self-esteem, time off work and school, and decreased employment opportunity (Northland Area Health Board, 1991; Ministry of Health, 1994).

Fluoridation of community-reticulated water supplies is a public health strategy designed to promote the social, economic, cultural and environmental well being of communities. Fluoridation contributes to equity in oral health as those who benefit the most from fluoridation are Maori and Pacific people, and people from the lowest socio-economic groups (Treasure and Dever, 1992) in society.

Dental disease in twelve-year-olds and five-year-olds has been shown to be between 12-62 percent more prevalent in non-fluoridated areas than fluoridated areas (Ministry of Health, 1994). There are a number of studies showing decreases in both coronal caries

and root caries for adult teeth. Prevalence studies reveal fewer root caries among older people in fluoridated areas (Thompson, 1997). The estimated savings in dental treatment achieved through fluoridation in New Zealand ranges from \$1.4 - \$14.3 M per year (Public Health Commission, 1995).

Onehunga

There are 13,000 people living in Onehunga, the only non-fluoridated reticulated water supply in Central Auckland (Auckland DHB zone). The potential net cost savings from fluoridation for this population is estimated to be more than \$1.56M over thirty years. This figure is calculated by subtracting the cost of water fluoridation for 10,000 people over thirty years (\$183,000) from the dental saving savings for 10,000 people over thirty years (1.740M).

Hauraki Gulf Islands

There are approximately 8,000 permanent residents on islands in the Hauraki Gulf and water supplies on the islands are non-reticulated and non-fluoridated.

In total, there are approximately 20-21,000 people in the Auckland DHB zone that do not have a fluoridated water supply. This represents approximately 5-6 percent of the DHB population.

SEWAGE and STORM WATER

There are around ninety sewage treatment plants in the region. The major facilities are the Mangere and North Shore Wastewater Treatment Works, which serve about 93 percent of the population in the Auckland region. The major sewage effluent outfalls are located in the Manukau Harbour (Mangere Wastewater Treatment Plant), off Castor Bay (North Shore Wastewater Treatment Plant), Tiri Channel (Whangaparaoa Peninsula) and off Orewa Beach (Orewa/Red Beach system). About 15 outfalls from other small treatment plants discharge into the Manukau, Kaipara, and Waitemata harbours and inner Gulf (Auckland Healthcare Services, 2000).

Though not in the Auckland DHB zone, the Mangere Wastewater Treatment Plant (MWTP) discharges into the Manukau Harbour, which borders the Auckland DHB zone. A major upgrade is underway at the Watercare Services Ltd MWTP and due for completion within 18 months. It has included decommissioning the oxidation ponds and returning this area to its natural state. Biological processes will be used to improve the wastewater quality prior to treatment in what will be the largest ultra-violet sterilization plant in the world. Recent advances in this technology mean that 99.99 percent of bacteria, viruses and protozoa, many of them disease causing, will be inactivated. The effluent quality is very high and will not adversely affect shellfish outside a small mixing zone around the outfall.

Sewage contains microbes that can cause health problems. The three main categories of microbes are fungi, bacteria and viruses and each microbe can cause acute, or chronic disease in human populations. From a public health perspective, sewage becomes a

problem when there are overflows. Overflows occur when the flow arriving exceeds the capacity of the pump station or sewer, or when the pumps fail to operate. There are approximately 400 overflow points around the isthmus (ARA, 1989). Approximately 85 percent of overflows in 1996-97 were due to heavy rainfall, ten percent were due to power supply failure and five percent were due to other occurrences (Watercare, 1997).

The main health risks associated with overflows are microbiological contamination of private and public land, recreational water, and shellfish.

Wastewater overflows from ageing, combined sewer/storm water systems continue to adversely affect bathing beaches within the Auckland DHB zone. Urban streams like Cox's, Motions and Meola Creeks regularly return indicator bacterial levels equal to sewage effluent. Moderate to heavy rain produces bacterial levels at beaches that exceed guideline levels and would be expected to result in bather illness. Public Health Protection advises the public not to bathe within 48 hours of rain. However observations suggest this advice is often ignored.

Stormwater Quality

A survey of storm water quality was undertaken at popular East Auckland bathing beaches in 1996 (Franks, 1996). Samples were taken from discharge culverts onto the beaches on three separate occasions and at multiple culverts in all weather conditions. The mean faecal coliform counts (MPN) were as follows:

- Eastern Beach - 2,000 (range 700 - >2,400);
- Howick Beach - 405 (range 17 - 1700);
- Melons Bay - 700 (range 17 - 16,000);
- Okahu Bay - 5 700 (range 45 - 50 000);
- Mission Bay - 35 700 (range 82 - 400 000).

It is not possible to generalize these results to other areas in Auckland, but storm water run-off is an important source of recreational water contamination.

Outside the metropolitan urban areas, septic tanks with on-site effluent disposal fields are commonly used for sewage disposal from individual dwellings, motels, rest homes and other small-scale commercial developments. Provided that septic tank systems are properly designed, installed and maintained they are an environmentally sound method of effluent disposal. Localized problems occur in rural and coastal communities as a result of the cumulative effects of poor soil types, higher densities of septic tank use and poor maintenance.

Waiheke Island

Concern has been expressed by the Public Health Protection over many years at the health risks resulting from large numbers of private residences on Waiheke Island that use on-site disposal systems. Local soil characteristics and having little topsoil overlying hard clay, often prevents adequate soakage and results in regular system failures. Low lying areas of Blackpool and Surfdale are subject to flooding in heavy rainfall events and

contaminated surface floodwaters become a significant health risk. Increased development and subdivision in recent years has added to the existing risk.

Although technological developments have improved wastewater quality, the sheer number of on-site systems, many of them very basic and old, and the volume of effluent means risks to health are unacceptably high. After many years of Public Health advocacy, a reticulated sewage system is near completion for the commercial area of Oneroa. Currently, many Oneroa premises have sewage removed weekly by tanker.

Disposal of septic tank sludge also presents difficulties due to local soakage problems, with run-off from sludge sites, contaminating natural waterways. All of these problems are exacerbated over holiday periods such as Xmas, New Year and Easter when the local population increases with an influx of holidaymakers and tourists.

Recreational Water

Natural Waterways

There are a large number of potential microbial pathogens present in Auckland's recreational water such as bacteria, enteric viruses and protozoa. Enteric viruses present the greatest risk of infection. A study in 1994 showed that combined sewer overflows delivered 30,000 faecal coliforms per 100 ml of combined sewage/storm-water (Beca Steven, 1994). The highest levels of microbial marine water contamination have been found in Central Auckland, inner Eastern Auckland and North Shore's East Coast Bays beaches. Fresh-water streams and rivers also show high levels of faecal contamination. Brackish water streams, lagoons and estuaries throughout the Auckland region show significantly high levels of faecal contamination, with pathogens including *Campylobacter jejuni* and *Salmonella typhimurium* identified at some sites. The fresh water lakes, however, are relatively pristine.

From international studies there is a consistent epidemiological association between exposure to faecal contaminated recreational water and adverse health outcomes including, 'highly credible gastroenteric illness' (HCGI), respiratory, eye, ear and skin infections. The risk of developing HCGI depends on the bathing site. Each episode of estuarine bathing carries a 2.3 to 6.2 percent risk of HCGI and each episode of beach bathing carries a <1 to 3.3 percent risk of HCGI (Auckland Healthcare Services, 2000).

The most important route of exposure to waterborne pathogens is that of ingestion, with swimmers swallowing an estimated 50-ml of water per hour. Other routes of exposure include inhalation and local skin contact.

Patronage at Auckland surf beaches was gauged from head counts performed in the middle of the day between October 1996 and March 1997, the principal bathing season. This count exceeded 377,000 people (Vaughan, R 1997). Inner city beaches are also very popular during the summer months, although no information concerning patronage has been obtained. This lack of data relating to human exposure to potentially contaminated recreational water represents an important gap in the local risk assessment process. The

expected gastroenteric illness rate among Auckland swimmers is presented in Table 125. It is estimated that for those swimming in North Shore streams and estuaries, the swimming-associated risk of highly credible gastrointestinal illness could be as high as 62/1,000 and at Greater Auckland beaches as high as 25/1,000 (Auckland Healthcare Services, 2000).

Table 125: Expected Gastroenteric Illness Rates Among Auckland Swimmers

Region	Data Source	Swimming*-Associated Illness Rate per 1,000 ** (percent)
North Shore/Auckland North		
North / North Shore Marine	NZ Bathing Survey	<1 - 11 (<1%-1.1%)
North / North Shore Marine	ARC Bathing Beach Survey	0.2 - 9.7 (<1%)
North Shore Estuarine	Auckland Healthcare	31 - 62 (3.1-6.2%)
North Shore Fresh	Auckland Healthcare	20 - 23 (2.0-2.3%)
Auckland West		
West Coast Marine	ARC Bathing Beach Survey	0.2 (<1%)
West Coast Marine	Waitakere City Council	<1 (<0.1%)
West Coast Estuarine	Waitakere City Council	23 - 26 (2.3-2.6%)
Northern Manukau Marine	Waitakere City Council	6 - 16 (0.6-1.6%)
Auckland Central		
Waitemata Harbour	ARC Bathing Beach Survey	0.2 - 11.2 (<1-1.1%)
Waitemata Central and Eastern Beaches	Auckland Healthcare	19 - 33 (1.9-3.3%)
Waitemata South Eastern	Manukau City Council	12 - 17 (1.2-1.7%)
Waiheke Island Beaches	ARC Bathing Beach Survey	0.2 - 3.7 (<1%)
Waiheke Island Beaches	Auckland Healthcare	<12 (<1.2%)
Waiheke Island Beaches	Auckland Healthcare	18 - 24 (1.8-2.4%)
Auckland South		
Manukau Northern Beaches	ARC Bathing Beach Survey	0.2 - 3.9 (<1%)
Manukau Northern Beaches	Auckland Healthcare	14 - 25 (1.4-2.5%)
Manukau Southern Beaches	ARC Bathing Beach Survey	0.2 - 10.5 (<1-1.0%)
Manukau Eastern Beaches	Manukau City Council	15 - 20 (1.5-2.0%)

*Range of expected ill swimmers over the various beaches sampled

**Swimming-associated illness rate=illness rate in swimmers minus illness rate in non-swimmers

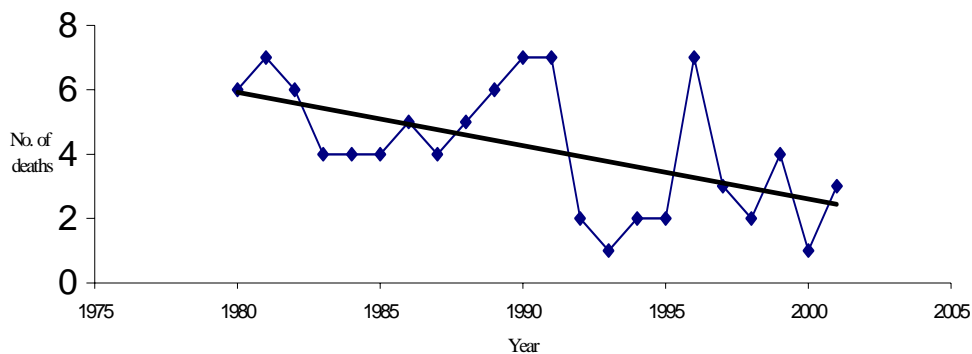
Overflows from the sewer/storm water system continue to adversely affect bathing beaches within the Waitemata area. Moderate to heavy rainfall produces bacterial levels at beaches that exceed guideline levels that would be expected to result in bather illness. Signs are regularly placed on North Shore beaches advising people not to swim due to sewage contamination. Public Health Protection advises the public not to bathe within 48 hours of significant rainfall, or 72 hours for muddy/silty tidal zones and areas, which are not directly, open to the sea. e.g. Waitemata Harbour. Observations suggest this advice is often ignored.

Swimming Pools

The health risks posed by swimming pools are drowning, injuries and chemical and microbiological contamination, particularly from cryptosporidium (a protozoa that is resistant to chlorination).

From 1980 to 2001, 92 people drowned in Auckland region swimming pools (Blomquist, S. 2001). Of that total, 66 percent were in the age range 0 -5 years old. Approximately 35 percent (20) of all deaths in home pools occurred in 'fenced' pools.

Figure 105: Drownings in Auckland Region pools, 1975-2001.



Swimming pool use has been associated with 107(54%) of the 199 cases of *Cryptosporidiosis* reported this year (to September 2001). The other main source of infection is person-to-person spread. Territorial local authority swimming pools should comply with local by-laws and the New Zealand Standards: Pool Water Quality 5826:2000. Auckland City Council, Rodney District Council and Franklin District Council carry out regular inspections of pools in their areas. Manukau City Council and Waitakere City Council are currently looking at doing the same.

Food Quality

Seafood

Hundreds of tonnes of cockles, mussels, paua, pipis, tuatua, toheroa, and oysters are harvested from around the Auckland region coastline each year. Shellfish are affected by water pollution, with enclosed harbours more likely to be polluted than open beaches and coasts. Not all areas that are polluted are signposted with warnings.

There is a potential public health risk from shellfish feeding on viruses from the water column in the vicinity of a sewage discharge point and thereby concentrating those viruses. The infective dose of some viruses is very low. For example, the infective dose of Norwalk-like viruses is as small as 1-10 virus particles (Greening et al., 1999).

Bivalve shellfish are internationally recognized as a high-risk food for the following reasons:

- ❑ Bivalves are filter-feeding shellfish and are therefore capable of accumulating pathogenic micro-organisms, viruses, marine biotoxins or toxic substances from the environment;
- ❑ Shellfish are often consumed in their raw state with no prior thermal process to eliminate pathogens;
- ❑ Microbial multiplication is likely to occur if time and/or temperature abuse occurs between harvest and consumption.

Illnesses can range from mild, self-limiting gastro-intestinal symptoms to diseases such as typhoid, hepatitis, and shellfish poisoning syndromes (paralytic, diarrhoeic, neurotoxic or amnesic). Population groups who traditionally gather and consume seafood are Maori, Pacific and Asian peoples. Vulnerable subgroups are the elderly, young children and pregnant women. Public Health Protection is currently working on biotoxin warning signs and temporary signs to be erected when sewage overflows occur around the region. This is normally the responsibility of the Territorial Local Authority. However, the Regional Public Health Service step in when this is not carried out.

The District Health Board can manage the risks to public health by providing advice, education, and public notification when shellfish are contaminated by marine biotoxins or other contaminants.

Mercury

Mercury is a heavy metal that in excess can cause permanent kidney and nerve damage. Most of the mercury in our bodies comes from eating contaminated fish. The unborn child, breast-fed babies and young children are at greatest risk. Pregnant women and breast-feeding women should avoid consuming excess quantities of old, large, predatory fish such as shark and lemon fish (commonly used in fish and chip shops), and tuna. The geothermal and volcanic nature of much of New Zealand affects the concentrations of mercury present in our environment. A suggested intake of these fish is no more than one serving per week. This does not apply to other varieties of fish (MOH, 2000).

Chemical Contamination

The Ministry of Health published the results of a total dietary survey in February 2000 (MOH, 2000). The dietary survey involved sampling 114 different foods, of which 105 were considered to be those most commonly eaten by New Zealanders. Levels of all pesticide residue limits were below internationally recognised acceptable daily intakes. Estimated weekly dietary exposures to arsenic, lead, tin, cadmium and mercury were all well within the Provisional Tolerable Weekly Intakes.

Food-borne infectious diseases

Food-borne infectious diseases are a major public health problem in New Zealand. The pathogens most commonly associated with food-borne infectious disease in New Zealand are; *campylobacter*, *salmonella*, *shigella*, *listeria*, *verotoxigenic Escherichia coli* (VTEC),

hepatitis A, Norwalk type viruses, and toxin producing organisms such as *Clostridium perfringens*, *Bacillus spp.*, *Staphylococcus aureus*. It is estimated that the number of cases occurring per year is 199,000 or 3,241 per 100,000 population (Lake et al., 2000). However, the majority of food-borne illness does not come to the attention of the health service and the total number of cases could be as high as 823,000 per year. Days of lost production and leisure time activities from food-borne disease have been estimated as approximately 497,000. An economic analysis in 2000 has estimated the total costs to be \$55.1 M (\$462 per case) with campylobacteriosis generating most of the costs (Scott et al., 2000).

Land Quality

Approximately 1,700 potentially contaminated sites were identified in the Auckland region in a 1992 'broad scale' report. The industries likely to present the greatest risk to human health in Auckland are those which use the most hazardous substances and have the greatest number of sites around Auckland. These include scrap yards (PCBs, metals), smelting/refining works (mercury, arsenic, lead) and landfills (landfill gases). Other sites, which may also carry significant risk, include chemical, paint and electrical manufacturing sites, metal treatment, electroplaters, drycleaners, tanning and agricultural sites.

Growth in the Auckland region is resulting in extensive residential development of both land that has been previously used for industrial purposes and rural land. A current investigation into residual levels of chemicals on horticultural sites has found elevated levels of organochlorines, copper, lead and arsenic. Auckland Regional Council and the Ministry for the Environment are now recommending soil testing prior to the development of rural land. Soil contamination resulting from previous land use may pose a risk to human health once the site is developed for residential housing. Soil and settled dust can be a significant source of exposure to contaminants through dermal contact, inhalation and ingestion (WHO, 2000). In addition, the earthworks associated with developing land may result in contaminated soil entering waterways and the production of contaminated dust. Metals and persistent organic chemicals from industry and urban run-off, not controlled at source, have led to contaminated sediments.

Landfilling (e.g. rubbish dumps or tips) is the most common method of solid waste disposal in New Zealand. Landfill sites currently operating in Auckland include:

- ❑ Redvale Landfill, Dairy Flat;
- ❑ Rosedale Landfill, Mairangi bay;
- ❑ Claris Landfill, Great Barrier Island;
- ❑ Greenmount Landfill, Penrose;
- ❑ Whitford Landfill, Whitford.

Potential hazards associated with landfills include:

- ❑ the generation of gas that may cause asphyxiation and/or is explosive;

- production of leachate that may contaminate surface and ground water.

Other potential health hazards include litter, which may cause direct injury, pose a fire risk, or act as a breeding ground for mosquitoes/ rats. Birds attracted to landfills may also carry disease, and there is a geotechnical risk of ground subsidence or a landslide.

Landfill sites employ a variety of measures such as leachate and landfill gas monitoring and collection systems to decrease the creation and discharge of hazards that could pose threats to human health. If a landfill contains hazardous substance likely to pose a threat to human health, it becomes a contaminated site.

Table 126: Priority Matrix for Contaminated sites in Auckland.

Number of sites	more than 50 sites	between 5-50 sites	less than 5 sites
Potential Effects			
High	<u>Scrap yards</u> (PCBs, metals) <u>Smelting/refining</u> (mercury, arsenic, lead) <u>Landfills</u> (landfill gases)	<u>Chemical manufacture</u> (any chemicals) <u>Paint manufacture</u> (oils, metals) <u>Metal treatment</u> (cyanides, metals) <u>Power generatⁿ/distributⁿ</u> (PCBs) <u>Asbestos</u> (asbestos) <u>Electrical manufacturing</u> (PCBs) <u>Mining/minerals</u> (cyanides, metals)	<u>Explosives</u> (explosives) <u>Gas works</u> (phenols, tars, cyanides)
Medium	<u>Electroplaters</u> (cyanides, metals, corrosives) <u>Engine works</u> (oils, metals) <u>Drycleaners</u> (volatile halogenated organics)	<u>Tanning</u> (metals, acids, alkalis) <u>Defence works</u> (metals, oils) <u>Agriculture</u> (fertiliser, metals, corrosives) <u>Airports and Drum re-conditioning</u> (volatile halogenated organics)	<u>Iron and steel works</u> (metals) <u>Pesticide manufacture</u> (pesticides)
Low	<u>Service stations</u> (hydrocarbons, oils) <u>Oil productⁿ/storage</u> (hydrocarbons, oils)	<u>Railways</u> (oils)	<u>Pharmaceuticals</u> (solvents, acids, alkalis) <u>Port facilities</u> (hydrocarbons) <u>Acid/alkali</u> (acids, alkali)

Data Source: Ministry of Health, 1996.

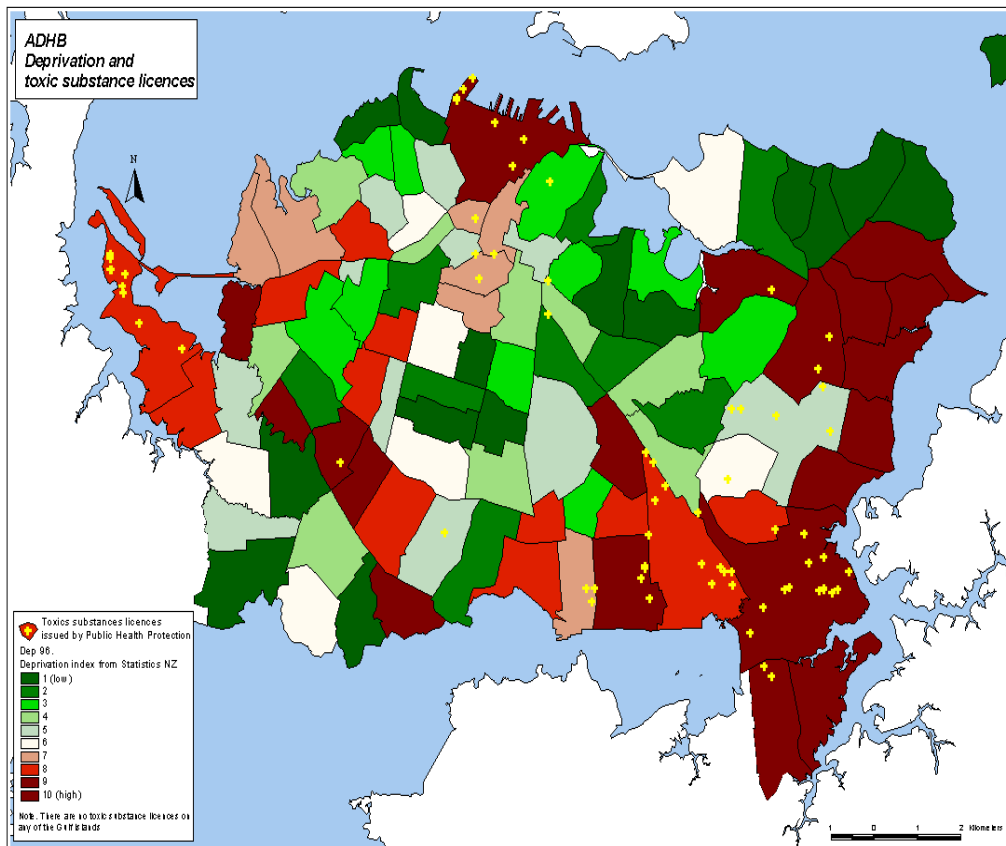
There is difficulty identifying many old landfill sites with few records existing on design and waste composition at these sites. The potential hazards associated with landfill sites

appear to be most marked for those sites closed in the 1960's - 1980's, and from leachate contamination of ground and surface water rather than from landfill gas. The sites ranked as having the greatest potential to adversely affect human health and the environment in four Auckland areas are as follows (Auckland Healthcare Services, 2000):

- ❑ Auckland: Galway Street, Motions Road, Meola Road, Cox's Creek, Waikowhai; Park, Riddell Rd, Brady Road, Whitney St, Waikaraka Park, and Phyllis Street;
- ❑ Franklin: The Elbow, Parker Lane, and Kowhai Place;
- ❑ Waitakere: Taipari Strand, Archibald Park, and Selwood Road;
- ❑ Manukau: Hills Road, Kouhoura Crater, Allens Road, Old Quarry Road, Great South Road.

Hazardous Substances and Organisms

Figure 106: Deprivation (NZDEP96, deciles 1-10) and toxic substance licences in the Auckland DHB zone.



Data Source: Auckland Public Health Protection Unit, 2001.

Hazardous substances are found in our homes, at work, in all businesses, industry, horticulture and agriculture. If not handled properly, hazardous substances can poison people, explode, cause fires and pollute the environment.

Increased urban intensification is resulting in the location of residential populations adjacent to industrial zones and the creation of mixed land-use zones. Both of these scenarios can result in potential exposures of residential populations to hazardous substances.

Through enforcement and education, the Public Health Protection Unit aims to reduce health risks arising from the sale, importation, manufacture, storage, packing, labeling, handling, transport, treatment and disposal of hazardous substances. The Hazardous Substances and New Organisms Act 1996 and the Toxic Substances Regulations 1983 provide the basis for necessary controls on hazardous substances. The legislation requires all packers, sellers, and hawkers of deadly, dangerous and standard poisons to hold an appropriate license. The Ministry of Health issues licenses upon the recommendations of a Hazardous Substances and New Organisms Officer. Approximately 200 licenses are issued in the Auckland region every year (Figure 106).

Lead

Lead is a bioaccumulative toxic metal that is found in many products and in many places in the environment. There is an increasing awareness about the hazards associated with lead. Children and pregnant women are vulnerable sub-groups of the population. The domestic use of lead-based paint is the major source of exposure. Lead-based paint is almost certain to be present in pre-1945 paintwork, and is likely to be present on pre-1980 paintwork (EH Advice, 2001). Other sources of lead exposure are; lead transported home on work clothes; hobbies involving lead (eg, lead lighting, graphic materials); lead-based cosmetics and traditional medicines; leaded pottery and ceramic glazes; and lead in food and drinking water. The levels of blood lead equal to or in excess of 15 µg/dl are notifiable to the Medical Officer of Health under the Health Act 1956. Currently, 12-15 cases per year are notified, however, lead exposure cases may be significantly under-diagnosed and under-reported.

Pre-school children are particularly susceptible to poisoning from lead-based paint because of their learning behaviour patterns (hand to mouth activities) and their relative size. Lead based paint has a sweet taste and children may develop a partiality for eating flaking paint (EH Advice, 2001).

The early stages of lead poisoning are non-specific and affect the gastrointestinal and nervous systems. In later stages, symptoms may develop in the blood, kidneys, bones, heart and reproductive systems and may, in extreme cases, cause death. One of the most important manifestations of lead exposure is developmental impairment in children. Most children suffering from elevated lead levels have no clear symptoms. The effects of mildly elevated lead levels can include reduced IQ, impaired neuro-behavioural development, cognitive deficits, irritability and aggression. Lead can also cross the placental barrier and affect an unborn child (Occupational Safety and Health Service, 1995).

Public health also provides advice and free testing of samples for the general public on matters relating to renovating homes containing lead paint. General practitioners in the

Auckland region are kept informed about lead poisoning trends and notification requirements through the Auckland Public Health Protection Unit.

Asbestos

Asbestos is a group of natural minerals that are very strong and resistant to heat, fire, chemicals, and wear due to friction. In the past it has been used for products such as insulation, spouting for drainage, and household products like oven gloves. In the last twenty years, asbestos-containing materials have become generally unavailable but may still be present in the environment, particularly in houses built before 1980 (MOH, 1996). In the last two years, the Regional Public Health Service in Auckland has received 243 samples from the public, to test for asbestos presence.

Asbestos is a risk to health when it is inhaled as a fine dust. The risk increases with the number of fibres inhaled and the frequency of exposure. To cause death or serious disease, concentrations would need to be more than 166 times the level for “normal exposure indoors” (30-600 fibres per cubic metre) (MOH, 1996). The diseases associated with asbestos are asbestosis (scarring of lungs), mesothelioma (tumours in lungs or intestines), thickening of lung membranes, and lung cancer. There is no consistent evidence that swallowing asbestos fibres is a health risk (MOH, 1996).

New asbestos is not a problem. However, District Health Boards will need to be aware that with increasing urban development and intensification, old asbestos may be uncovered and thereby present a hazard to the public.

Spray drift

Agrichemicals are often applied by vehicle-mounted sprayers, low flying aircraft or helicopters. Therefore dispersal may lead to unintended spray drift onto adjacent areas. In Auckland, additional aerial spraying has occurred in the Eastern suburbs due to the tussock moth infestation in 1996 and it is due to occur in western Auckland with the recent painted apple moth infestation. Spray drift creates much concern and there is a common perception that this has an adverse impact on the public health.

A health surveillance programme following the 1996 *Bacillus thuringiensis* var. *kurstaki* (Btk) spraying has been conducted. The report found that there was no increase in GP consultation rates for new-onset asthma, asthma exacerbations, lower respiratory problems, headache, eye, skin or upper respiratory symptoms. There was no increase in presentations for autoimmune disorders and no identified chronic fatigue syndrome associated with residence in a spray area. In addition, the report found that there was no consistent difference between birth weights and gestational age among babies born to mothers residentially exposed to Btk spray. The magnitude of variation lay within population trends and chance. There was a potential risk that low flying aircraft may distract road users, however, no pedestrian or cyclist injury admissions occurred among children resident in the spray area at the time of spraying (Ministry of Agriculture and Forestry, 2001).

The health risks from agricultural spray drift in rural areas in New Zealand have been described as minimal due to water and air dilution (Fowles et al., 2001).

Mosquito-borne disease and surveillance

Three accidentally imported mosquito species, now established in New Zealand, are potential arbovirus vectors; *Culex quinquefasciatus*, *Aedes notoscriptus*, *Aedes australis*. There is evidence of recent dispersal of mosquitoes from their original entry points in the northern North Island southwards, for the former two species, and northwards from the southern South Island for *Aedes australis*. All three species could possibly transmit Ross River virus in New Zealand. *A. notoscriptus* and *A. australis* are also potential vectors of dengue fever, and *C. quinquefasciatus* is a possible vector of encephalitis viruses (MOH, 1997).

Recent mosquito incursions of exotic species have occurred. For example, the Southern Saltmarsh mosquito *Aedes camptorhynchus* was first discovered in Napier in 1998. On 18 February 2001 it was identified in the Kaipara Harbour. This mosquito is exotic to New Zealand and is important as a possible vector for Ross River Virus disease, as well as being a nuisance biter. This disease is non-fatal, but can present a range of symptoms including myalgia, flu-like symptoms and a rash. Most people recover within a month, but the symptoms can persist for years and be quite severe. There is no vaccination against the disease, and immunity is obtained only after contracting the disease. To date, only three cases of Ross River Virus have been reported in New Zealand, all acquired overseas (ESR, 2001).

A trapping programme is underway at ports in Auckland after the discovery (April 2001) of larvae and pupae of an exotic mosquito thought to be *Aedes aegypti*, the yellow fever mosquito.

The potential population health risk is that a person infected with Yellow Fever, Ross River, Dengue or specific encephalitis viruses may be bitten by one of these mosquito vectors who is able to transfer these diseases to a non-immune population.

In New Zealand, the area at greatest risk of exotic disease is the Auckland Region (MOH, 1997). Auckland has:

- the largest population;
- high population growth;
- a large Pacific island community in South Auckland;
- a suitable climate with highest annual temperature;
- international air and sea ports resulting in;
 - 74.9 percent of passenger arrivals;
 - 74 percent of bulk shipping cargo;
 - 34.5 percent of direct overseas vessels;
 - 50 percent of retreaded or used pneumatic imported tyres.

There is a mosquito trapping programme operating at each port and inspection at the airports is undertaken by MAF who will inform health services only if they suspect a public health problem. Over 1,200 ships and thousands of containers pass through Auckland seaports. The MAF inspect containers however the ratio of inspected containers to non-inspected containers is approximately 1:4.

Other Hazardous Settings

Buildings and Legionella

Legionellosis is a potentially life-threatening illness. The main reservoirs of infection are aqueous; domestic hot water services in buildings such as hotels and hospitals, air conditioning cooling towers, evaporative condensers, pools, humidifiers, nebulisers, hot and cold water taps and showers. In addition, misting systems in fruit and vegetable departments of supermarkets and water from creeks and ponds have been implicated as sources of infection. Legionellosis has also been associated with compost and potting mixes. The possibility of an outbreak of legionellosis is high in Auckland due to the lack of audit, particularly audit of the maintenance and cleaning schedules for air conditioning and water systems in buildings.

Early Childhood Education Centres

Early childhood education centres provides many opportunities for communicable diseases to spread. Enteric diseases such as rota virus, giardiasis and cryptosporidiosis, spread very quickly from child to child by nappy changing and inadequate hand washing, placing contaminated objects in the mouth, or other unhygienic practices. In 2001, a large outbreak of giardiasis and cryptosporidiosis was linked to a childcare centre in the Waitemata DHB zone. Anecdotal evidence suggests that other enteric disease outbreaks are widespread, but often go unnotified. While many of these diseases may be self-limiting, a proportion will require medical attention and hospitalisation.

Injuries are also common in early childhood education centres. Providing a child-safe environment requires vigilance and the funds to repair childproof fences and playground equipment, top up the bark to provide a safe-fall surface, replace contaminated sand in the sandpit, and other routine maintenance. Staff must be trained to perform hazard audits and take action to protect the safety of children, but training and experience varies widely.

A growing proportion of pre-school children and infants attend early childhood education centres. There are currently 319 centres in the Auckland DHB zone. The maximum number of children per centre is supposed to be fifty, but some centres operate several licences to surpass this limit. The Ministry of Education is currently attempting to increase participation rates, particularly amongst Pacific and Maori, to promote educational and social outcomes. All early childhood education centres are required to obtain a license from the Ministry of Education, although a few do not. The licensing process involves a health and safety assessment by Public Health staff. Once licensed, the Education Review Office audits compliance with requirements periodically.

Parents, who may be under pressure from their employers, often insist on returning children to the centre while still infectious. Disease control is also compromised in some centres by inadequate disinfection.

Key Issues:

- ❑ Air pollution is a major problem in the Auckland Region. Motor vehicles cause 80 percent of this. They are a major source of ambient carbon monoxide; nitrogen dioxides; particulate matter and volatile organic compounds;
- ❑ Statistically significant associations have been observed between ambient air pollutants and hospital admissions, emergency department and GP visits for respiratory and cardiovascular diseases. Children may be particularly vulnerable to the adverse health effects of air pollutants. In the Auckland region, the number of deaths attributable to vehicular emissions is at least equivalent to deaths from traffic accidents;
- ❑ The makeup of fuel directly affects the type and quantity of emissions from vehicles. Substantial health gains could be made if the fuel specifications were changed and catalytic converters used;
- ❑ Health authorities need to be involved in transport-related decision making;
- ❑ In Auckland, environmental noise pollution continues to grow and it is accompanied by an increasing number of complaints from people exposed. Noise is associated with direct, as well as cumulative, adverse health effects such as hearing impairment, sleep disturbance, reduced physiological and work performance and increased psychological distress;
- ❑ Non-reticulated water supplies are associated with water borne illnesses. These impact on productivity, leisure time activity, and health services;
- ❑ Contamination of drinking water supply is most likely to be associated with microbiological organisms rather than due to toxic chemicals;
- ❑ The majority of people in the Auckland District Health Board area are serviced by reticulated water that has Aa grades. Water is supplied from protected catchment lakes in the Hunua and Waitakere Ranges and treated in plants at Huia, Waitakere and Ardmore;
- ❑ Illness causing organisms including *salmonella*, *campylobacter*, *giardia*, *cryptosporidium*, and *E.coli* 0157 are likely contaminants of non-reticulated water supplies. It is likely that gastro-enteric illness occurs in those areas as a result of poorly managed and maintained supplies;

- The incidence of poor oral health is inequitable and costly. DHBs should advocate fluoridation within communities that do not have it in their water supply – Onehunga & Hauraki Gulf Isles = 20,000 pop.;
- There are health risks posed by swimming at Auckland region beaches, estuaries, and swimming pools. This is likely to increase with urban intensification;
- Combined sewers collecting both sewage and storm water are common in the older parts of Auckland. Around 73 percent of the pipes are more than 50 years old and there are approximately 400 overflows points. The main health risks associated with this are microbiological contamination of private and public land, recreational water, and shellfish. The highest levels of microbial marine water contamination have been found in Central Auckland, inner Eastern Auckland and North Shore's East Coast Bays beaches. Brackish water streams, lagoons and estuaries throughout Auckland show significantly high levels of faecal contamination, with pathogens including *Campylobacter jejuni* and *Salmonella typhimurium* identified at some sites. The fresh water lakes however are relatively pristine;
- There is a <1 to 6.2 percent risk of developing “highly credible gastroenteric illness” when swimming at Auckland region beaches and estuaries. Public Health Protection advises the public not to bathe within 48 hours of significant rainfall or 72 hours for muddy/silty tidal zones and areas, which are not directly, open to the sea;
- The health risks posed by swimming pools are drowning, injuries and chemical and microbiological contamination particularly from cryptosporidium (a protozoa that is resistant to chlorination);
- Since 1980 there have been 92 drownings in Auckland region pools with 66 percent in the 0-5 age range;
- Swimming pool use has been associated with 107 (54 percent) of the 199 cases of *Cryptosporidiosis* reported this year (to September 2001);
- Food-borne infectious diseases are a major public health problem that impacts on productivity, leisure time activity, and health services. Vulnerable populations are Maori, Pacific and Asian people as they traditionally gather and consume seafood, which may have microbial or heavy metal contamination;
- The major potential hazards associated with landfills are the generation of gas that may cause asphyxiation and/or is explosive, and the production of leachate that may contaminate surface and ground water;
- Approximately 1700 potentially contaminated sites were identified in the Auckland region in a 1992 ‘broad scale’ report. Old landfill sites ranked as

having the greatest potential to adversely affect human health and the environment in the ADHB zone include: Galway Street, Motions Road, Meola Road, Cox's Creek, Waikowhai Park, Riddell Rd, Brady Road, Whitney St, Waikaraka Park, and Phyllis Street;

- ❑ As urban development intensifies there is likely to be greater exposure of the population to contaminated sites and hazardous substances;
- ❑ Lead is a bioaccumulative toxic metal that is found in many products and in many places in the environment. Lead-based paint is almost certain to be present in pre-1945 paintwork, and is likely to be present on pre-1980 paintwork. Pre-school children are particularly susceptible to poisoning from lead-based paint because of their learning behaviour patterns (hand to mouth activities) and their relative size. Lead based paint has a sweet taste and children may develop a partiality for eating flaking paint;
- ❑ Asbestos is a risk to health when it is inhaled as fine dust. In the last 20 years asbestos-containing materials have become generally unavailable but may still be around, particularly in houses built before 1980;
- ❑ Auckland is at risk of exotic disease (particularly from vector-borne illness) as it is the major port of entry for overseas visitors and goods. The Public Health Service oversees mosquito surveillance programs;
- ❑ Early childhood education provides opportunities for disease and injury. Many centres are inadequately funded, but still need to provide adequate, safe and sanitary facilities;
- ❑ There are currently 319 centres in the Auckland District Health Board area. The maximum number of children per centre is supposed to be 50, but some centres operate several licences to surpass this limit.

3.09 Disability Support Services (DSS)

The WHO (1980) define a disability as a functional and/or role limitation that results from a health condition, expected to last six months or more. Disability support services (DSS) are provided to support people with a physical, psychiatric, intellectual, sensory (sight or hearing), or age-related disability in the community. People with disabilities use the same health services that everyone else uses, but in addition, they require services to enable them to live as independently as possible.

Disability may be measured by the level of difficulty experienced in carrying out specific tasks, or by the assistance required in carrying out tasks. In order to receive support services, people with disabilities undergo a disability needs assessment, where their total support needs are identified and prioritized. Service co-ordinators then develop service packages to support individuals.

Disability Support Services are currently managed by the Ministry of Health. The current level of information available to DHBs to assess population health need for disability support services is limited. The data presented in this section is based upon use of public hospital services. It is expected that more relevant data will become available over time to enable more detailed analyses of health and disability support service need to be undertaken.

Prevalence of Disability in the Community

Data available from the New Zealand Disability Support Surveys indicate that approximately 702,000 people in New Zealand had a disability in 1997. This is equivalent to almost twenty percent of the population. However, the rate of severe disability in the population was estimated to be approximately three percent (31 per 1,000 pop.) in 1997.

The vast majority of people with disability were aged 65 years or more. The New Zealand Disability Surveys supported international findings that the prevalence of disability in the population tends to increase with age. Indeed, approximately six percent of the population aged 0-44 years were dependently disabled. However, this figure doubled in middle age to 12 percent and doubled again in the 54-74 years age group, to 25 percent. Among people aged 75 years and over, the figure was approximately fifty percent (MOH, 1999).

The prevalence of disability across ethnic groups is varied. Maori and Pacific peoples populations have younger age structures, compared to European and 'Other' ethnic groups, so overall numbers of Maori and Pacific people with disability are lower. However, the New Zealand Disability Surveys indicated that inequalities exist between Maori and non-Maori. When prevalence rates were standardized for age, Maori appear to be more at risk of disability than non-Maori. Unfortunately, the data collected during these surveys did not include sufficient numbers of Pacific peoples to allow similar comparisons to be made, but burden of disease evidence from other studies suggests that disability rates are likely to be high among the various peoples of the Pacific (MOH, 2001).

There was no data available at the time of writing on the prevalence of disability in the Auckland DHB population.

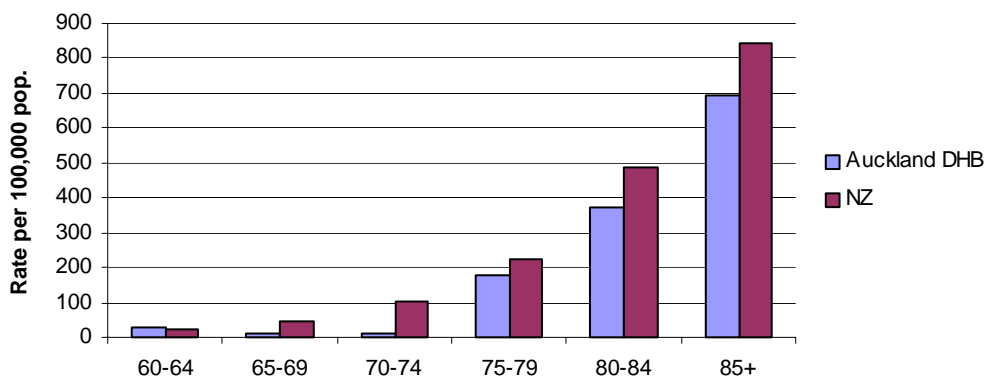
Service Utilization

Figure 107 presents age-specific DSS public hospital discharge rates, by age group for the Auckland DHB and all New Zealand populations. As might be expected, given the trend for increasing levels of prevalence with age (see above), utilization of hospital services appears to increase with age. However, hospital utilization rates are lower for residents in the Auckland DHB zone, compared to the all New Zealand population. This could indicate that the actual prevalence of disability is lower in the Auckland population, compared to the New Zealand population. It could also indicate access to hospital

services is more problematic, or more difficult, for Auckland residents than for people elsewhere in the country, or alternatively, the trend for lower rates of DSS hospitalization for Auckland DHB residents could be indicative of strong local community based DSS services that are successful in keeping people out of hospital.

Further analysis is required to illuminate the reasons for the lower Auckland DHB hospitalization rates, but the data and base information required to perform further analysis was not available at the time of writing.

Figure 107: Age-specific DSS discharge rates per 100,000 pop., by Age Group, Auckland DHB and NZ Pop, 1999/00.



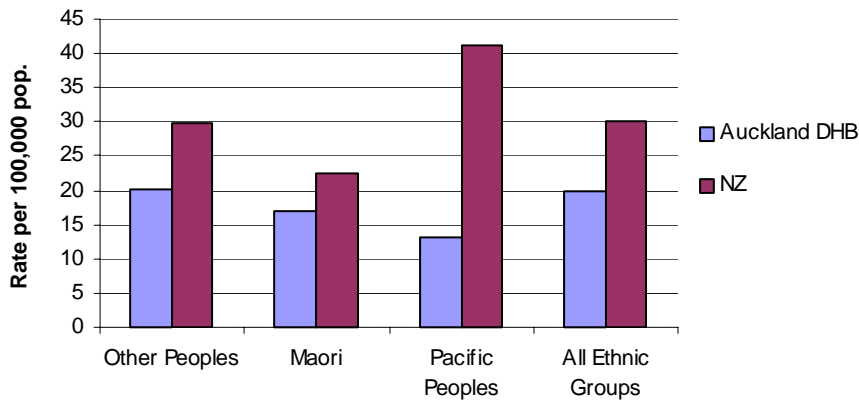
Data Source: NMDS – ‘DSS’ = all discharges with health specialty code ‘D’.

The graph in Figure 108 presents age-standardized DSS public hospital discharge rates, by ethnic group, for the Auckland DHB and all New Zealand populations. Although age-standardized Maori prevalence rates are high, the graph shows that Maori hospitalization rates are low, compared to other ethnic groups, for both the New Zealand and Auckland DHB populations.

Age-standardized hospitalization rates for Pacific peoples in the New Zealand population are very high compared to all other rates presented. However, the rates for Pacific peoples residing in the Auckland DHB zone are very low in comparison.

With the limited information available, it is difficult to accurately explain these trends. It is possible that strong Maori and Pacific family support networks may, in part, explain the lower than expected hospitalization rates presented in Figure L. Migration out of the central city area to family elsewhere in the city, or people returning to their original homes (elsewhere in NZ or to the Islands) may also partly explain the low hospitalization rates among Maori and Pacific peoples from the Auckland DHB. However, access issues to DSS hospital services by Pacific Auckland residents are likely to be the best explanation for the difference between the New Zealand and Auckland DHB Pacific hospitalization rates. Again, more detailed information is required for further exploration to determine the exact reasons for the hospitalization trends.

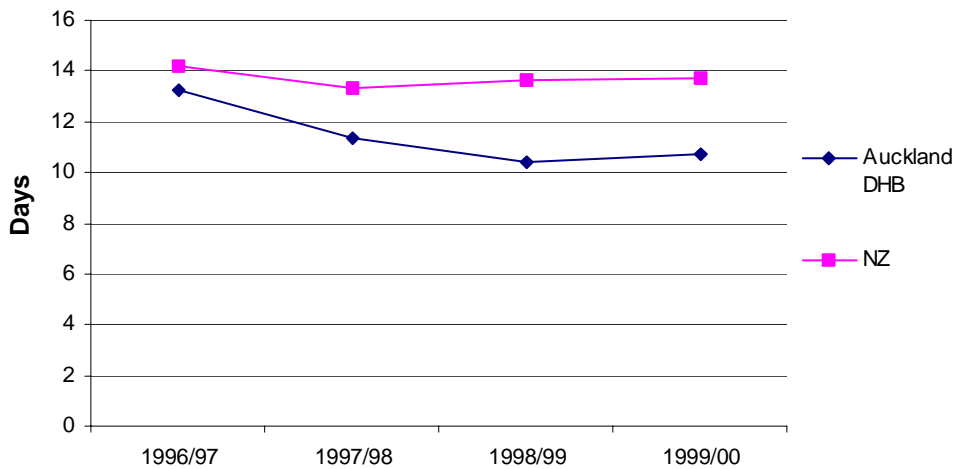
Figure 108: Age-standardized DSS discharge rates per 100,000 pop., by ethnicity, Auckland DHB and NZ Pop, 1999/00.



Data Source: NMDS – ‘DSS’ = all discharges with health specialty code ‘D’.

Figure 109 shows the average length of stay in public hospitals over time, for DSS patients from the Auckland DHB and the all New Zealand populations. As can be seen, the average length of stay is longer for people in the all New Zealand population than for Auckland DHB residents. The graph also shows that there has been a reduction in the average length of stay in recent years for Auckland DHB residents, down from an average of 13.2 days per patient in 1996/97 to 10.7 days in 1999/00.

Figure 109 : Average length of stay (days) for DSS hospitalizations for Auckland DHB and NZ Pop, 1996/97 -1999/00.



Data Source: NMDS – ‘DSS’ = all discharges with health specialty code ‘D’.

Key Issues:

- ❑ The data available is limited to public hospitalizations for DSS. More data is required to further explore population health and service need;
- ❑ Auckland DHB DSS hospitalization rates are lower than rates for the New Zealand population, across age groups;
- ❑ Maori Auckland DHB DSS hospitalization rates are high compared to rates for the NZ Maori population and other ethnic groups;
- ❑ Pacific peoples Auckland DHB DSS hospitalization rates are extremely high compared to rates for the NZ Pacific population and other ethnic groups.

Future Tasks:

- ❑ Perform more detailed analyses once more data becomes available to explain trends identified in analyses to date.

3.10 Primary Care

Although primary health care is a core service component, reliable information about activity in the primary sector is limited. The information contained within this section of the health needs assessment has been obtained from a variety of sources and has been used to present a macro-level assessment of primary health service need. The information presented is not necessarily the best information that could be utilized to assess need, but it is the best information available to the Auckland DHB, at the time of writing.

To a large extent, the information that is presented in this section is focused on general practitioner services. Practice nurses, dentists, pharmacies, community nurses, family planning, physiotherapists etc also provide primary health care services to the community in the sense that these are ‘first-level’ or ‘first point of contact’ services. However, many of these services are covered in other sections of this document, or they are touched upon here, where information is available.

General Practitioner Services

General practitioners (GPs) provide medical care in the community and are the first point of contact with the health sector for the majority of New Zealanders when they are unwell. They provide a wide range of essential services to their patients including treatment of common ills, care during pregnancy, health promotion advice, chronic disease care, basic treatment for injury etc. (general practitioners in this section of the document include those in accident and medical clinics).

Within the Auckland DHB zone, the majority of general practitioners are self-employed. As can be seen in Appendix V, approximately half of the practitioners attached to various general practices throughout the zone are affiliated with independent practitioner associations (IPAs).

Results from the New Zealand Health Survey 1996/97 suggest that general practitioners are the most widely consulted primary health care professionals. Approximately eighty percent of people interviewed in the survey reported having seen a general practitioner in the previous 12 months. This figure is very similar to the figure for the Central Auckland health district (Auckland DHB zone), derived from the results of the Northern Regional Health Survey 1996/97, where 81 percent of residents interviewed reported having seen a general practitioner in the 12 months preceding interview (Parr et al, 1998).

Data from the Regional Survey also indicates that approximately nine percent of the population residing within the Auckland District Health Board zone experienced difficulties getting to a general practitioner in the 12 months preceding interview. The main reasons cited for the difficulties experienced by people were a) transport problems and b) issues over service availability. This included problems regarding the availability of after-hours services, difficulties experienced getting appointments to suit and issues about the waiting time involved in getting to see general practitioners in the zone. Interestingly, the cost associated with seeing a general practitioner was not cited as a major issue for those interviewed within the Auckland DHB zone. However, it should be noted that the information available was collected via survey in 1996/97 and there have been changes to healthcare subsidies in the period since this information was obtained, which impact upon the cost of accessing general practitioner services. Thus, in 2001, the cost of accessing general practitioner services may well be problematic for many residents within the zone. Certainly, it is problematic for residents in lower income areas of the zone (see community perspectives section). In addition, language and cultural barriers were cited as barriers to accessing GP services.

Table 127 shows general practitioner FTEs per head of population in the Auckland DHB zone and the rate for the total New Zealand population. As can be seen from the table, in comparison to the figure for New Zealand, the Auckland DHB zone appears well serviced. In comparison to neighbouring city areas, again Auckland City (Auckland DHB zone) appears well serviced - the figure for Manukau City was seventy GPs per 100,000 population in 1999, North Shore had 83 GPs and Waitakere had 63 GPs per 100,000 population in 1999 (ACC, 2001).

However, the daytime population within Central Auckland, and especially the CBD area, swells with workers from other areas during the week, which largely accounts for the high number of GPs per head of population in Table 127. Although the exact number of people in the city area each weekday is unknown, estimates from an Auckland Regional Council transport survey suggest that 18,000 people travel into the city area to work each day by public transport alone (ARC, 2001). The populations used in the calculations in Table 127 include only those people that lived within the Central Auckland area in 1999.

The calculations do not include the total number of people that would normally seek access to Auckland DHB general practitioner services – which includes a large number of people outside of the Auckland DHB zone.

In addition, it should be noted that the rate for the Auckland area, whilst it appears high, it is an average across the population, which does not reflect general practitioner FTE spread, or general practitioner service availability, across the entire Auckland DHB geographical zone. Indeed, the information available at the time of writing (see Appendix V), which is not without its limitations, does suggest that general practitioner services are inequitably dispersed across the zone and that some of the lower income/high deprivation areas of the zone are likely to have far fewer FTEs per head of population than the averages presented in Table 127.

Table 127: Auckland DHB work-based GP FTEs & average population per GP FTE, compared to NZ, 1999.

	GP FTEs per 100,000 pop	Ave. Pop/GP FTE
Auckland DHB	100	997
New Zealand	87	1,154

Data Source: Medical Council of New Zealand, 2000.

There was no GP service utilization data available to the Auckland DHB at the time of writing, thus it is difficult to determine variations in service use between sub-groups of the population or how many people who reside outside of the Auckland DHB zone are being attended by local GPs. There is limited information available at the secondary level, however, that can be used to infer GP service need and provide an indication of primary care performance.

Approximately 45-55 percent of all Auckland and Starship Hospital emergency department attendances are triaged at levels 4 and 5. Although a triage level is an indicator of how long a patient can wait in emergency before being attended, and thus it is an indicator of urgency, there is a wide body of literature that indicates many triage 4 and 5 emergency department attendees present with conditions that could, or should be treated by a general practitioner (Young et al, 1996; Crouch et al, 1997). Information gleaned during focus group sessions (see section on Community Perspectives) indicates that members of the community often access the emergency departments at Starship and Auckland Hospitals for healthcare that is usually provided by GPs and other primary care providers.

There is a great deal of literature and numerous studies that have sought to explain the reasons why people attend hospital emergency departments, rather than seeking healthcare from general practitioners, when it is appropriate to do so. Some of the most common reasons cited for attending emergency departments, rather than general practitioners for non-emergency conditions include:

- Financial considerations – the cost of consulting GPs can act as a barrier to accessing services. Emergency department services, or ‘consultations’ are free of charge;

- ❑ GP availability – many GP services are not available 24 hours and most hospital emergency department services are available 24 hours;
- ❑ Many patients do not have a regular GP;
- ❑ Many patients perceive GPs to be less experienced and less knowledgeable than health professionals in the hospital;
- ❑ Many people in the community come from countries where primary care services are provided from hospital settings;
- ❑ Attending the emergency department is often seen as a means to ‘fast-track’ the referral process between GPs and specialist services.

Although the data currently collated by the Auckland and Starship Hospitals does not allow for accurate estimation of the numbers of patients attending with ‘ambulatory’ conditions, or conditions that are routinely treated in a primary care setting, approximately 76 percent (approx 3,380 attendances) of all Triage 4 and 5 attendees at Auckland Hospital in 2000 were self-referred and 47 percent (approx 11,990 attendances) of all triage 4 and 5 attendees at Starship Hospital in 2000 were self-referred. That is, they were patients who attended the emergency departments of these hospitals of their own accord. They did not arrive by ambulance or helicopter and were not referred by a GP or any other health professional. Although the emergency department would have been the appropriate place to seek healthcare for a number of these self-referred attendees, it is highly likely that a number of attendees would normally have been treated successfully in a primary care setting.

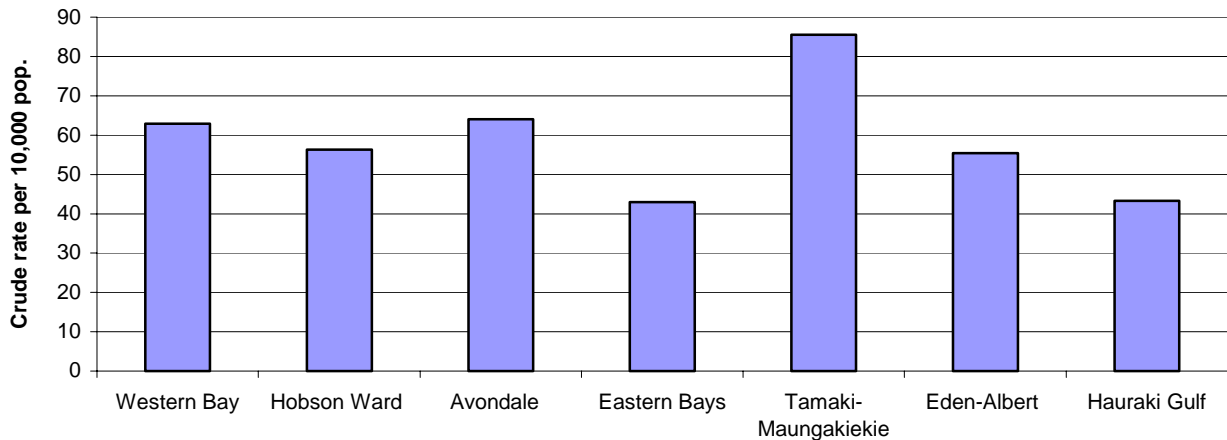
Ambulatory sensitive hospitalisations (ASHs) are hospitalisations that result from diseases sensitive to prophylactic or therapeutic interventions deliverable in a primary health care setting (such as vaccine preventable diseases, early recognition and excision of melanoma, asthma etc). Ambulatory sensitive hospitalisations are sometimes used as an indicator of performance for primary care and can be used to assist in identifying areas of need in the primary sector.

Figure 110 presents ASHs by Ward for the Auckland DHB population. As can be seen in the graph, the Tamaki-Maungakiekie Ward, which covers the Otahuhu, Glenn Innes and Onehunga areas has a very high ASH rate. The rates for Avondale/Mt Roskill and Western Bay Wards are also high. A large percentage of the populations within these Wards live in low income, or high deprivation areas.

Unfortunately the data available does not provide specific reasons why the ASH rates are high for some Wards and not for others. Further research is required to elucidate the reasons why people in specific Wards are at greater risk of ending up in hospital with conditions that could be managed in the primary care setting. However, it is interesting to note that the Wards that have high ASH rates also appear to have fewer general

practitioner practices (Appendix V) than areas such as Eastern Bays and Hobson, where ASH rates are lower.

Figure 110: Ambulatory sensitive hospitalisations (ASHs) by Auckland DHB Ward, 1999/00.



Data Source: NMDS

Anecdotal evidence (see section on community perspectives) and evidence from local surveys and research (Parr et al, 1998; Midland Health 1997) conducted elsewhere in the region suggests that many people in the community face multiple barriers in accessing GP and other primary care services. These barriers include the full cost associated with accessing services, not only the cost of paying GP consultation fees, but also the cost of transport to get to the GP, prescription fees, the cost of arranging care for dependents etc.; cultural barriers, service information barriers, GP availability etc.

Practice Nurses

Practice nurses are registered nurses who work with general practitioners, to provide primary care services. The practice nurse subsidy allows many general practitioners to employ practice nurses. The types of primary care services they provide are varied and include well child services, cervical screening, nurse assessments and health promotion and education.

Table 128: Total registered nurses working in primary care per 10,000 pop., Auckland region & New Zealand

	Auckland DHB	New Zealand
Nurses in primary care	11.15	8.24

Data Source: Nursing Council of NZ, 2001

There are currently 421 nurses working in primary care in the Auckland region. Table 128 shows that when this figure is converted to a rate per 10,000 population, the Auckland region appears better serviced by primary care nursing staff than the New Zealand population as a whole.

Community Pharmacy

Pharmacies in the community are legally required to register with the Pharmaceutical Society of New Zealand. They operate within the community as independent businesses and pharmacists dispense not only prescription medicines but also non-prescribed medicines and therapies. They also provide health advice and are an important ‘first point of contact’ provider of health services within their respective communities.

Information from the Northern Regional Health Survey in 1996/97 suggests that their services are widely utilized as more than 58 percent of the population in the Auckland District Hospital Board zone consult a pharmacist or chemist each year.

The cost of pharmaceuticals is often perceived as a barrier to good health in New Zealand. However, residents are entitled to receive medicines and medical products from a comprehensive national list of subsidized items. PHARMAC have set a reference price for each of these subsidized items and patients usually pay a small prescription fee that contributes to the actual cost of the pharmaceutical, when they pick-up prescribed medicines from their local community chemist or pharmacy. Maximum patient prescription charges apply to fully subsidized medicines. They range up to \$15.00 and are affected by community card/high health user card status (Table 129). Not all pharmaceuticals are fully subsidized, however, and when the actual cost of a medicine is not covered by subsidy, the pharmacist may recoup the difference from the patient. In addition, pharmacists may charge a fee to patients for special packaging, or an after-hours fee.

Table 129: Maximum prescription charges by patient health card status

Patient Health Card Status	Maximum Prescript. Charge
No Card	
Adult	\$15
Child 6+	\$10
Child under 6	\$ 0
Contraceptives	\$ 3
Community Services Card (CSC)	No other card
	\$ 3
High User Health Card (HUHC)	No other card
	\$ 3
Prescription Subsidy Card	No other card
	\$ 2
	With HUHC only
	\$ 2
	With CSC
	\$ 0

Data Source: PHARMAC, April 2001.

Table 130 illustrates the proportion of the population that collected all prescription items after their last visit to a general practitioner in 1996/97. As can be seen, the Auckland DHB population had the highest rate of prescription pick-up in the Northern region.

There were approximately 140 pharmacies in the Auckland DHB zone at the time of writing. The Auckland DHB fund approximately fifty percent of all pharmacies in the Auckland region. It is important to note that they do not appear to be evenly distributed across the Auckland DHB zone and service not only the ‘usually resident’ population, but also the population that commutes into the area during weekdays for work.

Table 130: % Pop that collected prescription items after visiting GP by DHB zone, 1996/97

	% Pop.
Northland DHB	93.8
Waitemata DHB - North Auckland	92.3
Waitemata DHB - West Auckland	92.1
Auckland DHB	96.9
Counties-Manukau DHB	93.9

Data Source: (Parr et al, 1998).

There appears to be approximately one pharmacy for every three GPs in the Auckland DHB zone, or 3.6 pharmacies per 10,000 usually resident population. (It is worth noting that this information has been obtained from claiming data derived from Health Benefits records and it is not entirely 'clean', or accurate data. However, it does provide a macro-level position for the zone and it is a starting point for future analyses.) In comparison, an analysis of pharmacies undertaken in the Midland region in 1995 showed that there was approximately one pharmacy for every two GPs and approximately three pharmacies per 10,000 usually resident population (Midland Health, 1997).

Integration & PHOs

A major issue that has arisen during the course of discussions with stakeholders, data collection, analysis and review of this section of the report is the need for greater primary sector integration in the Auckland DHB zone. There appears to be a need not only for vertical integration between the primary and secondary sectors, but also horizontal integration between the various primary providers in the community. Integration in this sense includes not only better communication and information flows between traditional providers of public health services, but also better collaboration and service co-ordination between public and 'private' health service and non-health (other social agencies) service providers.

The primary healthcare strategy calls for a move towards PHOs and the development of such organizations is likely to promote greater integration and better service co-ordination within the primary sector. Certainly there is a need in the Auckland DHB zone for more PHOs, but detailed analysis in this area is beyond the scope of this report.

Key Issues:

- ❑ Fewer GP practices in high deprivation/low income areas of the Auckland DHB zone;
- ❑ Higher rate of ambulatory sensitive hospitalisations in high deprivation/low income areas of the Auckland DHB zone;
- ❑ Barriers to primary care services – transport, service availability, cost, language and culture etc;

- ❑ Lack of primary care health utilisation data and reliance on ‘proxy’ data, which limits the type of analysis undertaken;
- ❑ Use of emergency department by patients that could see a GP – difficult to quantify magnitude of problem. Emergency department seen as means to ‘fast-track’ referral processes;
- ❑ Need for both horizontal and vertical primary sector integration;
- ❑ There is a need to move towards the development of PHOs in the Auckland DHB zone.

Future Tasks:

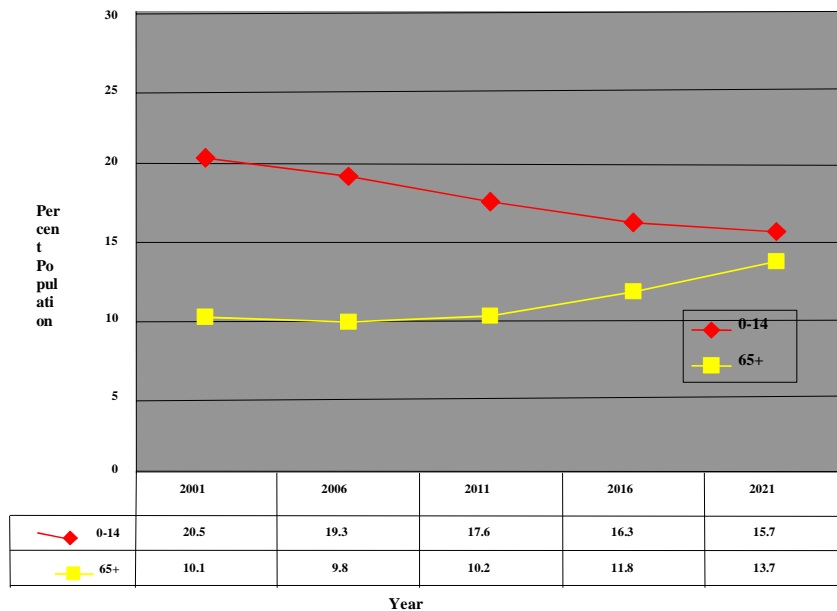
- ❑ Follow-up on general practitioner and pharmacy services across the zone to identify any major inequities in a) general availability or dispersal b) availability after hours/operating hours c) consulting fees.

3.11 Older Adults

Demographics

New Zealand has a comparatively young population, with only 11.5 percent of people aged 65 years and over. By 2010 around 13 percent of the population will be aged 65years or more and thereafter, the proportion of older adults in the population will rise significantly (to 22 percent by 2031 and 25 percent by 2051).

Figure 111: Projected population by age group, 2001 – 2021.



Increases in Māori and Pacific older adults will be particularly significant over the next fifty years, with a 270 percent increase in the proportion of Māori aged 65 years or more and a more than 400 percent increase in the proportion of Pacific people aged 65 and over (MOH, 2001).

The projected increase in numbers of older adults resident in the Auckland DHB zone (Figure 111) is significant in terms of increasing future demand for health and support services.

Services Available

Older adults are high users of all primary, secondary and community adult personal and mental health services including laboratory, radiology and pharmacy services. Older adults utilize a wide range of disability support services including equipment, artificial limb services, home help, assessment, treatment and rehabilitation, support needs assessment and residential services. They also have access to a range of non-government organizations including advocacy services, Age Concern, Grey Power as well as support groups for specific conditions e.g. arthritis foundation, multiple sclerosis society etc.

Health Needs of Older Adults in the Community

Older adults are high users of health and disability support services, with per capita expenditure increasing with advancing age. While older adults may be healthier for longer in the future, demand for health and support services is likely to increase, because of the rapid growth in the number and proportion of older adults in the population, particularly between 2010 and 2040.

Current health and support services for older adults lack a coherent policy and funding framework. Because of this, they are often fragmented and have inconsistent access criteria. This can be confusing for older adults and caregivers trying to identify their health care and support options (MOH, 2001).

An integration project in Auckland among older adults living at home with multiple and complex problems revealed, via self-assessment, that pain was the most common issue, or problem faced by these older adults. Physiological problems such as shortness of breath, mobility and skin problems were also common.

Health professionals involved in the project identified the following areas of need in relation to older adults:

- ❑ Older adults have a need for ongoing monitoring;
- ❑ Older adults often require assessment and provision of an aid or service;
- ❑ There is a need for education/ communication with the patient / family /whanau;

- ❑ There are ongoing needs for the treatment of medical problems in older adults;
- ❑ There is a need for co-ordination of care.

The most important health issues identified by health professionals were:

- ❑ Mental health issues;
- ❑ Cardio Vascular problems;
- ❑ Nutrition problems;
- ❑ Pain;
- ❑ Cognitive problems;
- ❑ Concordance issues;
- ❑ General mobility problems;
- ❑ Gastro-Intestinal;
- ❑ Not taking Rx or doing as advised;
- ❑ Sight / hearing problems;
- ❑ Continence problems;
- ❑ Aids required;
- ❑ Home support needs;
- ❑ Skin problems;
- ❑ Fall, risk, injury;
- ❑ Knowledge deficits.

In addition to the integration project, another project that involved consultation with older adults in the community and the development of a regional plan to meet the mental health needs of older adults, has recently been completed.

The main health needs and issues identified in this project included:

- ❑ People had a strong desire to remain in their own homes;
- ❑ Support is required for family/whanau;
- ❑ Home support services are highly valued;
- ❑ Respite & carer support is essential;
- ❑ It is difficult to access information. People are not well informed about all available services;
- ❑ There is a need for improved communication between Mental Health services and primary providers;
- ❑ People want alternative treatments to medication;
- ❑ People are appreciative of services providing ‘skills’, not just pills;
- ❑ There is a need for holistic treatments;
- ❑ There is a lack of confidence in GPs’ understanding and treatment of mental health conditions;
- ❑ People feel stigmatised by mental illness and “old age” - public education needed;
- ❑ Social isolation; related to ageism, ableism, stigma, resources, financial & physical barriers, immobility is an issue.

Consultation with Maori in this project revealed the importance of relationships with other people, including whanau and the wider community. Specific issues for Maori included:

- ❑ Maori expressed a preference for Maori health staff and services;
- ❑ A desire was expressed for Mental Health services to be more responsive towards the needs of whanau;
- ❑ Support is required for caregivers. Whanau criticised the lack of community support services, respite facilities and the cost of providing for a family member with a mental illness;
- ❑ Several people expressed a desire for Maori kai.

Consultation with Pacific people during the project revealed the following:

- ❑ Pacific People's view of Health is holistic and it is not possible to isolate Mental Health as a construct;
- ❑ Understanding Pacific culture is important to understanding Pacific health. For good mental health, people must adhere to custom and maintain social harmony in the family network and the community. Mental illness is often viewed as being caused by the breaking of custom, resulting in the anger of spiritual forces;
- ❑ More Pacific health workers are required. It is difficult for older Pacific adults to feel comfortable with those who do not understand their culture;
- ❑ Older Pacific adults are disadvantaged by a lack of information about services available. The information that is available should be in a culturally appropriate format. Information should be presented in places like churches, sports and community centres and by word of mouth as well as Pacifica Radio and TV stations;
- ❑ Services should address issues such as poverty, community disintegration, lack of transport, inability to pay for doctor's visits, medications and telephones.

Key Issues

- ❑ The population is aging and the Auckland DHB need to plan to accommodate growth in the numbers of older adults in the population;
- ❑ Isolation and loneliness impacts on well-being and is a major issue for older adults in the community;
- ❑ Transport to and from services is an issue;
- ❑ Gaining access to service information is an issue;
- ❑ Communication and co-ordination between health professionals is an issue;
- ❑ The cost of accessing services can act as a barrier for people;

- ❑ Gaining timely access to appropriate mental health services is an issue and the services that are available in the community need to be more responsive to the needs of Maori and Pacific peoples;
- ❑ More carer support is required for older adults;
- ❑ Support is required for family/whanau;
- ❑ People are appreciative of services providing ‘skills’, not just pills;
- ❑ There is a need for holistic treatments;
- ❑ There is a lack of confidence in GPs’ understanding and treatment of mental health conditions;
- ❑ Cultural considerations are important in the delivery of services to older adults;
- ❑ There is a need to better inform/communicate with family/whanau and friends about health care and the needs of older adults.

3.12 Summary

This section provides a ‘first-cut’ snapshot of health need in the Auckland DHB community and a series of base measures for future reference. There are a number of common issues, or themes, that have emerged from the analysis of population groups and key services areas. There include:

- ❑ There is a paucity of relevant and reliable quantitative data that limits the analysis undertaken in each section;
- ❑ Primary Care and Public Health are key to achieving health gains in the community;
- ❑ The Auckland DHB need to work more collaboratively with other social agencies and NGOs to improve health status;
- ❑ There are significant health inequalities across population groups;
- ❑ Services need to be tailored to suit individual population groups. The one-size-fits-all service approach does not appear to be meeting the needs of many population groups;
- ❑ There are a number of service access barriers and issues that need to be addressed. Transport issues, waiting times and service fees are important access barriers in the Auckland DHB zone.

There are a number of other population groups and service areas that need to be explored in terms of health need. In particular, the health status and health needs of men, sex workers, single parents, people on low incomes etc in the Auckland DHB zone also need to be profiled. In addition, hospital and community services need to be profiled and future demand needs to be explored. Service efficacy is another area that needs to be explored in detail. It is expected that these areas will be profiled by the DHB over time.