Prevention and Care of Respiratory Illness Among Adults in South Western Sydney Area Health Service 2001 - 2004

September 2001

Written by Dr Guy Marks, Director, Department of Respiratory Medicine, Liverpool Health Service, Chairperson, Area Respiratory Disease Advisory Committee, and Ms Lou-Anne Blunden, Senior Planner, Division of Planning, SWSAHS. May 2001.

ISBN: 1 74079 010 3

DIVISION OF PLANNING REPORT NO: 01/03

For additional copies:

Division of Planning

South Western Sydney Area Health Service

Locked Bag 7017, Liverpool BC NSW 1871

Telephone: (02) 9828 5755; Facsimile: (02) 9828 5962

FOREWORD

Prevention and Care of Respiratory Illness Among Adults in South Western Sydney Area Health Service 2001-2004 aims to achieve the purpose of NSW Health and SWSAHS of *Better Health, Good Health Care.* The document summarises policy, epidemiological, and the current service delivery context for the development of a plan for respiratory medicine in SWSAHS. The aims of the service are defined and then a model of care and strategies to implement that model are described.

It is important that the respiratory services developed over this period meet the health needs of the diverse communities of South Western Sydney.

The strategies outlined in the plan have been developed to reflect the needs of the local population and the priorities of the Area Health Service. The strategies will be used as the basis for addressing respiratory illness and will need to inform the development of Sector Business Plans.

It is intended that this plan be a responsive and flexible document. Wide consultation was used to develop the plan and comments received have been considered and incorporated.

IAN SOUTHWELL

Chief Executive Officer

TABLE OF CONTENTS

List of Figures

1. Executive Summary

The need for an Area-wide plan for respiratory services in South Western Sydney Area Health Service (SWSAHS) was identified during discussion on networking of services across the Area and the need for enhanced specialist respiratory services at Liverpool Hospital. The process of developing submissions for the NSW Priority Health Care Programs (PHCP) further highlighted the need for a comprehensive plan. The aim of this plan is to identify an optimal model for respiratory services in SWSAHS for the population 15 years and older and to present strategies to address the current gaps in meeting the needs of the local population with regards to respiratory disease. It is acknowledged that respiratory disease is a major issue in the 0-14 year age group and that care is generally provided by GPs, hospital and community paediatric services. Issues relating to inpatient care for the paediatric population have been considered in the draft plan *SWSAHS Paediatric Services Network 2000-2003* and therefore have not been considered further in this plan.

Specific objectives for the prevention and care of respiratory illness in SWSAHS are:

1. To promote changes in health related behaviour which are conducive to preventing respiratory ill-health in the SWS community;
2. To ensure that all patients with respiratory disease who live in SWS have equitable access to care for their illness;
3. To ensure that the care is provided in a manner which is appropriate to the needs of community groups and individuals within the Area;
4. To ensure that all patients with respiratory disease who live in SWS have access to optimally effective and safe care for their illness;
5. To stimulate research, education and training in respirology among medical, nursing, allied health and science students and graduates; and
6. To ensure that interventions for the prevention and care of respiratory illness are delivered in the most efficient manner possible.

Respiratory illness is the fourth-ranking cause of mortality in SWS and is responsible for 17.2% of bed-days occupied for medical illness. There has been a 33% increase in SWS workload for respiratory disease since 1994. Substantial further increases in demand are projected for Liverpool and Macarthur sectors over the next 10 years. Most respiratory illness is non-tertiary and unplanned. Consequently, there is a high level of self-sufficiency for most respiratory problems. Notable exceptions are sleep apnoea and cystic fibrosis.

There are substantial deficits in the capacity of services in some sectors, especially Liverpool, to meet existing demand. A range of strategies have been proposed to enhance SWSAHS's capacity to meet existing and projected demand and to address the service objectives outlined above.

The strategies with the highest priority are as follows:

- Implementation of the Tobacco Control Plan in South Western Sydney: Strategic Plan for Improving Health 2000-2005.
- Accessible Pulmonary Rehabilitation programs available across the Area.
- Review of policies to ensure that patients with complex respiratory disease receive specialist respiratory care.

- Increased Respiratory Specialist and registrar appointments in order to meet the needs of the above policy.
- Implementation of the Asthma component of the Priority Health Care Program (PHCP).
- Develop Respiratory assessment services, in accordance with the PHCP for Chronic Obstructive Pulmonary Disease.
- Provide a bronchoscopy service at Fairfield Hospital.
- Respiratory laboratory to be established at Liverpool Hospital.
- Clinical practice guidelines to be developed in collaboration with medical, nursing and allied health staff and processes to be established to improve dissemination and uptake of guidelines.
- Respiratory Diseases Advisory Committee (RDAC) to be established within each sector where appropriate to oversee the adaptation and implementation of this plan and the respiratory component of the PHCP and to advise General Managers on other issues relevant to respiratory disease in the sector.
- Area RDAC to take on these responsibilities at an Area level.
- Establish Respiratory CNC position in Liverpool, Bankstown and Macarthur sectors.
- Respiratory medicine ward at Liverpool and dedicated respiratory beds to be made available at each main sector hospital (where possible).
- Smoking cessation to be encouraged in ATSI community.
- Partnership links to be developed with Tharawal Aboriginal Corporation (TAC) to address respiratory illness in the ATSI population.
- Increase communication links between the Hospital,GPs and Community services
- Invite community participation.
- Establish three advanced training posts for respiratory medicine registrars in SWSAHS based at Liverpool and Bankstown.
- Progress the conduct of respiratory research by medical, nursing and allied health staff.

A number of lesser priorities have also been reported.

Resources required for the implementation of these strategies have been estimated however the source is yet to be identified. Some services such as the respiratory laboratory and the sleep and respiratory failure service, may be ultimately self funding. Components of the PHCP for respiratory have been fully funded through two sources: the PHCP funds ($360,000) and enhancement funding for respiratory services ($450,000).

2. Background

Respiratory illness includes a wide range of occupational, infectious, inflammatory, neoplastic, degenerative and other diseases affecting the airways, lungs, pulmonary circulation, pleura, chest wall, upper airway, respiratory muscles and control of breathing. Respiratory diseases associated with substantial morbidity among adults in SWSAHS include asthma, Chronic Obstructive Pulmonary Disease (COPD), tuberculosis, pneumonia, lung cancer and obstructive sleep apnoea. Lung cancer and COPD are also associated with substantial mortality. In addition pleural disease, infections in immuno-compromised hosts, management of ventilatory failure and interstitial lung disease are important problems in hospital practice.

The need for an Area-wide plan for respiratory services in SWSAHS was identified during discussion on networking of services across the Area and the need for enhanced specialist respiratory services at Liverpool Hospital. The process of developing submissions for the NSW Priority Health Care Programs further highlighted the need for a comprehensive plan for the Area.

The aim of this plan is to identify an optimal model for respiratory services in SWSAHS for the population 15 years and older and to present strategies to address the current gaps in meeting the needs of the local population with regards to respiratory illness. It is acknowledged that respiratory disease is a major issue in the 0-14 year age group and that care is generally provided by GPs, hospital and community paediatric services. Issues relating to inpatient care for the paediatric population have been considered in the draft plan *SWSAHS Paediatric Services Network 2000-2003* and therefore have not been considered further in this plan.

The model for SWSAHS attempts to include the full spectrum of health services for the population greater than 15 years in SWSAHS including prevention, primary care, general practice, emergency and acute inpatient services, hospital non-inpatient and community health services and palliative care. The Plan also includes specific strategies for care of patients with asthma and COPD formulated for a submission for the respiratory diseases component of NSW Health's Priority Health Care Program.

3. Goals and Objectives

Health Service Goals and Challenges

The NSW Health *Strategic Directions for Health 1998 –2003* provides the framework within which all other plans in the health system should be developed. The four goals, set out in the *Strategic Directions for Health,* are: Healthier People; Fairer Access; Quality Health Care; and Better Value[1].

As part of a commitment to achieving "Better Health, Good Health Care" SWSAHS has identified the following key challenges:

- Working with our community;
- Ensuring the people in SWS access health services according to need;
- Working in partnership with other agencies to improve health;
- Developing an effective Health service and a focus on health outcomes;
- Becoming a teaching/learning organisation;
- Making the best use of and fairly allocating incoming resources;
- Attracting, developing and retaining the best staff.

These key challenges guided the development of the objectives for prevention and care of respiratory illness in SWS and are reflected in the recommended strategies and priorities outlined in this Plan.

Objectives for Prevention and Care of Respiratory Illness

The objectives for the prevention and care of respiratory illness in SWS are consistent with the Strategic Directions for Health. These objectives are listed under the Goals that they address:

Goal 1: Healthier People

1. To promote changes in health related behaviour which are conducive to preventing respiratory ill-health in the SWS community.

Goal 2: Fairer Access

2. To ensure that all patients with respiratory disease who live in SWS have equitable access to care for their illness.
3. To ensure that the care is provided in a manner which is appropriate to the needs of community groups and individuals within the Area.

Goal 3: Quality and Safe Health Care

4. To ensure that all patients with respiratory disease who live in SWS have access to optimally effective and safe care for their illness.
5. To stimulate research, education and training in respirology among medical, nursing, allied health and science students and graduates.

Goal 4: Better Value

6. To ensure that interventions for the prevention and care of respiratory illness are delivered in the most efficient manner possible.

4. Operating Environment

Policy Context

4.1.1. Focus on respiratory health

The Commonwealth Department of Health and Aged Care has recognised asthma as the sixth national health priority under its National Health Priority Area initiative. In collaboration with the National Asthma Campaign and State Health authorities a strategy for implementing the Six Step Asthma Management plan has been proposed. The NSW Department of Health's asthma project, which preceded the Commonwealth initiative, has included recommendations on interventions for the prevention of asthma. A review of the evidence basis of the Six Step Asthma Management Plan was completed in 1999[2].

Respiratory illness has been targeted by the Report of the NSW Health Council (Menadue Report), March 2000[3] as one of three complex and chronic care conditions that require statewide action. Subsequent to the Health Council's report the NSW Government's Priority Health Care Program (PHCP) was initiated to address the needs of people with chronic and complex medical conditions. This initiative includes respiratory disease in addition to cardiovascular and cancer.

4.1.2. New MBS items

The Commonwealth Department of Health and Aged Care has listed new Medicare rebate items which encourage care planning. These allow General Practitioners to be specifically remunerated for participating in multi-disciplinary case conferences. A number of conditions attached to the eligibility for this rebate must be considered in planning to utilise this item. Care planning is well suited to the management of respiratory illness.

4.1.3. Co-ordinated Care Trial

This is an initiative designed to investigate the extent to which pooling of Commonwealth and State funds for care of specified patient groups will lead to enhanced and more efficient use of resources. An initial round of trials has been completed however the results have not been published. The Commonwealth has announced a second round of trials. SWSAHS is yet to be advised as to whether the co-ordinated care trial proposal has been successful. If accepted, the trial will focus on Chronic Obstructive Pulmonary Disease and Chronic Heart Failure.

4.1.4. Australian Medical Workforce Advisory Committee

A recent report from this Commonwealth government agency has reviewed the workforce requirements for respiratory medicine on a population basis. The purpose of this recommendation is for planning specialist training programs. The committee recommended that one respiratory physician should be supplied for each 75,000 to 85,000 people.

4.1.5. SWSAHS Tobacco Control Plan

This plan has recently been adopted by the Area. It incorporates a number of health promotion and health service-based recommendations to reducing smoking rates within the SWSAHS population.

The following focus areas have been identified for the implementation of the plan:

1. Smoking cessation
2. Exposure to environmental tobacco smoke
3. Marketing and promotion of tobacco products
4. Availability and supply of tobacco products
5. Community awareness and education
6. Building the capacity of the health service

The following priority populations were identified:

- Aboriginal and Torres Strait Islander people
- Children and young people (up to 25 years)
- Pregnant women and their partners
- People of culturally and linguistically diverse backgrounds
- People living with a mental health problem or disorder and their carers

Geography

SWSAHS comprises the seven local government areas of Bankstown, Camden, Campbelltown, Fairfield, Liverpool, Wingecarribee and Wollondilly covering an area of 6,237km^2. Settlement varies from quite dense suburban residential development in Bankstown to scattered rural townships in Wingecarribee and Wollondilly. Parts of the Area are geographically isolated, particularly in Camden, Wingecarribee and Wollondilly and the western parts of Fairfield and Liverpool. The geography, compounded by a growing, aging and diverse population, presents challenges for the provision of equitable and sustainable health services.

Demography

Currently SWSAHS has the second highest population in NSW. However, it is projected that, by 2006, South Western Sydney will be the most populous Health Service, with a total population of 840,680 people. The population is projected to grow from 757,916 in 1998 to 840,680 in 2006. The age distribution of the population is changing. There are projected to be disproportionately large increases in the population aged 45 – 65 over the next 15 years. People over the age of 65 years will make up 10% of the population (83,630 people) by 2006 (figure 1 and 2). As respiratory diseases disproportionately affect the older age groups, the increase in demand will be greater than predicted by the overall population growth.

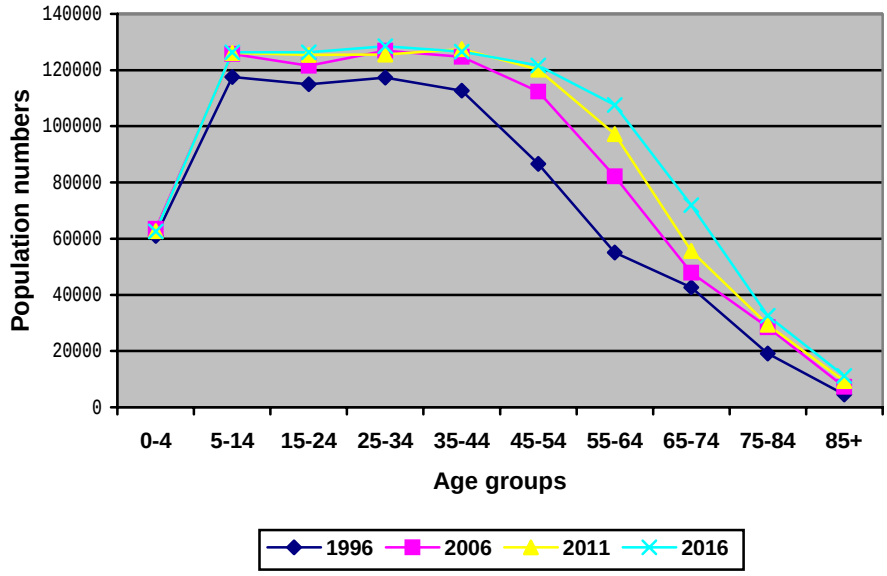
Table 1 - Population projections by Sector (total population)

Sector	1998 ERP*	2006	2011	2016
Bankstown	167,839	169,400	169,490	169,490
Fairfield	190,929	193,680	193,460	192,600
Liverpool	137,066	176,600	197,710	217,110
Macarthur	222,745	255,930	270,580	284,600
Wingecarribee	39,346	45,070	47,930	51,240
Total SWS	**757,916**	**840,680**	**879,170**	**915,040**

Source: Department of Health Population Projections for NSW Area Health Services March 2000

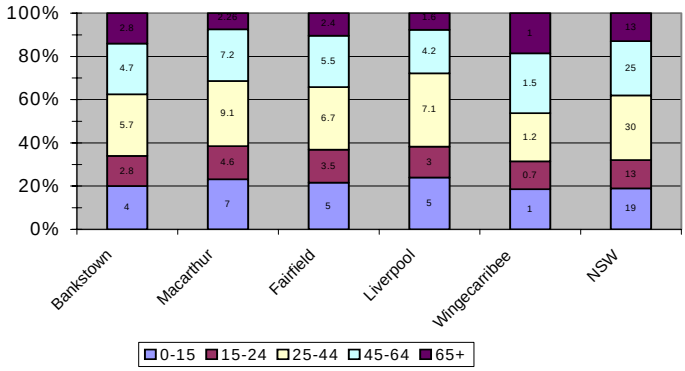
* ERP = Estimated Resident Population.

Figure 1. Population Projection South Western Sydney Area Health Service



Source: Department of Health Population Projections for NSW Area Health Services March 2000

Figure 2. Projected Age Distribution by Sector, SWSAHS 2006



Source: Department of Health Population Projections for NSW Area Health Services March 2000

4.1.6. Socio-Economic Factors

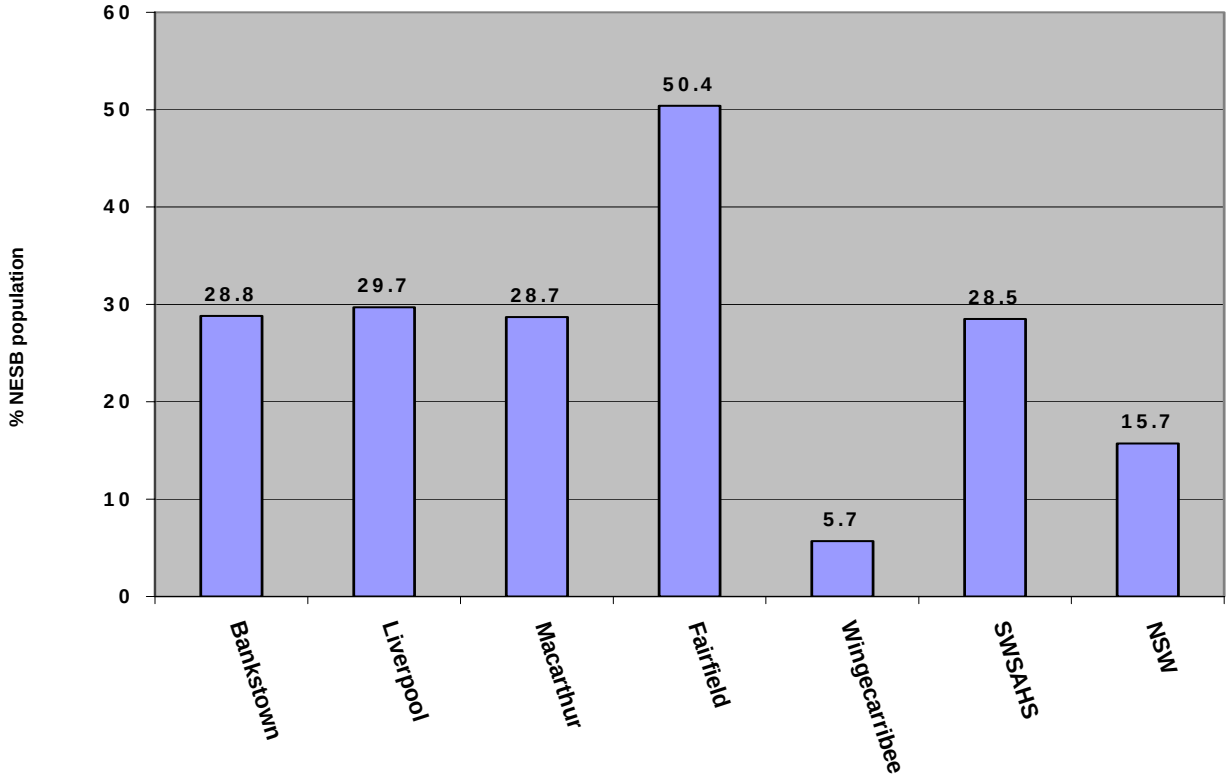
People living in SWS have more social disadvantage than other areas in NSW. The proportion of unemployed, sole parent households, public housing tenants, welfare recipients, and people leaving school early are higher than the State average. Mortality from respiratory illness is strongly associated with poor socio-economic status in NSW residents.

In a report to the National Health Strategy in 1992, adults of low socio economic status were shown to have higher death rates from pneumonia/influenza, bronchitis/emphysema/asthma and lung cancer. Men from this group were two and half times and women three times more likely to die from pneumonia or influenza. Both men and women of lower SES were 50-55% more likely to die from lung cancer[4].

4.1.7. Ethnicity

The Area has a diverse and multicultural population. Approximately one third of the current SWSAHS population was born overseas. Of these overseas born residents three quarters are from non-English speaking backgrounds (NESB)[5] However, the distribution of NESB people varies among the Sectors (Figure 3) as does the relative distribution of countries of origin.

Figure 3. Percentage of NESB Population in NSW and SWSAHS Sectors, 1996



Source: SWSAHS Epidemiology Unit, 1999

Some respiratory health problems are disproportionately represented in ethnic communities. In particular, the risk of tuberculosis in people born in China, Vietnam, and the Philippines, many of whom live in SWS, is approximately 50 times higher than the risk in people born in Australia[6]. The respiratory health problems arising from high rates of smoking among male members of some of the ethnic communities in SWS is also a concern (see below, section on smoking). Some ethnic communities experience very high levels of unemployment, low income levels, low levels of qualification and poor language ability[7] . The adverse health consequences of this socio-economic disadvantage are referred to above.

Finally, communication is clearly an important issue for service provision directed at NESB communities. Any strategies that are introduced to address respiratory illness such as screening, smoking cessation, asthma education and other disease management strategies need to be sensitive to cultural and linguistic differences. The SWSAHS interpreter service plays a vital role in the provision of respiratory services in SWSAHS.

4.1.8. Aboriginal and Torres Strait Islander

Twenty five percent of Sydney's Aboriginal population reside in SWS. In 1996 there were 8,696 persons of Aboriginal and Torres Strait Islander background in SWSAHS representing 1.2% of the total SWSAHS population. The distribution of the ATSI population is highest in the Macarthur sector, followed by Liverpool, Fairfield, Bankstown and Wingecarribee.

In NSW, the age adjusted hospital separation rates for respiratory diseases among ATSI persons were three times higher than the rate for non-indigenous people over the period 1993/94 to 1997/98[8]. The leading causes for hospitalisation among members of the ATSI community were pregnancy complications, injury, poisoning, diseases of the digestive system and mental disorders. The most common causes of hospitalisation for respiratory diseases among indigenous people were asthma (21%) bronchitis (12%) and pneumonia (11%). Hospital separation rates for respiratory diseases among indigenous people were highest among children under 5 years of age and people aged 65 years and over[9].

4.1.9. Women

The high rate of smoking uptake among teenage girls is a harbinger of serious excess morbidity in the cohort in years to come. Smoking cessation strategies targeting this community group have a high priority.

4.1.10. People with Disabilities

A snapshot survey[10] conducted in 1997 of people attending disability service providers in SWSAHS indicated a greater proportion of the clients were aged aged 0-29 years and were females. Intellectual disability was the most common disability with physical disability the next highest presentation.

Although women with disabilities are more likely to experience socio-economic and health disadvantage they are very unlikely to be targeted for health improvement programs[11]. People with disabilities are also more likely to become homeless which will also have an impact on the person's susceptibility to respiratory illness in general.

The Area's Disability Plan[12] identifies strategies for communication and participation with people with a wide range of disabilities. These strategies should be utilised when developing respiratory services. Issues such as awareness of and access to particular programs for respiratory illness such as screening, influenza vaccinations, health promotion and pulmonary rehabilitation need to be considered.

4.1.11. HIV/AIDS

The total number of new patients to SWSAHS in 2000 was 26. Of these, 20 were a new diagnosis. In 1999, SWSAHS contributed less than 3% of the NSW cumulative total of HIV infection[13]. During 1981-1999 in SWSAHS, there were a total of 297 HIV diagnoses (annual rate of 2.5 per 100,000 population); 167 AIDS diagnoses (annual rate of 1.2 per 100,000 population); 104 deaths with AIDS; and 310-420 people living with HIV[14].

People of NESB continue to have high representation on total numbers of new HIV cases in SWSAHS. Accounting for 35% of new infection. The majority are Asian background (in particular South East Asian). In 1999, there was an unusually high percentage (29%) of new infection involving young people between the age of 20 and 24 years however previous trends for this group has accounted for 10% of total new infections in SWSAHS. This is the same rate as for NSW and national levels. HIV prevalence in injecting drug users in SWSAHS remains low and contributes to only 3% of the cumulative total for SWSAHS[15].

The future burden of this illness in SWS will be influenced by the extent to which the disease spreads within the intravenous drug using (IVDU) community and also the rates of illegal and humanitarian refugee immigration to SWS from countries with a high prevalence of HIV infection.

Infectious and neoplastic pulmonary complications are an important cause of morbidity and mortality in persons with AIDS. The involvement of respiratory medicine services has principally been in the diagnosis of AIDS-related pulmonary illness. The exception to this is tuberculosis (TB), which is an increasing problem in patients with AIDS and can occur early in the course of HIV illness. TB management for patients with AIDS in SWS in predominantly undertaken through the Chest Clinic service. It is noted that there were 6 pulmonary/extrapulmonary TB cases (2 Cambodian, 1 East Timorese, 1 Burmese, 1 Ethiopian and 1 South African) in 2000.

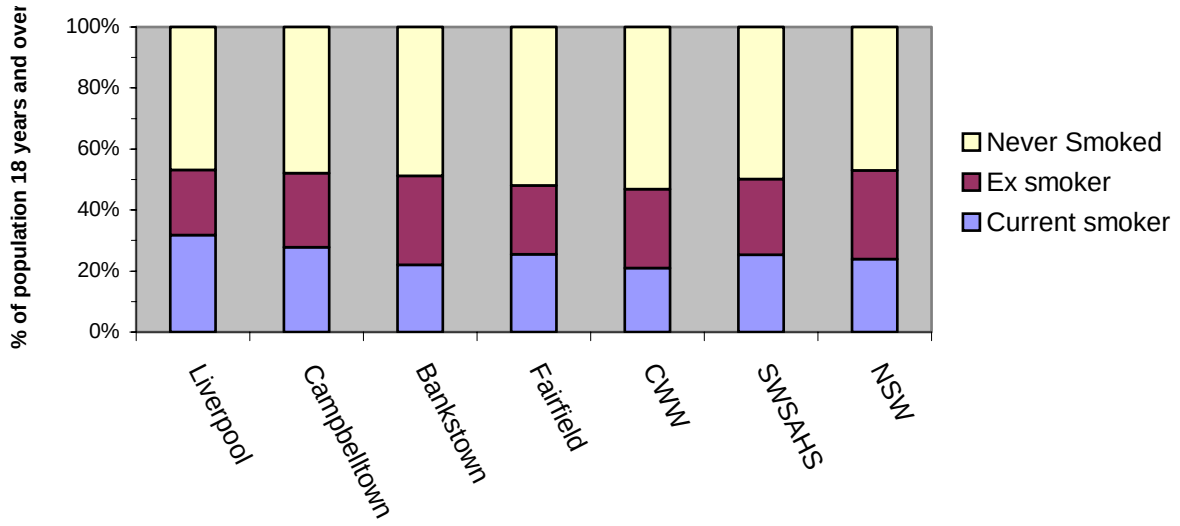
Epidemiology

4.1.12. Tobacco

Smoking is acknowledged as a major cause of lung cancer, stroke, heart disease and respiratory diseases, such as COPD. The main risk factor for developing COPD is smoking. Smokers are 700-1000% more likely to develop chronic lung diseases than non-smokers[16]. In addition smoking is the single greatest contributor to lung cancer risk. There is also strong evidence that exposure to environmental tobacco smoke impacts on health. There are positive associations between passive smoking and lower respiratory tract illness, lung cancer, major coronary events, sudden infant death syndrome and respiratory conditions in children.

The people of SWS experience a considerable burden of ill health as a result of smoking. In South Western Sydney, 26.3% of the population smoke regularly. This is higher than the NSW rate of 24.1%[17]. Smoking prevalence varies between LGAs (Figure 4). The highest rate of smoking in 1994/95 occurred in Liverpool (31.8%) followed by Campbelltown (27.8%). The average for SWSAHS was 25.3% (1994/95). It needs to be noted that the smoking prevalence in SWS has increased by 1% over the past 5 years.

Figure 4. Smoking Status by LGA in SWSAHS, 1994/95



Source: SWSAHS Epidemiology Unit, 1999

There are high rates of smoking in certain groups of the community such as Vietnamese males and Arabic speaking males who make up a significant percentage of the SWSAHS population. In 1997, a survey of Vietnamese-speaking men reported a smoking rate of 35%. Estimates of smoking rates amongst Arabic speaking people range from 43% and 55%[18]. Aboriginal and Torres Strait Islanders are twice as likely to smoke as other Australians with rates peaking in the 25-44 age group, where approximately 67% of males and 60% of females smoke[19]. Increased rates of mortality and morbidity among Aboriginal and Torres Strait Islander people may, in part, be related to the high rate of smoking in this group of people[20].

In 1996 a survey of SWS students in year 10 indicated that 50.4% of males and 47.4% of females smoke eight or more cigarettes per week. Both these percentages have fallen since 1992. The same study also found that 17.2% of young people who smoke report smoking more than 25 cigarettes per week[21].

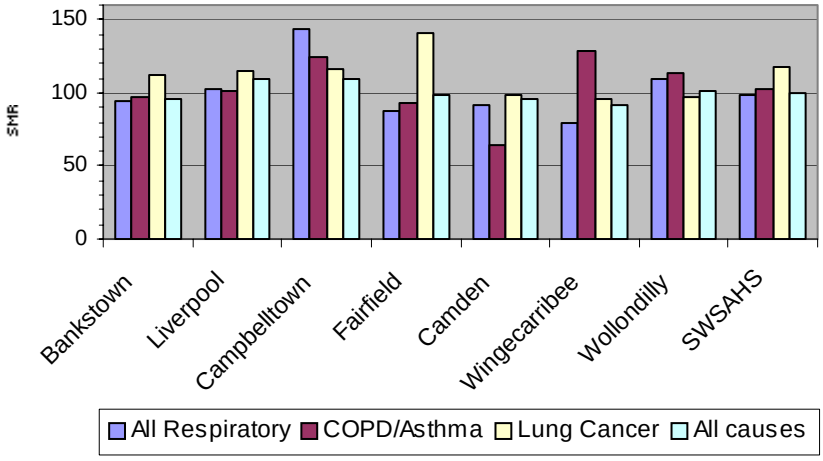
Smoking during pregnancy is related to low birth weight and pre-term birth. SWS rates have been slightly less than NSW overall over the period 1994-1997. In 1997 18.7% of women smoked during pregnancy. Among certain sub populations in SWS the proportion of mothers who smoke is well above that for NSW as a whole. The rates are highest among mothers who are aged 12-19 years, Aboriginal mothers and single divorced mothers. In 1997 smoking rates were highest amongst mothers born in the UK/Ireland followed by Australian born mothers, with the lowest rates in Asian born mothers. In 1997 the highest rates of smoking during pregnancy were in Campbelltown LGA with the lowest rates in Fairfield LGA[22].

Due to the high rates of tobacco related illness and disease in SWSAHS, the Area Health Service is taking action to reduce tobacco related harm. The *Tobacco Control in South Western Sydney: Strategic Plan for Improving Health 2000 -2005*[23] sets clear direction for tobacco control in South Western Sydney, identifying priorities for reducing tobacco related harm and recommending strategies for action. The Plan also reflects current State and National strategic directions for tobacco control. Implementation of the Plan is fundamental for long term control of respiratory illness.

Respiratory Diseases (general)

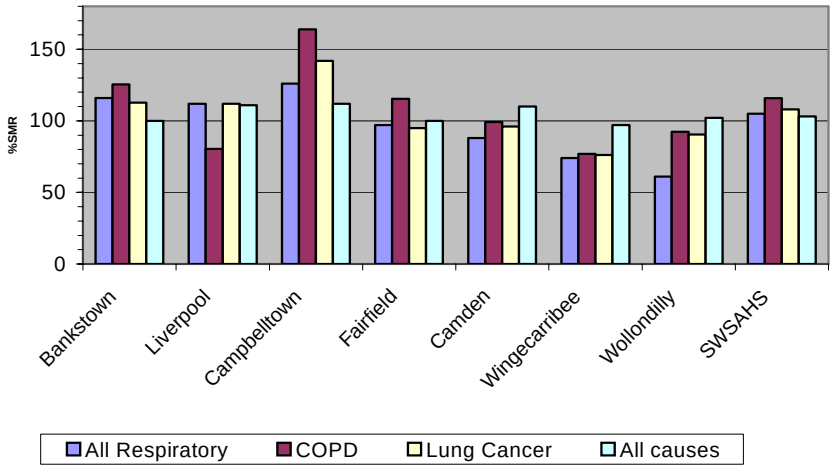
Respiratory disease is the third ranking cause of death in NSW after circulatory disease and cancer, being responsible for 7.6 % of all deaths. Respiratory disease is the fourth principal cause of death in SWSAHS. In 1998 2.4% of all male deaths and 2.1% of female deaths in NSW in the age range 15-64 years were due to respiratory diseases. The proportion of deaths due to respiratory disease in this age group was higher than the state average in SWSAHS: 5.5% in females (Figure 5) and 3.4% in males (Figure 6) during 1993-97[24]. For both the male and female population in SWSAHS, Campbelltown LGA had the highest standardised mortality ratio for respiratory disease during 1993-1997.

Figure 5. Standardised Mortality Ratios for Respiratory Diseases by Local Government Area, SWSAHS, Males, 1993-1997



Source: Health in South Western Sydney Epidemiological Profile 2000

Figure 6. Standardised Mortality Ratios for Respiratory Diseases by Local Government Area, SWSAHS, Females, 1993-1997



Source: Health in South Western Sydney, Epidemiological Profile 2000

Asthma

Asthma is a significant problem in Australia with prevalence rates among the highest in the world. For many individuals asthma means loss of lung function, occasional hospitalisation, reduced participation in work and other activities and sometimes, premature death.

Asthma is one of the most common reasons for emergency department admissions. The clinical presentation encompasses the whole spectrum of disease severity from chronic cough to mild wheeze to respiratory arrest. Misdiagnosis, undertreatment or poor asthma control of persons with asthma in the community and possibly in hospitals often lead to readmissions either in the course of the same attack or with subsequent attacks of asthma[25]. The symptoms of asthma can be triggered by a wide variety of agents in the environment such as allergens (dust mite, pollens and animal fur); smoking, drugs and other irritants such as sensitising agents in the workplace (wood dust, flour industrial chemical etc); immunogenetic susceptibilities; and exercise induced. Studies have shown that that self management education reduces hospitalisations, emergency room visits, unscheduled visits to the doctor, days off work and nocturnal asthma[26]. Patients who have had a hospital admission within the past 12 months of their consultation or who require three or more medications for control of their asthma are at an increased risk of dying from the disease. These persons require tailored management plans developed by their GP and close consultation with their provider[27].

The prevalence of "doctor diagnosed" asthma among people aged 16 years and over was lower in SWSAHS (7.6% in males and 9.7% in females) than in other areas of the State (8.8% in males and 11.4% in females) in 1997-98. In this survey the prevalence of current asthma, that is, asthma diagnosed by a doctor and either causing symptoms or requiring treatment in the previous year was 9.4%, which was not significantly different from the State average. It is also noted that English speaking background respondents were more likely to have asthma than non-English speaking background respondents. The Standard Separation Ratio (SSR) for both males and females in SWS were similar to NSW rates[28].

In 1998, just over 80% of all presentations by SWSAHS residents for asthma were to SWSAHS hospitals. Of these presentations to SWSAHS hospitals, adults accounted for 48.6% and children 51.4% of the activity. For those residents presenting to other Area Health Service hospitals, 23% were adults and 77% were children. The majority of the presentations were to Liverpool, Bankstown and Campbelltown Hospitals. Compared to NSW both male and female residents of Campbelltown LGA and female residents of Bankstown LGA had higher SSRs for asthma.

Chronic Obstructive Pulmonary Disease (COPD)

COPD, also referred to as Chronic Obstructive Airways Disease (COAD) or Chronic Airflow Limitation (CAL), is a clinical entity arising as the result of the progressive onset of an obstructive ventilatory defect. The most common underlying disease is emphysema, but small airways disease (bronchiolitis) and asthma may also manifest as COPD.

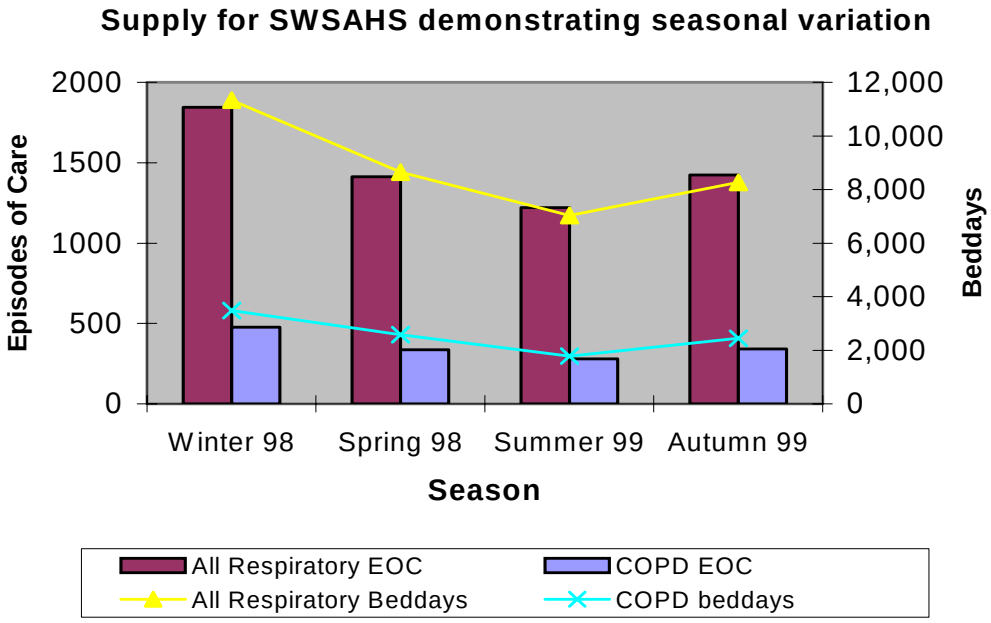
COPD is the fourth leading course of death amongst Australian males (3,326 in 1998) and the sixth leading course of death in females (2026 in 1998). In the period 1993-1997, 316 people died from COPD and asthma in SWS.

In 1998/99, there were 1,505 episodes of care (EOC) and 10,713 bed days in SWSAHS hospitals for COPD. COPD represents a significant workload for hospitals and emergency departments in SWSAHS. It needs to be noted that COPD may be under reported in hospital utilisation data since it may not be identified as the principle reason for admission. There is

also some evidence that the prevalence of COPD has increased in general practice[29] and this may not be unexpected given the aging population.

Approximately 85% of COPD cases can be attributed to cigarette smoking. The remaining attributable risk factors are exposure to occupational dust and fumes, asthma, and possibly, air pollution. COPD is a chronic disease that evolves throughout life and occurs more commonly among older individuals who often have multiple chronic conditions that contribute to the overall disability. Unlike asthma, admissions for COPD tend to occur at the end stage of the disease. A prospective study of COPD suggests that disability in persons with COPD progresses gradually. However within 7-8 years of initial diagnosis most persons with COPD are no longer capable of productive work[30]. The prognosis for patients over 50 requiring hospitalisation is poor[31] with repeated hospitalisation being an issue of concern. About 70% of patients who have been admitted to hospital for acute exacerbations of COPD are readmitted within one year[32] and there may be limited opportunities to address this. One risk factor for hospitalisation of patients with COPD is impaired quality of life[33].

Figure 7. Seasonal Variation of Supply in SWSAHS



Source: FlowInfo version 4.0 and 4.1 for COPD data

Figure 7 demonstrates the seasonal variation for respiratory activity in SWSAHS. In Winter 1999, respiratory patient activity accounted for 1844 EOC whilst in summer there were 1221 EOC. Winter strategies which involve increasing resource availability have been introduced in all of the sectors to address the issue of increasing demand during the winter periods.

Tuberculosis

TB is an infectious disease that can present in a variety of ways, most commonly as pulmonary disease characterised by a chronic cough, weight loss, fever, and night sweats.

While it is a major cause of mortality and morbidity on a global scale, it is not a major health problem in Australia. In Australia, 80% of cases of tuberculosis occur in overseas-born people. Relative high incidence rates are observed in people born in China, Indochina, the Philippines, Indonesia and Korea. All these communities are well represented in SWSAHS.

In 1998, SWSAHS had just over twice the notification rate for tuberculosis at 17/1,000 population compared to the NSW average of 7/1,000 population. In 1999 there was a total of 162 notifications in SWSAHS[34]. SWSAHS deals with approximately one quarter of the State case load for tuberculosis and one eighth of the national case load of the disease.

Services for patients with tuberculosis in SWSAHS:

- centralised out-patient service for diagnosis and disease management;
- directly observed therapy with free medications for all diagnosed cases;
- contact tracing, staff screening, and outbreak investigations;
- screening and surveillance of migrants with suspected or known past tuberculosis;
- BCG vaccination service; and
- in-patient care when needed.

Other Respiratory Infections

Pneumonia accounted for 1.5% of all common causes of death for persons aged 65 years and over between 1993-1997 in SWSAHS. Older people, and other members of the adult population who are less mobile, may have poor nutrition and/or have other co-morbidities are particularly susceptible to pneumonia. Hospital acquired pneumonia is a common cause of prolonged hospitalisation.

Lung Cancer

Lung Cancer is the leading cause of cancer death in Australia. NSW studies estimate a five year survival ratio of approximately 11%. Smoking is responsible for approximately 80% of lung cancers. One of the most common cancers in SWSAHS is lung cancer. SWSAHS males had significantly higher lung cancer incidence (55 per 100,000 population) and mortality rate (46 per 100,000) than NSW. It is noted that in SWSAHS, lung cancer in males ranked second in incidence and first in mortality for the most common cancers between 1991-1995[35]. In females, lung cancer ranked third in incidence and second in mortality for the most common cancers in SWSAHS. The average crude incidence for females was 22 per 100,000 population with a mortality rate of was 18 per 100,000. These rates were also higher than the NSW rates but statistically not significant[36]. However, trend analysis for lung cancer in SWSAHS demonstrates that male lung cancer incidence and mortality are decreasing whereas rates in females are gradually climbing. This is due to the relative increases in the prevalence of smoking among women. The highest burden of lung cancer was experienced by Bankstown followed by Wingecarribee and Fairfield.

It is noted that lung cancer mortality was significantly higher than the NSW average in Fairfield and Liverpool. As stated in the section detailing smoking, there are sub populations at higher risk such as particular ethnic groups and the socially disadvantaged.

Obstructive Sleep Apnoea

Obstructive sleep apnoea (OSA) and snoring are common and associated with considerable morbidity and mortality. Obstructive sleep apnoea is the commonest cause of hypoxia in the population. OSA is associated with hypercapnic respiratory failure due to alveolar hypoventilation and depressed ventilatory responses, complicating pulmonary disease. Treatment of OSA for patients with hypercapnic respiratory failure often corrects the hypercapnic respiratory failure and depressed hypercapnic ventilatory responses[37].

Overweight or obesity increases the risk of a range of health problems including obstructive sleep apnoea. According to a survey of self-reported height and weight, 51.1% of males and 35.2% of females in SWSAHS have a body mass index in the overweight range[38].

5. Health Service Utilisation for Respiratory Illness Management

In-patient Care

Information on utilisation of in-patient services for care of patients with respiratory illness is based on the NSW Health Inpatient Statistical Collection information recorded, at the time of discharge, for all patients admitted to hospital. Analysis of these data provides useful information for the evaluation of the existing disposition of resources and for the planning of future resource allocation.

Activity is classified as tertiary or non-tertiary. Within the field of respiratory illness tertiary activity includes (a) operative procedures with complications, (b) requirement for assisted ventilation, and (c) cystic fibrosis. All other respiratory episodes of care are classified as non-tertiary.

The analysis of data by Local Government Area (LGA) of residence provides an estimation of the in-patient service needs of local populations. This is referred to as "Demand", although it is not a pure representation of demand since is based on utilisation data and is influenced, in part, by the access of residents of any given area to the services they need or desire. *Demand* in this paper refers to the total number of episodes of care recorded for SWS residents (or residents of a specific LGA) in all hospitals in NSW and interstate.

The analysis of data by unit of health service provision (that is, hospital, sector or AHS) reflects the workload of the health system units and is referred to as "Supply". *Supply* refers to the total amount of inpatient services provided by SWSAHS to both SWS residents and out-of-Area residents (*inflows).*

The extent to which a population's "demand" for services is "supplied" by the local health service unit (hospital, sector or AHS) is measured by examining the relation between area of residence and unit of service provision. *Capture* refers to the number of SWS residents treated within SWSAHS hospitals. *Self sufficiency* refers to the number of SWS residents treated within SWSAHS hospitals as a proportion of SWS resident demand. This is usually expressed as a percentage. In addition, SWSAHS supplies services to non-SWS Area residents, these are referred to as *inflows*. Where SWS resident demand exceeds local supply or services are not available, residents need to access care out of the Area and are referred to as *outflows.* This analysis permits calculation of inflows to health service units, and outflows and percentage self-sufficiency of areas.

The following projections for demand, supply and the related variables for the years 2006 and 2011 have been sourced from NSW Health's FlowInfo version 4.0 and the Acute Projections Plus Interventions (APPI) model which is explained in the appendixes. In the data presented below, no assumptions have been made about changes in the availability or nature of service provision.

5.1.1. Demand

In 1998/99, 95% of total public sector demand for respiratory medicine in SWSAHS was non tertiary and 85% of this was provided on an overnight (as opposed to day-only) basis. The total in-patient demand for SWS residents accounted for 6,226 Episodes of Care (EOC).

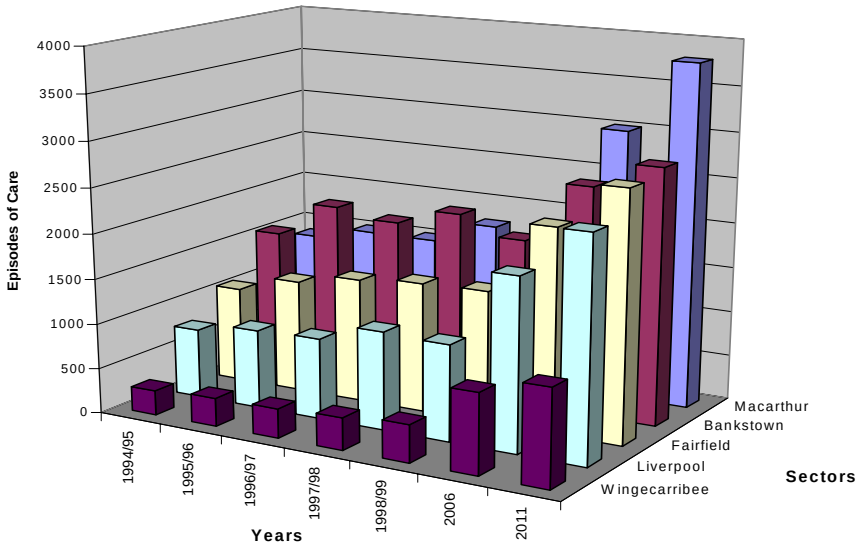
In 1998/99 outflows accounted for 797 EOC. Most residents were flowing to Central Sydney, Western Sydney and South Eastern Sydney Area Health Services. There were a total

of 591 EOC inflows with 61.4% of these being provided at Bankstown/Lidcombe Hospital. Forty percent of these inflows were from the Canterbury LGA.

Respiratory medicine activity is dominated by the unplanned nature of the workload with less than 15% of admissions being planned (or booked). The average length of stay is high (13.8 days) for the tertiary component of the service although this accounts for only 4.8% of all demand. The non-tertiary component activity's average length of stay was 5.75 days and accounted for 5,924 EOC and 34,084 bed-days. Acute demand for respiratory medicine by SWS residents has increased by 18% since 1994. As can be seen in the Figure 8 the greatest demand (sector of residence), currently, for adult respiratory services is in the Bankstown Sector, followed by Macarthur. However, the projections for 2006 indicate a shift to Macarthur. Levels of self sufficiency are generally high and this was reflected in 1998/99 with overall self sufficiency of 83%. The exception is Fairfield LGA which has a self sufficiency of 59% compared to 83% for other SWS Sectors. It needs to be noted that 38% of Fairfield residents were treated at Liverpool Hospital in 1998/99.

Appendix 8.1.2 provides information on the pattern of demand for respiratory services since 1994/95. It provides information on demand, supply and capture for the adult population for respiratory medicine services grouped into five enhanced services related groups (ESRGs).

Figure 8. In-patient Service Utilisation ("Demand") for Respiratory DRGs by Sector (age 15 years and over)



Source: FlowInfo version 4.0 and APPI version 4.0

APPI Projections for 2006 and 2011 are provided in Appendixes 8.1.3-8.1.5. APPI projects that demand for the ESRGs in SWSAHS will change as follows over 1998 –2006:

Enhanced Service Related Group	**Projected increase in EOC 1998-2006**
Asthma, Bronchitis and COAD	245 (11%)
Respiratory Neoplasms	40 (18%)
Infection and Inflammation	866 (61%)
Sleep apnoea	35 (92%)
Respiratory Medicine (Remainder)	727 (51%)
TOTAL (All respiratory)	**1913 (36%)**

5.1.2. Hospital Supply

There are six acute hospitals in SWSAHS with Liverpool Hospital the principal referral hospital for SWS. There has been significant capital investment in facilities in SWSAHS over the past 5-10 years. The major redevelopment associated with Campbelltown and Camden Hospitals is estimated to be complete in 2003. A comprehensive summary of respiratory medicine services and staffing configuration currently available at each of the six hospitals for respiratory services is provided in the appendixes.

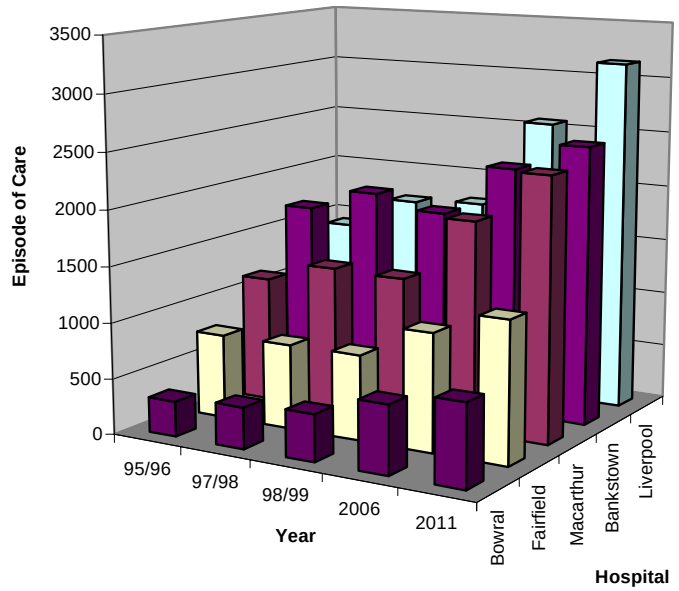
Respiratory medicine is provided in all hospitals in SWSAHS. However, the casemix and workload between hospital varies. Figures 8, 9 and10 indicate the supply of episodes of care, bed-days, and lengths of stay by each hospital in SWSAHS over the period 1995-99 with APPI projections included for 2006 and 2011.

In 1998/99 there were a total of 6020 EOC for Respiratory medicine supplied in SWS acute hospitals. Workload was predominantly for SWS residents with inflows accounting for only 591 EOC or 9.8% of the total supply. There has been a 33% increase in the supply of Respiratory Medicine EOC in SWSAHS since 1994 which is consistent with population growth and changes in demography within SWS. Workload is forecast to continue to increase to 2011. Substantial increases in workload have been projected for Liverpool and Campbelltown Hospitals. Bankstown-Lidcombe Hospital will also continue at a high, but stable level (figure 8).

In 1998/99 there was a total of 33,057 bed-days across the Area for respiratory medicine. This activity accounted for 17.2% of medical overnight bed-days and 12% of medical EOC. Liverpool and Bankstown-Lidcombe Hospitals had a total of 12,138 and 11,526 bed-days respectively for respiratory medicine. By 2006, it is projected that Liverpool will be supplying 33%, Bankstown 28%, Campbelltown 19%, Fairfield 12.8% and Bowral 6.2% of the Area's total bed-days (42,586) for respiratory medicine (Figure 10). The "supply" of bed-days in SWSAHS according to DRGs is outlined in the appendixes. The largest proportion of bed-days are attributable to obstructive lung disease (38%), but infectious lung disease, pulmonary vascular disease, and lung cancer are also substantial contributors. The second largest grouping is "others" which contains some un-diagnosed respiratory problems. Decreasing trends in length of stay (LOS) have been demonstrated across all acute hospitals

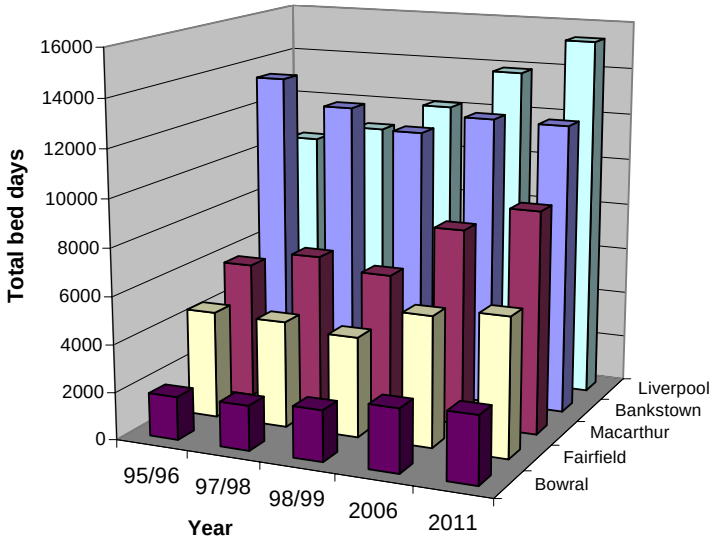
for respiratory medicine (Figure 11). The average LOS is currently six days for respiratory medicine. However, there is marked variation amongst the DRGs (appendix 8.1.6-8.1.7). The higher LOS recorded for Liverpool Hospital is related to higher activity of the tertiary DRG component.

Figure 9. Supply, Episodes of Care for Respiratory Medicine by SWSAHS Hospitals



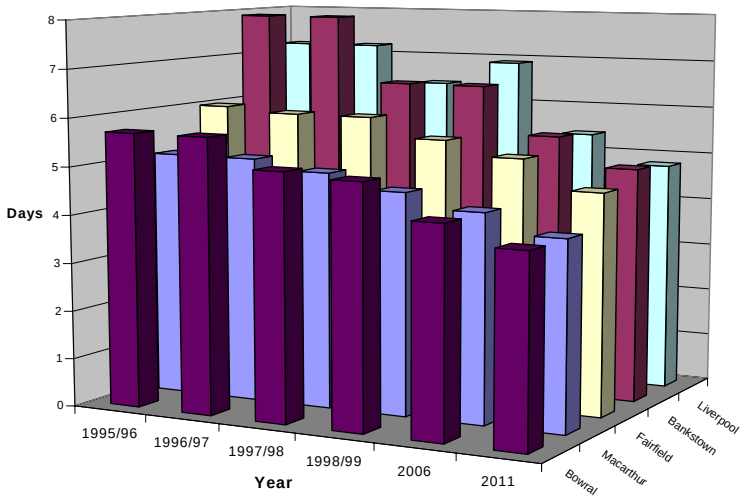
Source: FlowInfo version 4.0 and APPI version 4.0

Figure 10. Total Bed-Days for Respiratory Medicine SRG Supply by Hospital and Year



Source: FlowInfo version 4.0 and APPI version 4.0

Figure 11. Average Length of Stay for Respiratory Medicine SRG by Hospital and Year



Source: FlowInfo version 4.0 and APPI version 4.0

Figure 12. Self Sufficiency for selected DRG Groupings by year, SWSAHS

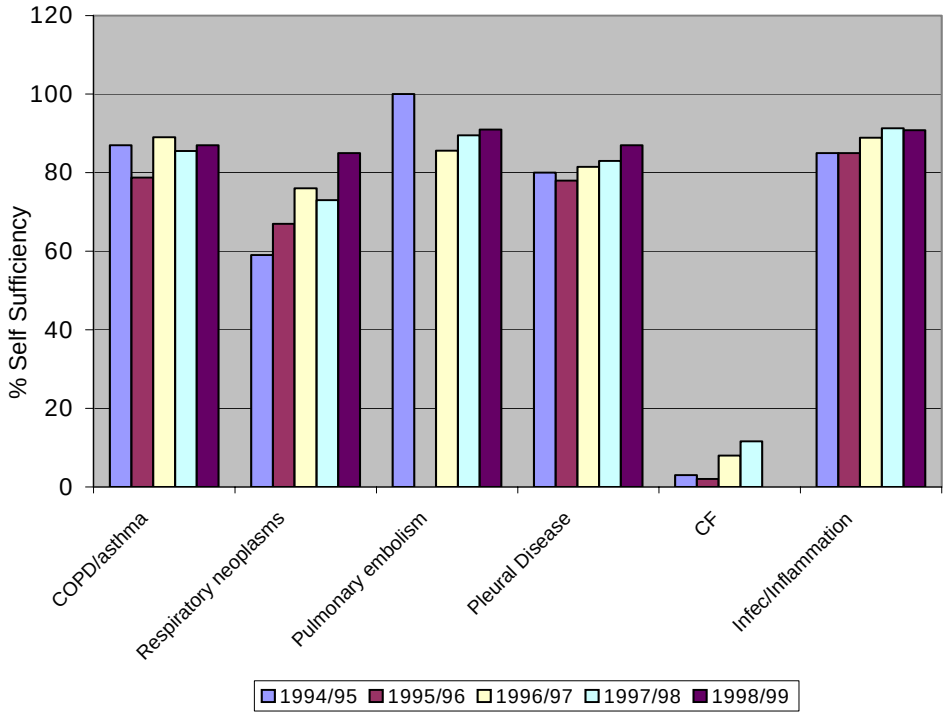


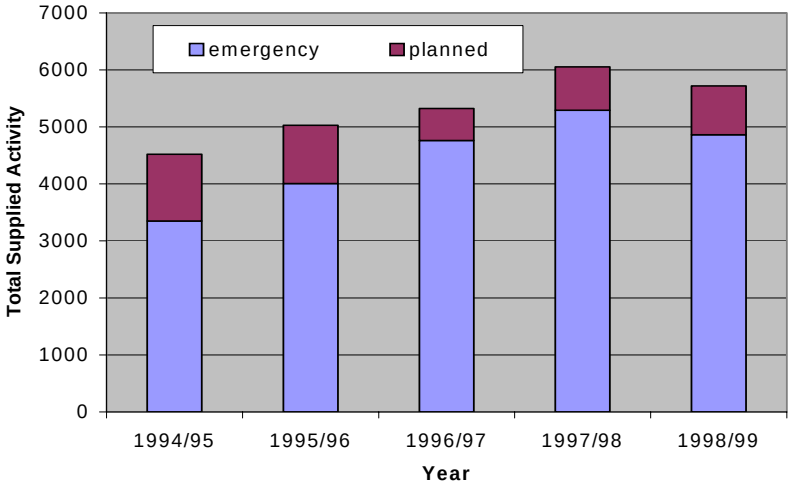
Figure 12 demonstrates that there is a high level of self sufficiency for most respiratory DRG groupings. Self-sufficiency for respiratory neoplasms has increased substantially. There are no dedicated services for cystic fibrosis in SWSAHS, hence, the low level of self-sufficiency for this condition.

Emergency

Each of the 6 SWSAHS acute hospitals has an Emergency Department (ED). As indicated above, most of the activity in relation to respiratory medicine is unplanned. The activity for respiratory medicine SRG in ED has increased by approximately 7% since 1994 with 5163 EOC reported in 1998/99. Asthma, COPD and Bronchitis increased over the five years by approximately 680 EOC.

It needs to be noted that the above activity relates only to the number of patients who attend the ED and are admitted to hospital. In 1998 the third most common reason for attending the SWS ED, irrespective of gender, was for disease of the respiratory system (9.9%). Asthma ranked among the leading reasons for attendance to SWSAHS EDs by adults aged 14-44 years.

Figure 13. Trends in Supply for Emergency and Planned Admissions for Respiratory Medicine over 5 years.



Private Sector Hospitals

A total of 197 beds are available in the following private hospitals: Macarthur Private, Campbelltown (52 beds); Southern Highlands Private, Bowral (64); and Sydney Southwest Private, Liverpool (93). There are four day procedure centres located in Fairfield Heights, Bowral, Moorebank and Liverpool. There are 2,395 beds in 28 nursing homes. In 1998/99, there were 1,004 separations of SWS residents in the private sector for respiratory medicine DRGs. Consistent with the generally lower intensity case mix in the private sector, this was equivalent to 619 cost weighted separations. SWS residents used 2,557 bed days. The ESRG for sleep apnoea accounted for 68% of the separations. The current public demand for in-patient services relating to obstructive sleep apnoea in the public sector in SWSAHS is 60 EOC.

Community Health Services

Within SWS there are Community Health Centres (CHC) located at Narellan, Campbelltown, Rosemeadow, Tahmoor, Bowral, Bankstown, Liverpool, Cabramatta, Carramar, Prairewood, Ingleburn, Moorebank and Hoxton Park.

The major service types, target groups and the activities provided by SWSAHS community health services relating to respiratory services include:

- health promotion and disease prevention services;
- continuing and extended care, home nursing services, palliative care; and
- Hospital in the Home and a range of other ambulatory and transitional care initiatives.

In 1998/99 there were a total of 445,175 non admitted patient services (NAPS) reported for SWSAHS Community Health Centres:

Community Health Service	Total equivalent NAPS
Bankstown	112,516
Liverpool	114,934
Fairfield	100,669
Macarthur	96,349
Wingecarribee	20,707

Specific information identifying respiratory patients is currently not available for the Area as a whole but local information is available for Macarthur sector. Data currently available from the ambulatory care database for Macarthur allied health indicates COPD is the second most common diagnosis for patients presenting to allied health OPD after Diabetes. The clinical service type "respiratory" represents 7.6%(250) of total presentations (3181) over a 3 month period.

It is anticipated, and has already been demonstrated, that, with changing models of care that encourage decreasing lengths of stay for hospital in-patients, the acuity and number of patients requiring continuing care in the community will increase. In addition, it is envisaged that the implementation of the PHCP proposals to address the needs of COPD and asthma patients (Respiratory Assessment Service) may require additional resources for patients for whom it has been determined could be treated at home rather than hospitalised.

General Practitioners

While there is no consensus on the ideal number of general practitioners per head of population there is evidence that South West Sydney has fewer GPs than inner Sydney. In 1992, there was one GP for every 1350 population in SW Sydney compared to one for every 650 persons in Eastern Sydney. Of SWS general practitioners 86% were male and 79% in practice for 10 years or more, 43% were overseas graduates, 19% trained by the RACGP Training Program and 93% vocationally registered. Sixty percent consulted in a language other than English at least some of the time[39]. There are five Divisions of General Practice in South West Sydney: Liverpool, Fairfield, Bankstown, Southern Highlands and Macarthur.

A number of respiratory disease projects are occurring in the Divisions or in collaboration with the Divisions. Liverpool Division is developing an asthma program with support from the Respiratory Service at Liverpool and the academic Department of General Practice. Fairfield Division is committed to creating an asthma nurse educator position and has funded a project to investigate the possession of asthma care plans among patients who present to emergency services with acute asthma.

Palliative Care

Palliative care may be described as the active total care of people whose disease is not responsive to curative treatment. Palliative care aims for the achievement of the best possible quality of life for the patients and their families and friends. Many aspects of palliative care are also applicable earlier in the course of the illness in conjunction with treatment aimed at cure[40]. In respiratory medicine, palliative care services are typically sought during the management of patients with lung cancer. Occasionally, these services are utilised in the management of patients with severe chronic, non-malignant lung disease.

There are two facilities in SWSAHS with dedicated palliative care beds: Braeside Hospital (20 beds) and Banksia Ward (6 beds) at Camden Hospital. Braeside Hospital is a third schedule hospital managed by Hope Healthcare and is located on the Fairfield Hospital campus. Banksia Ward will increase to10 beds in late 2001. This will serve the Camden, Campbelltown and Wingecarribee LGAs.

At Liverpool and Bankstown-Lidcombe Hospitals a palliative care consultancy service is provided.

Ambulatory care

Ambulatory care encompasses the delivery of health care in a variety of settings including outpatient departments, short stay/day only beds, specialists' rooms and the patient's home. Shared care between general practitioners, nurses, allied health professionals and hospital specialists is the accepted practice. There is shared responsibility for health between the patient, carer and the services allowing for choice in the delivery systems for treatments whether physical, psychosocial or pharmacological.

Each sector has an ambulatory care service which meets the current standards. Fairfield Health Service does not as yet have a Department of Ambulatory Care although there are currently a number of outreach services, such as the Acute Care Outreach Service (ACOS). It is proposed to establish a more co-ordinated Ambulatory Care Service in 2001/02.

There are a variety of models across Sectors which reflect the needs of the Sector population. A summary of the models is outlined in the appendixes.

6. Proposed Model for Prevention and Care of Respiratory Illness

The model proposed in this section incorporates a broad range of services whose provision within SWSAHS is relevant to the control of respiratory illness. These include services aimed at disease prevention, diagnosis, treatment, rehabilitation and palliation. The type of respiratory disease, the acuity and complexity, and the stage of presentation determine the relevance of each of these services.

The development of the model was guided by the objectives for respiratory services for the Area. At the end of each subsection describing components of the model the relevant goal and proposed strategy linkages (section 7) are provided. The strategies and priorities were determined after a gap analysis (based on the current situation outlined in appendixes) was conducted. This process has highlighted a number of deficiencies that need to be addressed to enable SWS to provide a more effective and efficient respiratory medicine service for the residents of SWS.

Prevention and Health Promotion

Health promotion and prevention are crucial if we are to reduce respiratory illness in SWS. Prevention and Health promotion is a key component of the proposed model. Health promotion and prevention activities are generally referred to as public health or population health. For example some of the activities include population screening, mass immunisation, communicable disease control and health promoting communications.

Population health interventions are characterised by a focus on:

- prevention, promotion and protection as opposed to treatment;
- population groups rather than the individual; and
- the factors that affect health and causes of illness.

The major opportunities for primary and secondary prevention in respiratory disease are in tobacco control. The potential role of screening for COPD is discussed below. Other potentially beneficial interventions include promotion of breastfeeding, which may have some effect on reducing the risk of atopic disease, promotion of exercise, physical fitness and ideal body weight, which have beneficial effects for people with existing chronic lung disease. Avoidance of exposure to occupational fumes and dusts and to occupational allergens has an important role in the prevention of occupational lung diseases. The role of other specific preventive interventions for atopy and asthma are currently under investigation in several Australian and International studies.

Goal 1: Healthier People, Strategy 1.1, 1.2a, 1.2b, 1.3; Goal 2: Fairer Access, Strategy 2.3a

6.1.1. Tobacco control

As noted in section 4.1.12, smoking is the major avoidable cause of respiratory illness and mortality. Tobacco control is a crucial element of strategies for the prevention of respiratory morbidity and mortality.

SWSAHS has developed a framework for promotion and prevention to reduce the impact of tobacco on our community. This is outlined in the *Tobacco Control in South Western Sydney: Strategic Plan for Improving Health 2000-2005* which encompasses a

comprehensive plan for tobacco control in SWSAHS. The Plan focuses on the following six areas of action:

1. Smoking cessation;
2. Reduction of exposure to environmental tobacco smoke;
3. Marketing and promotion of tobacco products (addresses prevention);
4. Availability and supply of tobacco products (addresses prevention);
5. Community awareness and education (addresses cessation, prevention and exposure to environmental tobacco smoke); and
6. Building the capacity of the health service (addresses cessation, prevention and exposure to environmental tobacco smoke).

Specific strategies include the establishment of evidence-based smoking cessation practices and targeting of priority groups, such as pregnant women. This work requires the establishment of basic infrastructure to coordinate and monitor the implementation of the Plan.

Goal 1: Healthier People, Strategy 1.1; Goal 4 : Better Value, Strategy 4.3a

6.1.2. Screening

At present there are no recommended procedures for screening and secondary prevention of respiratory illness in adults. Modern radiological and other diagnostic modalities have advanced to a stage where screening of high risk groups for early detection of lung cancer may be feasible and effective. However, there are no data presently available that justify the adoption of such a strategy. It will be important to keep this area under review, and where possible to participate in relevant research, to enable rapid implementation of selected screening for early detection of lung cancer if, and when, this is proven to be an effective intervention.

Measurement of spirometric function in asymptomatic smokers identifies a sub-group of subjects who would be expected to progress to develop symptomatic COPD. These individuals would be especially likely to benefit from smoking cessation. Although this intervention is feasible, safe and relatively inexpensive, its effectiveness as a tool in smoking cessation programs is not established. Furthermore, there is concern that those who have normal lung function at this screening would be encouraged to continue smoking which would put them at increased risk of the other deleterious health consequences of tobacco smoking.

Goal 1: Healthier People, Strategy 1.3

Community-based services

6.1.3. General Practice

Respiratory illnesses are one of the most common reasons for people consulting their general practitioner (GP). The University of Sydney 1998-99 survey of general practice activity in Australia[41] shows respiratory illnesses account for 16.7% of all problems managed by general practitioners. Upper respiratory tract infection is the most common at 4.7% of all problems managed, followed by acute bronchitis/bronchiolitis (2.3%) and asthma (2.2%). Respiratory medications (bronchodilators and asthma preventives) account for 7.3% of all prescriptions by GPs and antibiotics (many of which are for respiratory illness) account for 17.8% of

prescriptions. Pneumonia was the third most common reason for referral of patients to hospital by general practitioners and asthma the fifth most common.

Prevention: Smoking Cessation and Immunisation –GP Role

General Practitioners have a key role in prevention of respiratory illnesses. The major aspects of this role are in providing smoking cessation advice and immunization.

Brief intervention from a physician has been shown to increase quit rates and ideally all general practitioners in SWS should have the skills and be providing this intervention for their smoking patients. Information on smoking cessation is being incorporated into GP Divisional programs on other conditions such as cardiovascular disease. Cessation advice could be further supported by ensuring that information about patients making quit attempts during a hospital admission is communicated to the general practitioner. This would help ensure that the person is followed up and supported in the quit attempt offered by the GP. Protocols for doing this are being developed in the hospital system.

General practitioners have a key role in providing standard childhood vaccinations. In South Western Sydney the rates of immunization have improved following work by the Divisions of General Practice and the Public Health Unit. Influenza and pneumococcal vaccinations are also provided by general practitioners and are important for prevention of respiratory illness in older people and high risk individuals. Divisions of General Practice have immunization co-ordinators who are providing information to GPs about immunization and the opportunity to be involved in quality assurance activities such as clinical audits on immunization. This work is supported by the Area Immunization Coordinator at the Public Health Unit.

GP Management of Acute Respiratory Illnesses

The majority of respiratory problems experienced by people in SWS are acute problems of a non serious nature and are managed entirely by the patient and the GP. This is appropriate and should remain the case. In management of common respiratory infections there is evidence of a need for more selective use of antibiotics[42]. This involves education for both patients and general practitioners. Education on this issue for GPs has been provided by the National Prescribing Service through their newsletter and feedback of prescribing data to general practitioners.

Community acquired pneumonia is a common reason for referral of patients to hospital from general practitioners. Some of these patients can be managed in the community if there is access to support such as domiciliary nursing and physiotherapy. Area wide ambulatory care guidelines for management of pneumonia are being developed and when finalised need to be disseminated to general practitioners via ambulatory care services and Divisions of General Practice.

GP Management of Asthma

As has been discussed previously asthma management guidelines have been developed by professional bodies and promoted by the National Asthma Campaign during recent years. The guidelines have achieved wide consensus and provide a simple stepwise approach to the management of asthma that aims to inform achievement of disease control and maintenance of best lung function. It was designed to assist doctors, particularly general practitioners, to develop good asthma management practices based on the availability of safe and effective medication to prevent the symptoms of asthma and treat acute exacerbations of the disease. Evidence based review (based on randomised control trials) has demonstrated the efficacy of aspects of the plan[43]. For example there is good evidence of the effectiveness of preventive medication, reliever medications and symptom controllers in the treatment of asthma.

Importantly, the review found strong evidence for the provision of training in self-management involving self-monitoring of symptoms, regular medical review and use of written asthma management plans in adults[44]. However provision of information alone without active follow-up does not appear to improve health outcomes in adults with asthma[45]. This evidence is strongly supportive of the principles of the Asthma Management Plan and underlines the need for continued effort to promote and disseminate it to doctors and people with asthma.

However there is accumulating evidence in South Western Sydney that care planning and use of written asthma action plans is not optimally implemented. In a survey of 78 adults who had attended the Emergency Department at Liverpool Hospital because of an exacerbation of asthma during 1996, only 27% had measured their peak flow at home prior to ED attendance, only 19% had increased their dose of inhaled corticosteroids and only 22% had commenced oral steroids prior to ED attendance[46]. The recent NSW Health Survey, showed that the proportion of people with current asthma in SWS who had attended ED or been admitted to hospital in the preceding 12 months was higher than the NSW average. A possibly related finding was that the proportion of subjects with current asthma who used preventer medications on most days and had a written asthma management plan was lower in SWS than the NSW average.

While the prevalence of asthma is high, most people who are affected have mild infrequent episodes of symptoms that are managed in general practice. Thus strategies to improve the use of care plans in general practice need to focus on the development of GP skills through training in management and support through specialist services. Divisions of General Practice are well placed to provide training and educational support materials to GPs. More active support may be needed to reinforce educational activities and convince GPs of the benefits of active care planning. Opportunities to do this are available through Area based PHCP, particularly the part funding of asthma liaison nurses with the Divisions of General Practice, through Divisions of General Practice activities, and through the implementation of the Enhanced Primary Care (EPC) items under Medicare. These allow for health assessments for older patients with asthma and for care planning for all patients with more severe disease. The potential of the asthma liaison nurses to support and complement the work of GPs needs to be tested and evaluated.

Goal 2: Fairer Access, Strategy 2.3a

GP Management of COPD

General practice offers opportunities for early detection, particularly among patients who smoke with most management occurring in general practice.

GP's acknowledge the importance of opportunities to work with other health professionals to improve the health outcomes of patients with COPD. Beyond direct treatment of acute exacerbations of disease the GP's role includes:

- Adequate assessment of disease status;
- Care planning and co-ordination of care;
- Provision of information about COPD and disease management;
- Preventive care through immunisation and encouraging cessation of smoking;
- Encouraging improved lung function through increased physical activity;
- Management of co-morbidity; and
- Early detection of disease.

A model similar to that proposed for asthma care may have application to providing improved care to patients in the community. The improved care supports smoking cessation in these patients and uses care planning. The Commonwealth's EPC items should be used to facilitate development of improved care.

Goal 2: Fairer Access, Strategy 2.3b

GP Communication Issues

As a principle respiratory services should actively communicate with general practitioners. This involves fostering a culture in the respiratory services that values the GP as part of the team of health professionals involved in caring for patients. Respiratory services should seek to ensure that the patient's GP is identified and that communications from the GP are valued and recorded. Opportunities now exist for improved communication through the Commonwealth EPC. These opportunities for case conferences and care planning will be incorporated into the work of respiratory services, especially for patients with chronic respiratory conditions such as asthma and COPD. This is a key component of the SWS PHCP proposal. Discharge summaries remain a key means of communication. These need to be provided promptly, be relevant and legible. Alternative means of delivering information to general practitioners such as by facsimile and electronically should be investigated.

Goal 4: Better Value, Strategy 4.4a

Continuing Medical Education (CME) and Quality Assurance for GPs

Respiratory services should contribute to CME activities for general practitioners. These should seek to achieve knowledge and skills transfer to general practice. Opportunities for doing this exist through the education activities and disease management programs conducted by Divisions of General Practice. Quality assurance activities for GPs in respiratory illness (such as clinical audits in asthma care) are available. The respiratory services in SWS can contribute to these by providing educational support.

Goal 3: Quality and Safe Health Care, Strategy 4.4b

GP Research and Evaluation Activities

Within SWS a number of projects to address respiratory illnesses such as asthma and COPD are underway. There is potential to expand these activities in collaborations between the respiratory service, the academic department of General Practice and Divisions of General Practice. There will be a need for evaluation projects focusing on the use of case conferencing and care planning as part of the Commonwealth EPC.

Goal 2: Fairer Access, Strategy 2.3a, 2.3b

6.1.4. Specialist Respiratory Physicians

Respiratory physicians working in private practice carry out the bulk of specialist care for patients with respiratory illness. The majority of such patients are referred from local GPs. A small number are follow-up patients from recent hospitalisation. Also seen are "inter-

specialist" referrals from other private specialists or hospital staff physicians of different specialties. The role of the specialist respiratory physician in this setting is to:

- comprehensively evaluate the nature of the respiratory problem, using whatever diagnostic modalities are required to augment the initial clinical evaluation;
- to recommend a plan of management utilising an appropriate range of interventions including medications, devices, surgery, radiotherapy, allied health, home care or counselling;
- to communicate this advice to the patient (and family, if requested by the patient), other medical attendants and others involved in delivering patient care; and
- to provide on-going or periodic care when the nature of the problem requires this.

Effective provision of specialist respiratory medicine care outside hospital should reduce the need for in-patient care due to:

- the capacity of respiratory physicians to conduct specialist investigations and implement specialist management as an outpatient; and
- earlier implementation of effective management to prevent deterioration in clinical state.

Private practice in respiratory medicine is currently responsible for the diagnosis and initial management of the majority of respiratory conditions.

Within SWSAHS, there is the equivalent of 4.5 full-time consulting private respiratory specialists . These positions are occupied by two part-time staff specialists and one part-time VMO at Bankstown Hospital, one part-time staff specialist at Fairfield Hospital, two part-time staff specialists and one part-time VMO at Liverpool Hospital and one VMO in Macarthur Health Service. All except one of these staff has at least some private practice within SWS.

This complement of specialist physicians is probably similar to the Western Sydney Area Health Service but substantially less than other metropolitan Area Health Services. It is expected, this deficiency relative to other Areas will be overcome by the appointment of additional specialists to hospital appointments in the Area.

Due to the socio-economic factors eluded to above (see Operating Environment), together with the fact that respiratory medicine is principally a non-procedural specialty, private practice in this discipline is relatively poorly remunerated in SWS. This provides a disincentive for respiratory specialists to establish practices in that setting. Consideration should be given to the efficiencies that would flow from utilising hospital-based facilities for private practice clinics. These increased efficiencies may make private specialist respiratory practice more financially viable in SWSAHS.

Ambulatory Services

A range of hospital-based services for ambulatory patients are relevant to the Respiratory Plan. All these services should be accessible to patients referred by specialists and general practitioners.

6.1.5. Tuberculosis Service

The Area-wide tuberculosis service is an out-patient service of Liverpool Hospital. This is a long established service which provides medical and nursing care for patients with tuberculosis, directly-observed therapy, contact tracing investigations, staff screening, and

screening of other community groups and individuals deemed to be at high risk of tuberculosis infection and/or disease.

Mechanisms to ensure early detection, diagnosis and institution of directly observed therapy for patients with tuberculosis are important for maintaining effective tuberculosis control.

6.1.6. Pulmonary Rehabilitation

Exercise-based pulmonary rehabilitation improves exercise capacity, breathlessness and quality of life in patients with COPD. It is one of the few interventions which does achieve this outcome in this group of patients.

It is considered that all patients with symptomatic COPD should have access to a pulmonary rehabilitation service. The service should be linked to a respiratory medicine assessment service to confirm the diagnosis and to identify treatable complications and co-morbidities (eg, hypoxaemia, ventilatory failure, cor pulmonale, obstructive sleep apnoea, heart failure, and asthma). It should also be linked to smoking cessation interventions, dietary advice, and health information.

There may be value in having facilities available away from the hospitals where accommodation would be more readily available and parking would be easier to arrange. There may also be opportunities to prevent hospital admission through home-based programs involving general practitioners and other health workers such as nurses and physiotherapists[47,48]. While home based pulmonary rehabilitation program for patients with COPD[49] and long term oxygen therapy and mechanical ventilation[50,51] have been shown to be effective, others have been less effective[52].

Bankstown, Fairfield, Campbelltown and Bowral Hospitals each require 0.5 FTE physiotherapist for the implementation of their pulmonary rehabilitation programs.

Goal 2: Fairer Access, Strategy 1.2a, 1.2b

6.1.7. Home Oxygen, CPAP and BiPAP therapy

Oxygen therapy for patients with COPD and hypoxaemia improves survival and quality of life. There are published guidelines that identify the patient population likely to benefit from this intervention[53]. However, prior to prescription of long-term home oxygen therapy it is important to identify whether there is any treatable cause for the hypoxaemia and whether there is co-existing ventilatory failure, nocturnal hypoventilation and/or obstructive sleep apnoea. For these reasons it is appropriate that all chronically hypoxaemic patients (p_aO_2 < 60 mmHg) be assessed by a respiratory physician.

Continuous positive airway pressure (CPAP) and variable (or bilevel) positive airway pressure (BiPAP), administered by nasal mask, have a role in the management of obstructive sleep apnoea and various hypoventilation syndromes. The management of this intervention forms part of a comprehensive sleep and respiratory failure service which is discussed in section 6.1.26.

Goal 2: Fairer Access, Strategy 2.1, 2.7; Goal 3: Quality and Safe Health Care, Strategy 3.1a, 3.1b

6.1.8. Ambulatory care

Ambulatory care services allow the administration of treatment that would otherwise require hospital admission. These treatments may be given on a non-inpatient basis within the hospital or in the patient's home. The two major interventions relevant to respiratory medicine are intravenous antibiotics for patients with empyema, lung abscess, bronchiectasis or cystic fibrosis; and sub-cutaneous low molecular weight heparins for patients who require this treatment for venous thromboembolism. In hospitals which do not have a respiratory out-patients department (ie all except Liverpool), this may be an appropriate setting to perform some diagnostic procedures such as pleural aspiration and biopsy.

Goal 2: Fairer Access, Strategy 2.8

6.1.9. Community and Allied Health Services

The substitution of acute treatment in hospital for acute treatment in the home or on an out-patient basis as well the changes in population demographics will impact significantly upon the workload and roles played by Primary Health Nurses (PHNs) and Allied Health staff.

There will be an increase in the number of more acute patients being managed and cared for in the community. This has implications for the skills, training and support required for staff, as well as the hours of operation of services. The hospital system sees that there is a need for greater integration of services between providers with multidisciplinary approaches and sharing of skills and expertise. The community based system's need to adjust and should not be understimated as this represents a notable shift of role.

Physiotherapy's key role is in assisting patients with sputum retention (eg bronchiectasis and some patients with severe COPD) to clear secretions and maintain airway patency. This role entails both performing chest physiotherapy and teaching techniques to patients and their carers. Other roles are in providing the pulmonary rehabilitation service and advising patients on breathing techniques.

The role of occupational therapy has been alluded to above. Occupational therapy also has a role in providing education on work simplification and lifestyle changes that will assist the patient to manage activities of daily living (ADL).

Dietitians are required to provide advice on strategies to maintain optimal weight. Both overweight and underweight conditions are a problem in patients with advanced chronic lung disease.

Social Work is required in the assessment of the patient's socioeconomic situation to identify strategies to assist the patient socially/educationally to assist the patient in building social support networks within the community.

With the advent of the Respiratory Assessment Service (section 6.1.16) there may be additional requirements for allied health involvement such as physiotherapy for education and intervention. Strategies for the provision of allied health services in the community will need to be developed to cope with the additional work in the community if the Respiratory Assessment Service determines that the patient can be managed at home instead of being admitted.

Goal 2: Fairer Access, Strategy 2; Goal 3: Quality and Safe Care, Strategy 3.4

6.1.10. Respiratory Health Workers

At present there is no mechanism for experienced observers to assess the respiratory status of patients in their home environment. There is no systematic approach to optimising use of

specialist devices such as oxygen therapy or CPAP machines or even nebulisers, spacers and peak flow meters.

We recommend the appointment of a community-based respiratory health worker (RHW) within the Department of Respiratory Medicine in each Sector. This position would be available to a physiotherapist or a senior nurse with experience in respiratory care.

The RHW would focus on the home management of patients with severe chronic lung disease who are known to the Departments of Respiratory Medicine. The roles would include:

- to assess response to treatment and liase with the treating physician and GP about changes to treatment;
- to assess adequacy of respiratory function for the home environment and recommend OT or ACAT assessment, if required;
- to monitor use of home oxygen, nasal CPAP, nebulised antibiotics and other respiratory devices;
- to supervise simple home physiotherapy (ie postural drainage) by patients and their support people, and
- to liaise with PHNs about ongoing nursing needs.

The expected benefits of this service would include: earlier hospital discharge in the knowledge that patients will be reviewed soon after discharge, fewer readmissions because of more effective implementation of post-discharge plans in the home, more cost-effective use of devices provided by PADP, and better communication with GPs and PHNs. These outcomes are measurable and would be used as key indicators.

In each Sector, this service will require one full-time senior nurse (CNS or above). Other resources required will be a car, an oximeter and a spirometer.

Goal 3: Quality and Safe Health Care, Strategy 3.4

6.1.11. Palliative Care Nursing

As a part of SWS's Priority Health Care Program for Palliative Care Services a common, networked clinical register of palliative care patients will be introduced through the new SWSAHS patient administration system. This will supplement the existing system in which paper records of registered palliative care patients are held in each site.

Palliative care nursing services will be available in all Sectors until 9 pm on weekdays and a weekend service will be also be available. Currently, only some Sectors provide extended hours coverage.

The proposed program will provide a single telephone point of contact for palliative care advice for patients, their carers and their families. This telephone service will be available on a 24 hour basis and will be conducted by specialised call centre facilities based at Braeside and Camden Hospitals. This will replace the present system, in which a number is provided to patients/carers at either Braeside or Camden but there is no 24 hour access to specialist advice. This is one of the strategies identified in the State plan to be implemented by Area Health Services by July 2001.

Currently, General Practitioners in SWS do not have a consistent approach to the management of palliative care patients, and are rarely able to provide care in the home. The PHCP will attempt to improve this situation by introducing training programs for General Practitioners and establishing a register of GPs who will be available to participate in shared care of patients requiring palliative care interventions.

The appointment of a coordinator will assist in the implementation of consistent policies and protocols that will ensure the delivery of a high quality, specialist palliative care service in all Sectors. The coordinator's role will include development of a shared patient assessment and care planning format for inpatient and community patients across the Area.

Goal 4: Better Value; Strategy 4.6

6.1.12. Asthma Clinic

The Asthma Clinic at Liverpool Hospital is established to bridge the gap between the hospital and primary care. Patients with asthma who are discharged from the hospital or the ED are invited to attend. A combined medical and nursing intervention is directed at establishing the diagnosis and, if asthma is confirmed, establishing a management plan.

The relevance of this model in other Sectors is not established. A process to develop a strategy for optimising asthma control in the community is currently being developed in collaboration with Divisions of General Practice. The PHCP proposal includes a nurse liaison for asthma to work with each of the Divisions of GP.

Goal 2: Fairer Access, Strategy 2.3a

6.1.13. Other potential services

Smoking cessation clinic and acute assessment services (discussed below) may be established but are not incorporated in this plan.

Interface between Hospital and Community

This interface has several dimensions: entering the hospital, leaving the hospital and hospital-based care in the community as discussed above.

6.1.14. Entering the Hospital

Hospital care for patients with respiratory illness is required for management of symptoms or disease entities that:

a) require diagnostic or therapeutic interventions that are only available in hospital and/or cost effectively provided in hospital;

b) pose a threat to life as perceived by the patient or the attending medical officer; and/or

c) disable the patient to the extent that he or she cannot conduct activities of daily living independently or with the support that is available in the community.

The nature of respiratory illness is such that these circumstances often arise relatively abruptly and hospital attendance is required as a matter of urgency; certainly within a small number of days, if not hours. The decision to come to hospital may be made independently by the patient, who then presents directly to the Emergency Department (ED), or in consultation with a doctor in the community: either the patient's usual GP, an after-hours GP, or a specialist physician.

Some patients are booked for admission by the attending respiratory physician, usually for investigations that require brief hospitalisation: bronchoscopy, pleural aspiration and biopsy, or sleep study. Most of these patients do not need full hospital admission and alternative models of care, which enable these procedures to be done safely and with adequate supervision in an out-patient setting should be explored.

6.1.15. Emergency Department

Emergency Medicine already has its own evidence-based triage system, which has recently been updated. It is outside the scope of a respiratory plan to advise Emergency Departments (EDs) how they should triage.

Most admissions of patients with respiratory illness are undertaken through the Emergency Departments. This is appropriate where the patient requires urgent clinical assessment and intervention. However, when adequate pre-hospital clinical assessment has been undertaken and has concluded that emergency intervention is not indicated, alternative models of care and routes of access to the hospital may be appropriate (see below).

Key elements to the Emergency Department assessment of patients with respiratory illness include:

- triage to assess acuity of the condition and priority for treatment;
- clinical assessment; and
- institution of initial management.

To implement these elements of management requires the provision of adequate staff with training and skills in Emergency Medicine. These staff should have access to specialist respiratory medicine consultation and advice during the period of assessment and management of patients in ED.

It is beyond the scope of this document to define what constitutes effective clinical assessment. However, four particular issues about the initial management of respiratory illness may be appropriate subjects for the establishment of clinical practice guidelines for both medical, nursing and allied health staff:

a) Administration of supplemental oxygen for hypoxaemia;

b) Use of CPAP and BiPAP for symptomatic relief of dyspnoea and for management of acute ventilatory failure;

c) Acute asthma management, in particular use of nebulisers versus spacer devices and indications for parenteral beta agonists; and

d) Selection of antibiotics for treatment of community acquired pneumonia (CAP) and acute exacerbations of chronic bronchitis (AECB).

Those patients with respiratory illness who require admission to hospital from ED should be transferred to a ward area where staff are familiar with the ongoing management of acute respiratory illness.

Among patients who are discharged home from the ED, it is important to identify those (the majority) who require further management so as:

- to support them during convalescence at home;
- to ensure adequate resolution of the acute illness or deterioration in illness-status which caused ED attendance; and/or
- to ensure optimal management of an underlying chronic illness (such as asthma, COPD etc) to prevent ongoing deterioration or further exacerbations.

This requires that there is an adequate flow of information to general practitioners, community care services, and specialist physicians and also that the patient him/herself is involved in, and aware of, the planning process. This is not practical within the existing structures for managing discharge from ED. A proposed new model to enhance the

effectiveness of this process is described below in the section detailing the Respiratory Assessment Service (RAS).

Goal 2: Fairer Access, Strategy 2.3a and 2.3b; Goal 3: Quality and Safe Health Care Strategy 3.1; Goal 4: Better Value, Strategy 4.1

6.1.16. Respiratory Assessment Service

A respiratory assessment service (RAS) will be established, initially at Liverpool Hospital and subsequently at Bankstown-Lidcombe Hospital. A component of this service comprises the RAS for the COPD and asthma PHCP. A modified version of the RAS will be established in Macarthur, Fairfield and Wingecarribee Sectors. The objectives of the assessment service, for patients in these Sectors, will be:

1) to enhance the medical assessment of patients presenting to hospital with acute respiratory illness;
2) to expedite the diagnostic work-up and therapeutic intervention in the management of patients with acute respiratory illness so as to minimise the length of stay in hospital and the risk of re-admission;
3) to identify those patients who may potentially be safely and effectively managed outside hospital;
4) to enhance the flow of information between ED, respiratory physicians, general practitioners and community care service providers at the time of acute illness deterioration;
5) to develop a safe and effective plan (in close consultation with GPs) of management for patients who are discharged into the community for ongoing management of their acute illness; and
6) To provide a service to GPs requesting respiratory assessment of their patients but not definitely requiring hospital admission.

The RAS may be located in the asthma clinic area at Liverpool Hospital. Alternative sites will need to be identified at Bankstown. The service will take referrals from the Emergency Department and directly from General Practitioners. The criteria for referral will need to be defined but will include those patients whom it is considered safe to assess in an out-patient setting. More seriously ill patients, who definitely require in-patient care, will be referred via ED to the respiratory ward for assessment.

The respiratory assessment service will undertake a medical and nursing assessment. In addition to an initial clinical evaluation and routine investigations, such as spirometry, chest x-ray and arterial blood gases, this will include special investigations, such as V/Q scan, spiral CT scan, D-dimer, ECHO etc, which may be required to establish the cause of the acute illness or acute deterioration. Expedited access to these investigations will be a pre-requisite for the success of this service.

The RAS nurse will discuss with the patients' GP the need to develop a care plan. This process will then commence with a GP initiated case teleconference with the patient, the assessing doctor (RAS team), and one or more of the relevant community service providers, such as Primary Health Nurses (PHN), the ACAT team, community care, and ambulatory care. The GP will possibly require the RAS nurse to organise the participants of the teleconference. During the teleconference a plan of management will be formulated and agreed upon. The RAS team will, where necessary, support the GP by assisting with the documentation of the care plan.

Once the patient is returned to the community setting with their care plan either the GP/Primary Health Nurse or other service provider would take on the role of care co-ordinator.

In this teleconference a plan of management will be formulated. The plan may include an initial period of hospitalisation, or the option of subsequent hospitalisation if certain circumstances eventuate. The plan may also include a role for the GP in home or practice visits, and for the community-based service providers. Specific medical treatments, including intravenous, subcutaneous or inhaled medications, as well as oral medications, may be indicated. Home oxygen therapy may also be prescribed. Finally, the plan may also include aspects of long-term disease management including follow-up diagnostic procedures and an appointment with a respiratory specialist, as well as plans for smoking cessation interventions, regular influenza vaccination, and longer-term community service provision. The respiratory specialist will refer suitable patients to the pulmonary rehabilitation program during the interval phase of the disease.

For patients in whom initial home management is contemplated, this teleconference will take place as soon as possible after the initial assessment. Where it is not possible to arrange this on the day of the assessment, the assessing doctor will formulate an interim plan of management in consultation with others. More severely ill patients, who will definitely require a period of hospitalisation, will have a teleconference arranged at a time closer to their planned discharge from hospital. This discharge care plan would be for the period of acute management. The GP would then be required to develop the longer term care plan (3-6 months).

Where it has not been possible to involve the GP prior to discharge home from the respiratory assessment service or when the extent of medical monitoring or intervention required is beyond the resources of the GP, the patient may require a brief period of hospitalisation. An alternative, which will be considered, is to utilise a "General Practice registrar" who would visit the patient at home during this interval period of acute management. The role for this registrar would be defined in the plan of management for each case.

The Respiratory Assessment Service will be staffed by a respiratory registrar and a nurse, supervised by a respiratory physician. The role of the respiratory registrar will be to (a) assess referred patients with acute respiratory illness; (b) to formulate an initial plan of management; (c) to participate in the teleconference; (d) to modify the plan of management after the teleconference; (e) and to implement those aspects of the plan which require respiratory physician implementation. The nurse will undertake a nursing assessment, contribute to the medical assessment and act as the care co-ordinator. The respiratory physician will be available for consultation about all cases at the time of the initial assessment. He/she will undertake a weekly quality review of all assessed cases with the respiratory registrar and the nurse.

The model described above is suitable for implementation in Bankstown and Liverpool Hospitals which have, or will have, respiratory specialist care for most in-patients with respiratory problems and an adequate specialist respiratory physician workforce. On the other hand, it is probably not an appropriate model at this time for Fairfield, Campbelltown and Bowral hospitals, where most patients with respiratory illness are initially managed by Generalist Physicians. However, a broadly similar structure, staffed by a general medical registrar with rapid telephone access to consultant respiratory physician and urgent lines of referral to that physician, would still be applicable in those Sectors.

Goal 2: Fairer Access, Strategy 2.3b

In-patient care

Most patients with respiratory illness who present to hospital or the Emergency Department do so urgently and are either self-referred or referred by their GP. A small proportion are referred via a respiratory specialist. As respiratory conditions make up 12% of medical admissions and most do not require expensive or unusual equipment to manage, most of the patients presenting with respiratory illness to any hospital in SWSAHS can be, and should be, managed at that hospital. For this reason, services for dealing with most respiratory conditions are required at all the SWSAHS hospitals.

6.1.17. Networking

An effective system of networking services across the Area would enhance continuity of care of patients, efficient utilisation of resources, research and education. Some patients requiring intensive care, radiotherapy, thoracic surgery and some complex diagnostic procedures are referred to Liverpool Hospital (in particular, from Fairfield and Campbelltown Hospitals). From March 2003, radiotherapy and medical oncology services will be provided at Campbelltown Hospital. In the future, patients with sleep-related breathing disorders and ventilatory failure, who are currently referred outside SWSAHS, may also be referred to Liverpool Hospital. The respiratory medicine case-load at Liverpool Hospital also includes patients with respiratory complications of underlying diseases which are primarily managed by tertiary services based at Liverpool (such as haematology, oncology and renal medicine). This case load, together with the existence of the Area-wide tuberculosis service at Liverpool and the substantial interdependence between respiratory medicine and other tertiary treatment and diagnostic services based at Liverpool, means that the level of respiratory medicine service provision will be higher at Liverpool than at other centres. Some degree of concentration of resources at Liverpool will also facilitate the development of this site as a centre for respiratory research and teaching within the Area.

6.1.18. Respiratory Physicians

It is our view that the most effective and efficient means of achieving optimal outcomes for patients admitted to hospital because of a complex respiratory problem, or who have complex respiratory co-morbidity, is achieved when care of the respiratory problem is undertaken by specialist respiratory physicians. It is acknowledged that there are many clinicians, other than respiratory physicians, involved in the care of patients with respiratory illness. In many cases, the need for this arises because of complex non-respiratory co-morbidity. In other cases, this need arises because it is not feasible to provide specialist respiratory care in the sector where the patient seeks care. Within SWSAHS this latter constraint applies to the Wingecarribee Sector.

This model proposes the development of infrastructure which optimises the availability of specialist respiratory medicine resources within the Area. The model envisages that patients with the following complex respiratory problems at presentation, or diagnosed after presentation, should receive specialist respiratory care:

- respiratory illness requiring admission to intensive care;
- severe acute or chronic ventilatory failure ($paCO_2 > 50mmHg$);
- interstitial lung disease or diffuse pulmonary infiltrate;
- lung mass;
- lobar or proximal atelectasis;
- all pleural disease;

- suspected or proven pulmonary infections other than uncomplicated community acquired pneumonia, simple bronchitis, and acute exacerbations of chronic bronchitis; and
- suspected or proven tuberculosis.

There are no accurate data on the proportion of respiratory admissions that meet this criterion. As these criteria are themselves rather complex, under some circumstances it may be more suitable for all in-patients, whose reason for hospitalisation is a respiratory problem, to be under the care of a respiratory physician.
Liverpool, Bankstown, Fairfield and Campbelltown Hospitals will need sufficient respiratory physicians on service to deal with:

(a) overall care and responsibility for patients whose primary problem is a complex respiratory problem as defined above; and
(b) co-management or consultation on patients whose primary problem is non-respiratory but who have a respiratory co-morbidity or complication which requires attention.

The structures and policies that are suitable for enabling optimal utilisation of the available specialist respiratory medicine resources will vary between sectors but should be designed to achieve the maximum possible levels of effectiveness, efficiency and equity across the Area. One potential structure, co-management by generalist and specialist respiratory physicians, of patients whose primary or sole problem is a respiratory illness and who require ongoing specialist input introduces unnecessary confusion about the lines of responsibility among staff, patients and carers and is not an effective or efficient model of care.

It is acknowledged that these resources would not be directly available to patients who are admitted to the other, smaller, hospitals within SWSAHS (Bowral and Camden). The management of patients with complex respiratory problems at these hospitals will require a combination of utilising the skills of generalist physicians with special interest in respiratory illness and establishing pathways for consultation and referral for specialist care.

While the proportion of respiratory admissions that are complex is likely to be fairly constant across the Area, the proportion of respiratory complications of other major conditions will be higher at Liverpool Hospital because of the higher level of tertiary services offered at that hospital.

Goal 2: Fairer Access, Strategy 2.1, 2.2a

6.1.19. Medical Staffing Numbers

The Australian Medical Workforce Advisory Committee's (AMWAC) recent report on the specialist thoracic medicine workforce in Australia recommends that one thoracic physician is required per 75,000 to 85,000 people. The document does not make recommendations on how these positions should be divided between hospital and private practice. The following table indicates the current staffing configuration for respiratory specialists in each of the acute hospitals.

Hospital	Current FTE Respiratory Physicians (number occupying)
Liverpool	0.8+ (3)
Bankstown/Lidcombe	1.2 (3)
Macarthur (Campbelltown and Camden)	VMO** (1)
Fairfield	0.3* (1)
Bowral	0.0 (0)
Total for SWSAHS	2-3 FTE

+ excluding Area tuberculosis service (which occupies 0.5 FTE).
* holder of this post is also 0.5 FTE Staff Specialist Intensivist
** VMO not sessional appointment. No exact FTE estimable.

A benchmarking exercise conducted with Northern Sydney Area Health Service indicated that the Respiratory Medicine Department at Royal North Shore Hospital has seven senior medical staff making up the following configuration:

- 1 Academic
- 3 Staff Specialists (2.6FTE)
- 3 VMOs

Junior medical staff include:

- 2 registrars
- 1 advanced trainee
- 1 rotating resident
- 1 resident
- 1 intern

The following levels of specialist respiratory physician staffing at SWS are required for the current workload based on AMWAC recommendations:

- Liverpool 3.5 FTE positions (including the Area tuberculosis service);
- Bankstown 2.2 FTE positions;
- Campbelltown and Fairfield 1.5 FTE positions each.

These FTE allocations are solely for in-patient activities, bronchoscopies, administration and teaching at all hospitals except Liverpool (where out-patient activities are also included).

The following registrar allocations are also required. These proposed numbers include current FTE:

- Liverpool 3.0 posts, two advanced and one basic trainee;
- Bankstown 2.0 posts, one advanced and one basic trainee;
- Campbelltown 1.0 post; and
- Fairfield 1.0 post.

The total number of proposed senior medical practitioner positions in Respiratory Medicine for the Area is 8.7 FTE. This number includes the current 2-3 FTE. Based on AMWAC recommendations, a total of 11.2 physicians are required for the projected SWS population for 2006. In addition, 0.5 FTE secretarial position is required for each 1.0 FTE staff specialist physicians. These positions should be separate from the clinic receptionist positions.

Goal 2: Fairer Access, Strategy 2.2, 2.3

6.1.20. Respiratory Ward/Dedicated Respiratory Beds

Each hospital that admits patients with respiratory illness should have a ward (or, in the case of Fairfield, Campbelltown, and Bowral, a part of a ward) dedicated to the in-patient care of these patients.

Adequate in-patient care for patients with respiratory illness requires effective nursing and allied health care. It is our view that this can only be provided where there is leadership from nurses with post-basic training in the care of respiratory illness and a vocational focus on respiratory nursing. This requires a respiratory ward or area, staffed by nurses and allied health with specialist training, in which all or most patients with respiratory illness are managed. The existence of a respiratory ward provides a focus for further training of nursing, medical and allied health staff. This is a key strategy to attracting and keeping staff. It also facilitates the multi-disciplinary management of patients with respiratory problems by encouraging formal and informal interaction between nursing, medical and allied health staff about individual patient problems and the development of protocols and procedures.

6.1.21. Nursing

Specialist respiratory nursing skills that are required include:

- assessment of respiratory status;
- management of oxygen therapy;
- management of intercostal chest drains;
- assistance at procedures including insertion of chest drains, performance of pleural aspirations and biopsies, and bronchoscopies;
- nursing management of severely breathless patients;
- use of inhaler devices;
- performing induced sputum via ultrasonic nebuliser;
- specialist monitoring (including sputum charts and peak flow charts);
- preparation for discharge for patients disabled by breathlessness;
- nursing management of nasal continuous positive airway pressure (CPAP) and variable (or bilevel) positive airway pressure (BiPAP); and
- nursing management of patients with tuberculosis.

In addition, at least one member of the ward staff (nursing and/or physiotherapy) should have training and interest in asthma education. An additional reason to have all respiratory patients managed on a single ward is to facilitate occupational health and safety in relation to tuberculosis. Most tuberculosis transmission in hospital is acquired from patients admitted with cough and sputum, prior to diagnosis of tuberculosis. If all such patients are admitted to a single ward, then the requirement for staff screening would be much more limited than at present, when all hospital staff could be considered as exposed to this risk.

Goal 4: Better Value, Strategy 4.1

6.1.22. Intensive Care

Patients with respiratory illness require intensive care management when:

a) ward-based ventilatory assistance has failed;

b) there is actual or imminent multi-organ failure; and/or

c) there is actual or imminent failure to protect the airway; and

d) and there are grounds to believe that interventions only available in intensive care will alter the course of the illness in a favourable manner.

At Liverpool and Bankstown full intensive care facilities are required (and available). Liverpool and Bankstown ICU should be available for patients at Bowral, Campbelltown and Fairfield who require ICU admission. At these other hospitals, ICU facilities should be capable of administering NIPPV and managing patients requiring invasive ventilation for shorter periods.

The role of respiratory physicians in ICU varies among the SWSAHS hospitals on the basis of historical patterns. However, in all cases, respiratory physicians should assume joint responsibility, with intensive care physicians, for the management of patients whose primary problem is respiratory and should also have an active role in the management of patients who have secondary respiratory problems. It is estimated that 15% of ICU patients are in the ICU due to a primary respiratory problem.

The establishment of a specialist respiratory ward at Liverpool Hospital, with some associated enhancement of the existing nurse:patient ratio, should allow some patients currently requiring intensive care management to be managed in that ward. This change will evolve over time with increasing experience and confidence of the ward staff.

Goal 4: Better Value, Strategy 4.2

6.1.23. Allied Health

Physiotherapy, social work, occupational therapy, dietetics and speech pathology services are required and should be linked to the respiratory medicine service at each of the hospitals. This will be made easier by the establishment of a respiratory ward or ward area at each hospital.

It is considered that three physiotherapists would be required to staff a respiratory service (including ICU) at Liverpool. The suggested profile for the respiratory medicine ward: 1 senior physiotherapist (Grade 2) with post graduate qualifications or post graduate experience in respiratory medicine and one grade 1 physiotherapist who would be on the normal physiotherapist rotating roster. Additional duties would also include the management of the Pulmonary Rehabilitation Program. It is considered that the senior respiratory (grade three) physiotherapist would be located in ICU as is currently the practice.

Goal 2: Fairer Access, Strategy 4.1

6.1.24. Bronchoscopy and other Diagnostic Procedures

Each hospital requires facilities to perform bronchoscopies on in-patients and day-stay patients. Three lists per week are required at Liverpool Hospital. One list per week, with a facility for urgent add-ons where needed, is required at each of the other hospitals.

Sputum induction may, under certain circumstances, obviate the need for bronchoscopy in the diagnosis of PCP and TB. It is a procedure that carries significant infection risk to staff (as does bronchoscopy). A protocol for the procedure is currently being revised. Well-ventilated, ideally negative pressure, rooms that are not occupied by other staff or patients are required for this purpose.

Pleural aspirations and biopsies are performed by respiratory physicians at each hospital. The safety of these procedures is enhanced if there is access to ultrasound guidance.

Fine needle aspiration biopsies are performed by radiologists under x-ray or CT guidance. At present this is available at Liverpool and Bankstown. No immediate change to this arrangement is envisaged.

Goal 2: Fairer Access, Strategy 2.5

6.1.25. Imaging Services

Plain chest radiology and thoracic CT scans are essential for the management of in-patients (and out-patients) with respiratory illness. Two special scanning modalities, high resolution CT scanning and CT angiograms, both play an increasing role in the diagnosis of respiratory illness. While the former is available on most modern CT scanners the latter requires spiral CT which may not be available on all scanners. It is important that this facility is readily available at all Area hospitals. In the case of Bowral Hospital access to a private scanner would be appropriate.

Two aspects of the post-imaging handling of radiographs and scans are important: reporting by a radiologist and physician access to the images. It is important to ensure that systems are in place to optimise both these aspects of the service. In the future, it is likely this will include a Picture Achive Communication System (PACS) with images being transferred to workstations at the wards, the physicians' rooms, and team meeting areas.

6.1.26. Respiratory Laboratory

This is principally an out-patient diagnostic service but is also used for in-patients. Each hospital needs access, within the hospital or nearby, to a respiratory laboratory capable of measuring spirometric function, plethysmographic lung volumes and diffusing capacity, and performing bronchial challenge tests.

At Liverpool Hospital, this should be a hospital-based facility which in addition is capable of performing cardiopulmonary exercise tests. A Senior Scientist is required to run a hospital respiratory laboratory. A hospital respiratory laboratory could provide a service to Intensive Care in addition to testing other in-patients and referred out-patients. The large case-load of referred out-patients means that such a service is likely to be able to become substantially self-funding over time.

In addition to providing a clinical service, the laboratory is required for teaching and for research. The presence of the Senior Scientist would also facilitate the establishment of a sleep and non-invasive ventilation service.

Existing private respiratory laboratories, adjacent to the hospitals, are considered to be adequate for the provision of services at Bankstown and Campbelltown Hospitals. Fairfield Hospital would utilise the facility at Liverpool Hospital.

The respiratory laboratory at Liverpool Hospital will be partially self-funding. A feasibility study will be developed during 2001 to investigate Area wide options for a respiratory laboratory.

Goal 2: Fairer Access, Strategy 2.6

6.1.27. Sleep and Respiratory Failure Service

This is predominantly an out-patient service. However, some in-patient facilities will be required at Liverpool to manage patients with complex or severe sleep-disordered breathing. These patients, together with patients admitted with ventilatory failure, could be investigated and managed in standard beds on the respiratory ward using portable, telemetric devices. In addition to equipment, trained medical, nursing, physiotherapy and scientific staff will be required. Patients presenting with acute ventilatory failure, who either do not require intubation or are not suitable candidates for intubation, should be managed by non-invasive ventilation. The appropriate setting for this service, an acute respiratory ward or the Intensive Care Unit, is yet to be determined. In the short to intermediate term, the setting will be the Intensive Care Unit.

A comprehensive business plan for a sleep and respiratory failure service, based at Liverpool, will be developed by the end of 2001.

Goal 2: Fairer Access, Strategy 2.7

6.1.28. Thoracic Surgery

Each hospital needs to have a clear pathway to a thoracic surgical service. At present Liverpool Hospital provides such a service for Liverpool, Campbelltown and Fairfield. Bankstown mainly accesses thoracic surgery out of the Area (at Concord). There may be advantages, in terms of the development of services in SWSAHS, in having Liverpool Hospital as the thoracic surgical centre for all SWS patients. However, the ideal model for this service in relation to Bankstown-Lidcombe Hospital requires further discussions involving Bankstown-Lidcombe Hospital and the Department of Cardiothoracic Surgery.

It is considered that thoracic surgical services should be maintained at Liverpool Hospital. It is understood that this is a requirement of the surgeons, who are based at Liverpool. It is also sensible to co-locate the referral centre for respiratory medicine and the thoracic surgical service.

Leaving the Hospital

The following section deals with the discharge management of patients with respiratory illness who have been admitted to hospital. It encompasses the areas of discharge planning and case conferences.

6.1.29. Discharge planning and Community Care

Each of the services listed above needs nursing and clerical support to assist general practitioners in the co-ordination of services for patients after discharge from hospital. Services to be co-ordinated include oxygen, CPAP machines and other devices, home care and domiciliary nursing care, GP visits and interventions, and, if necessary, additional hospital or specialist care. This should be done in communication with the treating physician and the patient's general practitioner. A proposal to enhance the existing service forms part of the Area's submission for Chronic and Complex Care funding (see Respiratory Assessment Service).

Goal 2: Fairer Access, Strategy, 2.4b

6.1.30. Provision of Services and Facilities

Prior to hospital discharge, assessment of the patient's likely temporary or permanent needs should be assessed.

- Oxygen and CPAP needs will be assessed by the medical team although a final decision may not be taken until after discharge.
- Patients who are disabled by breathlessness or other impairments will need an occupational therapy assessment, in hospital and/or at home, to identify the need for physical aids and household services.
- When the patient is assessed as possibly unable to cope at home, even with aids and services, an ACAT assessment will be required.
- A range of nursing or medical interventions may be required after discharge (see hospital-based care in the community). These will need to be organised by the attending medical team and the discharge planner in consultation with the patient's GP and other relevant service providers.
- Patients with COPD should be referred to a Pulmonary Rehabilitation Program.

Goal 2: Fairer Access, Strategy 2.4b

6.1.31. Communication

The medical team, together with respiratory ward nursing staff, should take responsibility for ensuring that the patient is as aware of the diagnosis and prognosis as he/she wishes to be and that a management plan is established and communicated to those who will implement it. This will include the patient and may also include the patient's family or carer(s), one or more specialists, one or more GPs, ambulatory care staff, primary care nursing staff, home care providers, and the community pharmacist. It is important to ensure that the patient is capable of using the inhaler devices that have been prescribed. In the case of patients with asthma, it is important to ensure that patients have been instructed on when to reduce or cease oral steroids and have a written action plan for the management of subsequent exacerbations.

The question of how communication with people other than the patient is implemented is beyond the scope of this respiratory plan. It is the subject of other State-wide and Area initiatives. At present, most communication is by way of (a) a hand-written discharge summary to the patient's GP; (b) a letter from the specialist to the GP when the patient is seen in follow-up; and (c) communication between the discharge planner and the primary care nursing team. A proposal for an enhancement to this present procedure is detailed in the PHCP proposal[54], and the South Western Sydney Area PHCP Implementation and Evaluation Plan[55]. The RAS section of this proposed model is an essential component of the respiratory PHCP for SWS.

Education, Training and Research

One of the goals of the delivery of respiratory services across SWSAHS is to stimulate research, education and training in respirology among medical, nursing, allied health and science students and graduates.

It is considered that to achieve this, it is necessary that employment policies include employing staff in senior positions (medical, nursing and allied health) with demonstrated achievements in research and education. The job descriptions need to ensure a commitment to participation in education, research and training. For senior staff, including Staff

Specialists, Clinical Nurse Consultants, and the senior Respiratory Physiotherapist in each Sector, the usual expectation would be that at least 20% of Health Service time would be allocated to research and/or education and training. For less senior positions, such as registrars, Clinical Nurse Specialists and other allied health staff, 10% of time should be allocated to this task.

It needs to be established that where local skills are not available, utilising external courses to train suitable and committed staff in skills which will enhance the provision of respiratory medicine services by:

1. Promoting a culture of research by attempting to attract PhD and other higher degree students, holding regular research meetings, and inviting external researchers to participate. This activity would be primarily centred at Liverpool Hospital but should involve clinicians and scientists from other Sectors.
2. Developing teaching materials relevant to the needs of medical, nursing and allied health students in collaboration with the Clinical Skills Laboratory.
3. Active participation in local, state, national and international scientific meetings in respirology and related fields.

Goal 2: Better Value, Strategy 4.4

Governance

There are important differences between sectors in existing resources, current practices and future plans. It is essential that the implications of this plan be interpreted and implemented at a sector level. We recommend that, in implementing the plan for enhanced respiratory services, General Managers should be advised, at a Sector level, by Respiratory Disease Advisory Committees. These should comprise, among others, representatives of specialist respiratory medicine, general medicine, Emergency, ICU, allied health, medical nursing, community nursing/PHNs, and Divisions of General Practice. This committee would have three responsibilities:

1) overseeing the implementation of the respiratory component of the PHCP within the Sector;
2) advising the GM on the Sector Respiratory Services Plan; and
3) advising the GM on other issues relevant to respiratory illness in the Sector.

At an Area level, these three tasks would be undertaken by the existing Respiratory Diseases Advisory Committee.

7. Strategies and Priorities for the Prevention and Care of Respiratory Illness in SWSAHS

The NSW Health *Strategic Directions for Health* provides the framework within which all other plans in the health system should be developed. The four goals set out in the *Strategic Directions for Health* are: Healthier People; Fairer Access; Quality Health Care; and Better Value.

The SWSAHS Board has adopted the *Strategic Directions Statement and Implementation Plan 1998-2003* in which four prioritisation principles Equity, Efficiency, Effectiveness and Acceptability are stated as overarching principles. The Area has adopted these four prioritisation criteria to assist in decision making. These criteria assist at all levels in the planning process, including determining the relative priority of the issues, identification of the preferred option and the priority of proposed implementation strategies. The Objectives of this Plan have been based on the quality framework: Healthier People; Fairer Access; Quality Health Care; and Better Value. It is considered that many of this Plan's Objectives relate to more than one quality framework goal.

GOAL 1 : HEALTHIER PEOPLE

SERVICE OBJECTIVE: TO PROMOTE CHANGES IN HEALTH RELATED BEHAVIOUR WHICH ARE CONDUCIVE TO PREVENTING RESPIRATORY ILL-HEALTH IN SWS COMMUNITY

LINK SDS	STRATEGY	PERFORMANCE INDICATOR	RESPONSIBILITY	TIME FRAME	RESOURCE REQUIRED	SOURCE	PRIORITY
KC 1,2,4,5,7	**1.1.** Implementation of the Tobacco Control Plan in South Western Sydney: Strategic Plan for Improving Health 2000-2005	Decrease in the prevalence of smoking in SWS	Director, Division Pop Health (DPH) / Manager, Health Promotions Unit	Commenced 1999/00 ongoing	1.5 FTE and Goods and Services	Population Health growth funds targeted for Tobacco control Plan.	**1**
	1.2a Accessible Pulmonary Rehabilitation Programs within each Sector	Pulmonary rehabilitation established and accessible.	Sector GMs/Sector Departments of Respiratory Medicine	2003-2004	Additional resources required for Bowral, Fairfield, Macarthur and Bankstown. Additional 0.5 physiotherapists in each sector	Future Respiratory Growth funds/Community Growth Funds	**1**
	1.2b Investigate the provision of community based pulmonary rehabilitation programs.	Pulmonary rehabilitation programs established in the community where appropriate.	Community and Allied Health/Sector Departments of Respiratory Medicine	ongoing	To be determined	Future Community growth funds	**2**
	1.3 Implement Screening for early detection of Lung Cancer when cost effective interventions are established.	Await further evidence	RDAC	-	To be determined when cost effective interventions are established	-	**3**

GOAL 2: FAIRER ACCESS

SERVICE OBJECTIVE: To ensure that all patients with respiratory illness who live in SWSAHS have equitable access to optimally effective and safe care for their illness

LINK SDS	STRATEGY	PERFORMANCE INDICATOR	RESPONSIBILITY	TIME FRAME	RESOURCES REQUIRED	SOURCE	PRIORITY
KC 4,5	**2.1** Review Policies to ensure that patients with complex respiratory illness receive specialist respiratory care	Policies established in each sector	Sector GMs/Area Director Medical Services	Ongoing	Additional respiratory Specialist staff appointments as identified in 2.2a	Part Respiratory Growth Funds 200/2-2002/3 and future growth funding	**1**
KC3,5,6,7	**2.2a** Increase Respiratory Specialists appointments in order to meet the needs of the Policy described in 2.1	Appointment of additional staff across Area (includes RAS staffing requirements)	Sector GMs/Area Director Division of Medicine	Commence 2001 - ongoing	▪ Liverpool 2 FTE ▪ Bankstown 1 FTE ▪ Macarthur 0.5 ▪ Fairfield 0.7 FTE (includes 0.5 FTE secretary per for each 1.0 FTE staff specialist)	Respiratory Growth Funds available for: Liverpool 1.0 (Yr 1) Bankstown 0.5 (Yr2) Macarthur 0.25 (Yr 2) Fairfield 0.25 (Yr 2). Full component of staffing (Specialists and Registrars) will be dependent on future growth funding allocations.	**1**
KC 3,5,6,7	**2.2b** Increase Respiratory Registrar appointments in order to meet the needs of the Policy described in 2.1	Appointment of additional staff across Area	Sector GMs/Area Director Division of Medicine	Commence July 2001	▪ Liverpool 2 FTE (2^{nd} FTE for Liverpool Priority 2) Bankstown 1 FTE ▪ Macarthur 1.0 FTE ▪ Fairfield 1.0 FTE	Respiratory Growth funds available for: Liverpool 0.5 (Yr 2) Bankstown 0.5 (Yr2) Macarthur 0.25 (Yr 2) Fairfield 0.25 (Yr 2)	**1**
KC 2,3,4 &5	**2.3a** Implement Asthma component of the Priority Health Care Program (PHCP)	▪ Asthma Liaison Nurse appointed in the each of the Sectors ▪ Outcome indicators As per PHCP proposal.	Sector General Managers Sector RDACs/Area RDAC	2001-2003 Commencement of program-ongoing	I FTE CNS Nurse liaison in each sector as per PHCP proposal, Wingecarribee 0.5FTE PHCP funds/Divisions of General Practice (50:50 cost share) in Yr 2 and Yr 3 of PHCP	PHCP funds Yr 1 to fund 0.5 FTE at Liverpool, Bankstown and Macarthur. NB 0.25 FTE for Wingecarribee (unsourced)	**1**

LINKS SDS	STRATEGY	PERFORMANCE INDICATOR	RESPONSIBILITY	TIME FRAME	RESOURCES REQUIRED	SOURCE	PRIORITY
KC 2,3,4 &5 (Cont)	**2.3b** PHCP Chronic Obstructive Pulmonary disease	Implementation of RAS at Liverpool Bankstown, Macarthur and Fairfield (variation in models may exist across each sector)	Sector GMs / Sector Clinical Governors for PHCP	July 2001-ongoing	Enhancement of Respiratory Specialists and registrars positions: Liverpool: 1.0 staff specialist 0.5 registrar Bankstown: 0.5 staff specialist, 0.5 Registrar; Fairfield: 0.25 staff specialist, 0.25 registrar; Macarthur: 0.25 staff specialist 0.25 registrar **included in 2.2a &2.2b**	PHCP funds used for the nursing FTE ($204,548), capital, RMR and G&S. Respiratory growth funds used ($474,834 includes G&S) for specialist and registrar component of PHCP	**1**
KC 3, 4 &5	**2.4** Development of strategy to identify the most cost effective provision of respiratory allied health services (outside of hospital) and identified resources	Strategy implemented	Divisions of Community and Allied Health/RDAC	2001-2002	To be determined by Allied Health	Community Growth funds	**2**
	2.5 Provide bronchoscopy service at Fairfield Hospital	Bronchoscope to be purchased for Fairfield	Sector GM/Director, Respiratory Services, Fairfield	2003-2004	1 Bronchoscopy unit approximately $20,000	Future Respiratory Growth Funds	**1**
	2.6 Respiratory Laboratory to be established initially at Liverpool Hospital	Area Wide feasibility study to be developed (Division of Planning) Service established at Liverpool	GM Liverpool / Director Respiratory Services Liverpool	2001-2002	Capital to be identified by feasibility study	Future respiratory Growth Funds. It is considered that the laboratory will be partially self funding.	**1**
	2.7 Sleep and Respiratory Failure Service	Business case to be developed (Division of Planning) Service established at Liverpool	GM Liverpool/Director Respiratory Services Liverpool	2001-2002	To be determined by business case	Future Respiratory Growth Funds.	**2**
	2.8 Sectors to investigate the provision of diagnostic procedures such as pleural aspiration and biopsy to be performed in ambulatory care setting.	Policies developed	Sector RDAC/Ambulatory Care	ongoing	Nil	-	**2**

GOAL 3: QUALITY AND SAFE HEALTH CARE							
SERVICE OBJECTIVE : That the provision of care for respiratory medicine in SWSAHS is optimally effective and safe							
LINKS SDS	STRATEGY	PERFORMANCE INDICATOR	RESPONSIBILITY	TIME FRAME	RESOURCES REQUIRED	SOURCE	PRIORITY
KC 5	**3.1a** Clinical practice guidelines to be developed in collaboration with medical, nursing and allied health staff	Development of guidelines for: 1. Administration of supplemental oxygen for hypoxaemia 2. Use of CPAP and BiPAP for symptomatic relief of dyspnoea and for the management of acute ventilatory failure; 3. Acute asthma management in particular the use of nebulisers vs spacer devices and indications for parenteral beta antagonists 4. Selection of antibiotics for treatment of community acquired pneumonia (CAP) and acute exacerbations of acute chronic bronchitis (AECB) 5. Other clinical practice guidelines as identified by RDAC	RDAC / Area Director of Medical Services	Commence 2001-ongoing	Infrastructure support	To be identified -	**1**
	3.1b processes to be established to improve dissemination and uptake of guidelines	Strategy to be developed	RDAC/ Ambulatory Care Advisory Committee/Sector RDACS	Ongoing	Nil		**1**

GOAL 3: QUALITY AND SAFE HEALTH CARE							
SERVICE OBJECTIVE : That the provision of care for respiratory medicine in SWSAHS is optimally effective and safe							
LINK SDS	STRATEGY	PERFORMANCE INDICATOR	RESPONSIBILITY	TIME FRAME	RESOURCES REQUIRED	SOURCE	PRIORITY
KC 5,7	**3.2** Respiratory Diseases Advisory Committee to be established within each sector to: ▪ oversee the implementation of the respiratory component of the PHCP ▪ Advise GM on other issues relevant to respiratory illness in the sector	Committees established	Sector GMs	July-August 2001	Nil	-	**1**
KC 5	**3.3** Area RDAC to take on responsibilities as outlined in model	Committee Terms of Reference expanded	Chairperson RDAC	July 2001	No	-	**1**
KC 5&7	**3.4** Establish a team of respiratory health workers	Positions established within each sector	Sector GMs /Sector Directors of Nursing/ Sector Directors of Respiratory Medicine	2003/4	1 nurse/respiratory physiotherapist within each sector (also car, spirometer, oxymeter)	Future Respiratory Growth funds	**3**
KC 5	**3.5** Establish Respiratory CNC for each Sector	Appointment of staff	Sector GMs /Sector Directors of Nursing/ Sector Directors of Respiratory Medicine	2003-2004	1 CNC for each Sector	Future Respiratory Growth Funds	**1**

GOAL 4: BETTER VALUE							
SERVICE OBJECTIVE :To ensure that care is delivered in the most efficient manner possible							
LINK SDS	STRATEGY	PERFORMANCE INDICATOR	RESPONSIBILITY	TIME FRAME	RESOURCES REQUIRED	SOURCE	PRIORITY
KC 4,5,6 &7	**4.1** Respiratory medicine ward/dedicated respiratory beds to be made available at each main sector hospital where appropriate.	▪ 30 bed Respiratory ward established at Liverpool Hospital. ▪ Dedicated respiratory beds established at each main sector hospital	▪ Liverpool General Manager ▪ Sector General Managers	2002 2003-2004		Future Respiratory Growth Funds Respiratory growth funds	**1** **2**
	4.2 Respiratory physicians to have joint responsibility with ICU physicians for management of patients who have a primary respiratory problem	Policy developed at Liverpool	Respiratory Medicine Departments/ICU	December 2001-ongoing			**2**
KC 2, 3	**4.3a** Smoking cessation to be encouraged in ATSI community.	Policy developed	PHU	Dependent on Tobacco control Plan	Identified in Tobacco control Plan	Tobacco control enhancement funds	**1**
	4.3b Partnership links to be developed with Tharawal Aboriginal Corporation (TAC) to address respiratory illness in the ATSI population.	Agreement developed	RDAC/TAC	2002-2003	Nil	-	**1**
KC 2	**4.4 a** To increase communication links between the Hospital and GPs./Community in relation to patients with chronic respiratory disease	Implementation of PHCP program.	Division of Medicine/Sector GMs	ongoing	Nil	-	**1**
	4.4b RDAC To provide a contact point for Divisions of GP to access resources for CME, QA and evaluation activities.	Divisions of GP aware of contact point	RDAC/ Divisions of GP	Ongoing	Nil	-	**2**

LINK SDS	STRATEGY	PERFORMANCE INDICATOR	RESPONSIBILITY	TIME FRAME	RESOURCES REQUIRED	SOURCE	PRIORITY
KC 1	**4.5** Invite Community Participation	Process for inviting community input and participation developed on a number of levels	Area RDAC/Sector RDAC	Determined by convening of committees	No	-	**1**
KC 4	**4.6** Palliative Care -PHCP	Implementation of PHCP for palliative care	PHCP Steering Committee	Commences mid 2001 – ongoing	$334,000	PHCP funds for palliative care	**1**
SERVICE OBJECTIVE : To stimulate research education and training in respirology among medical, nursing, allied health and science students and graduates							
KC 6,7	**4.7** Establish 3 advanced training posts for respiratory medicine registrars in SWSAHS based at Liverpool and Bankstown	Employment of advanced trainees in approved training programs.	Director Division of Medicine/Directors Respiratory Medicine Liverpool and Bankstown	January 2002 (2 positions Bankstown and Liverpool) January 2004 (3rd position Liverpool)	Enhanced staffing	Respiratory growth funds see 2.3b	**1**
KC 6,7	**4.8** Progress the conduct of respiratory research by medical nursing and allied staff.	Peer review publications by SWSAHS staff in respiratory medicine, post graduate students in respiratory medicine Peer review grant funding for respiratory publications	Sector Directors of Respiratory Medicine	Ongoing	Allocation of 20% of time for medical staff Allocation of 10% for senior nursing and allied health staff in respiratory medicine.	-	**1**

8. Appendixes

Membership of Respiratory Services Area Plan Steering Committee

Professor Ian Webster, Director of Population Health (Chairperson to December 2000)

Dr Guy Marks, Staff Specialist, Respiratory Medicine, Liverpool Health Service and Chair, Area Respiratory Disease Advisory Committee (Chairperson from January 2001)

Dr Hamish Crawford, Staff Specialist, Respiratory Medicine, Liverpool Health Service.

Dr Alvin Ing, Respiratory Physician, Bankstown-Lidcombe Hospital

Dr KP Hui, Respiratory Physician, Fairfield Hospital

Dr Tony Aouad, Respiratory Physician, Macarthur Health Service

Dr David Freiberg, Respiratory Physician, Bankstown-Lidcombe Hospital

Professor Nick Zwar, Department of General Practice

Dr Elizabeth Comino, Department of General Practice

Dr Linda Dann, Director, Emergency Services, Bankstown-Lidcombe Hospital

Ms Gwen Smith , Nursing, Hoxton Park Community Health Centre

Ms Leanne Mills, A/Director of Nursing, Division of Medicine, Liverpool Heath Service

Ms Ana Lay, Senior Physiotherapist, Pulmonary Rehabilitation, Liverpool Health Service

Dr Chris Pokorny, VMO, Division of Medicine, Liverpool Heath Service

Dr Neville Lunn ,VMO, Division of Medicine, Liverpool Heath Service

Dr Stephen Wilson, Director, Ambulatory Care, Macarthur Health Service

Dr Charles Pain, Area Director, Medical Services, SWSAHS

Mr Tim Wills, Director, Division of Planning, SWSAHS

Ms Cathryn Cox, Deputy Director, Division of Planning, SWSAHS

Ms Lou-Anne Blunden, Senior Planner, Division of Planning, SWSAHS

8.1.1. Terms of Reference

The purpose of this Committee is to produce (a) a draft Area Plan for adult respiratory medicine services for SWSAHS and (b) a submission for the respiratory diseases component of NSW Health's Priority Health Care Program by December 2000. To achieve this objective the Committee will consider the following terms of reference:

1. To identify and prioritise the needs of the communities comprising the South Western Sydney population in relation to respiratory disease.

2. To identify and review National and State priorities in relation to respiratory disease as well as the priorities identified by SWSAHS' Respiratory Disease Advisory Committee

3. To define the objectives of service provision for respiratory disease in SWS.

4. To describe current adult respiratory medicine services across SWSAHS.

5. To develop and recommend an optimal model to meet the objectives of service provision for respiratory disease in SWS.

6. To identify deficits in current service provision in relation to this optimal model.

7. To identify strategies and resources required to achieve the optimal service model

8. To prioritise enhanced resource requirements and service development strategies

9. To identify a component of the enhancement required which would be suitable for implementation under the NSW Department of Health's Priority Health Care Program for Chronic and Complex Care and to develop a submission for this purpose.

Process of Plan Development

The plan was developed in consultation with, and the assistance of, the above Steering Committee. A number of the members of this group are also members of the Area's Respiratory Disease Advisory Committee. The Steering Committee first met in November 2000. A total of four meetings were held with much of the feedback also conducted by e-mail. A draft plan was distributed for comment via the Area Executive Team and the Sector General Managers in March 2001. A total of 86 comments were received, tabulated and incorporated in the revised draft where appropriate.

FlowInfo version 4.0

The following elements of data are recorded.

1. Principal reason for the episode of care (EOC or hospitalisation). This is coded to a diagnosis-related group (DRG). DRGs incorporate information on the principal diagnosis, the presence of co-morbidity and complications, and patient's age in a manner that broadly describes the resource implications of the episode of care. DRGs are aggregated into Service Related Groups (SRGs). There is one SRG that incorporates the DRGs falling within the ambit of respiratory medicine.
2. Hospital and sector within which the episode of care took place.
3. Local government area (LGA) in which the patient was resident at the time of admission.
4. Simple demographic data: age group (< 15, 15 – 64, and > 64 years) NESB and gender.
5. Date of admission, date of discharge or death, and the time interval between them, that is, length of stay (LOS). The product of average LOS and number of EOC for any classification or combination of classifications represents the number of bed-days utilised.
6. Whether the EOC was an emergency or a planned admission to hospital.

These data are used to examine time trends, over the period 1994 to 1999, and projections for the years 2006 and 2011. The projections are based on extrapolation of simple linear trends in the EOC and exponential trends in LOS at the DRG level for each age/gender group. The calculated trend or slope has been altered by the authors of the implementation package, Acute Projections Plus Interventions (APPI) in cases where the projected values "seemed unlikely to be obtained" (APPI Manual). These data may be expressed by area of residence and by sector of service provision.

Activity Trends and Projections

8.1.2. Table: Indicating Activity trends for past 5 years for adult inpatients (overnight and day stay)

ESRG	Year		Demand	Supply	Capture	Emergency	Planned
Asthma, bronchitis and COAD	1994-95	EOC	2048	1933	1792	1580	353
		Beddays	13329	12635	11798	10247	2388
	1995-96	EOC	2115	2035	1860	1770	265
		Beddays	12866	12486	11410	10779	1707
	1996-97	EOC	2175	2124	1938	2046	78
		Beddays	13911	13629	12488	13215	424
	1997-98	EOC	2359	2315	2117	2185	130
		Beddays	13522	13456	12344	12738	718
	1998-99	EOC	2397	2386	2180	2264	122
		Beddays	13992	14036	12854	13180	856

ESRG	Year		Demand	Supply	Capture	Emergency	Planned
Respiratory medicine	1994-95	EOC	1154	1272	1123	863	409
		Beddays	10331	8619	7660	6347	2272
	1995-96	EOC	1806	1556	1370	1170	386
		Beddays	10832	9603	8281	7586	2017
	1996-97	EOC	1777	1568	1358	1312	256
		Beddays	10992	9907	8324	8840	1067
	1997-1998	EOC	1978	1813	1579	1431	382
		Beddays	11201	10135	8648	8522	1613
	1998-99	EOC	1940	1786	1579	1251	535
		Beddays	1164	10170	9034	8480	1690
Respiratory infection/ Inflammation	1994-95	EOC	1095	1008	941	765	243
		Beddays	8436	7826	7233	5959	1867
	1995-96	EOC	1154	1068	980	899	169
		Beddays	9207	8495	7778	7165	1330
	1996-97	EOC	1353	1277	1173	1197	80
		Beddays	10656	10015	9139	9319	696
	1997-98	EOC	1605	1581	1466	1463	118
		Beddays	11099	10820	9996	10147	673
	1998-99	EOC	1546	1563	1408	1440	121
		Beddays	10351	10388	9393	9631	757
Respiratory neoplasms	1994-95	EOC	432	287	255	133	154
		Beddays	2993	2069	1809	1178	891
	1995-96	EOC	484	352	324	162	190
		Beddays	2873	2307	2097	1459	848
	1996-97	EOC	412	349	314	201	148
		Beddays	2570	2247	1998	1569	678
	1997-98	EOC	432	340	316	209	131
		Beddays	2199	1758	1645	1204	554
	1998-99		301	281	257	205	76
		Beddays	1536	1428	1289	1098	330
Sleep apnoea	1994-95	EOC	111	22	20	7	15
		Beddays	307	167	163	37	130
	1995-96	EOC	124	18	17	7	11
		Beddays	307	113	98	43	70
	1996-97	EOC	75	5	5	4	1
		Beddays	177	29	29	26	3
	1997-98	EOC	49	4	3	2	2
		Beddays	94	7	3	5	2
	1998-99	EOC	41	4	4	3	1
		Beddays	132	26	26	23	3

Source: FlowInfo Version 4.0

8.1.3. Total Demand for Adults SWSAHS includes all activity overnight and day stay.

ESRG	Year		Demand	Supply	Capture	Inflow	Outflow
Asthma, bronchitis and COAD	1998	EOC	2397	2386	2180	206	217
		CWT Seps	2752	2748	2514	234	238
		Beddays	13992	14036	12854	1182	1138
	2006	Seps	2756	2740	2528	212	228
		CWT Seps	3237	3237	2992	399	245
		Beddays	1406	14008	12936	1072	1090
	2011	EOC	3021	3006	2784	222	237
		CWT Seps	3583	3586	3328	258	255
		Beddays	13900	13891	12873	1018	1027
Respiratory medicine	1998	EOC	1940	1786	1579	207	361
		CWT Seps	4072	3370	2980	390	1092
		Beddays	11560	10168	9032	1136	2528
	2006	EOC	3047	2772	2475	297	572
		CWT Seps	6282	5127	4594	533	1688
		Beddays	15100	13084	11676	1408	3434
	2011	EOC	3797	3445	3085	360	712
		CWT Seps	7776	6319	5679	640	2097
		Beddays	17077	14671	13157	1514	3920
Respiratory infection/ Inflammation	1998	EOC	1547	1563	1409	154	138
		CWT Seps	2486	2525	2284	241	202
		Beddays	10353	10397	9395	1002	958
	2006	EOC	2512	2512	2292	220	220
		CWT Seps	4031	4046	3701	345	330
		Beddays	13664	13725	12528	1197	1136
	2011	EOC	3163	3158	2891	272	272
		CWT Seps	5070	5078	4664	414	406
		Beddays	15124	15156	13891	1265	1233
Respiratory neoplasms	1998	EOC	301	281	257	24	44
		CWT Seps	424	396	359	37	65
		Beddays	1536	1428	1289	139	247
	2006	EOC	354	333	308	25	46
		CWT Seps	514	485	447	38	67
		Beddays	1813	1746	1598	148	215
	2011	EOC	402	378	351	27	51
		CWT Seps	579	549	509	40	70
		Beddays	1958	1893	1745	148	213

Sleep apnoea	1998	EOC	41	4	4	0	37
		CWT Seps	22	3	3	0	19
		Beddays	132	26	26	0	106
	2006	EOC	78	7	7	0	71
		CWT Seps	42	4	4	0	38
		Beddays	244	23	23	0	221
	2011	EOC	103	10	10	0	93
		CWT Seps	55	5	5	0	50
		Beddays	315	29	29	0	286
Total	1998	EOC	6226	6020	5429	591	797
		CWT Seps	9757	9043	8141	902	1616
		Beddays	37573	36055	32596	3459	4977
Total	2006	EOC	8747	8635	7611	1024	1136
		CWT Seps	14106	12898	11738	1160	2368
		Beddays	44847	42586	38761	3825	6086
Total	2011	EOC	10486	9997	9121	876	1365
		CWT Seps	17063	15537	14185	1352	2878
		Beddays	48374	45640	41695	3945	6679

Source: *APPI Version 4.0*

8.1.4. Table: APPI projections for Adults (overnight only) excludes Private Hospitals

ESRG	Year		Demand	Supply	Capture	Inflow	Outflow
Asthma, bronchitis and COAD	1998	EOC	2158	2150	1968	182	190
		CWT Seps	2638	2634	2411	223	227
		Beddays	13753	13800	12642	1158	1111
	2006	EOC	2403	2396	2215	181	188
		CWT Seps	3065	3070	2838	232	227
		Beddays	13673	13664	12623	1041	1050
	2011	EOC	2577	2575	2389	186	188
		CWT Seps	3366	3376	3133	243	233
		Beddays	13457	13460	12479	981	978
Respiratory medicine	1998	EOC	1434	1306	1168	138	266
		CWT Seps	3463	2791	2479	312	984
		Beddays	11054	9688	8621	1067	2793
	2006	EOC	2161	1942	1756	186	405
		CWT Seps	5231	4176	3748	428	1483
		Beddays	14214	12254	10957	1297	3257
	2011	EOC	2652	2375	2156	219	496
		CWT Seps	6426	5100	4592	508	1834
		Beddays	15932	13601	12228	1373	3704

Respiratory infection/ Inflammation	1998	EOC	1422	1434	1298	136	124
		CWT Seps	2404	2437	2208	229	196
		Beddays	10228	10268	9284	984	944
	2006	EOC	2288	2284	2092	192	196
		CWT Seps	3890	3904	3576	328	314
		Beddays	13440	13496	12329	1167	1111
	2011	EOC	2867	2857	2627	230	240
		CWT Seps	4886	4894	4501	393	385
		Beddays	14827	14855	13627	1228	1200
Respiratory neoplasms	1998	EOC	223	207	186	21	37
		CWT Seps	387	361	325	36	62
		Beddays	1458	1354	1218	136	240
	2006	EOC	263	248	227	21	36
		CWT Seps	465	440	404	36	61
		Beddays	1723	1661	1517	144	206
	2011	EOC	289	275	253	22	36
		CWT Seps	514	491	454	37	60
		Beddays	1845	1789	1647	142	198
Sleep apnoea	1998	EOC	38	4	4	0	34
		CWT Seps	21	3	3	0	18
		Beddays	129	26	26	0	103
	2006	EOC	73	7	7	0	66
		CWT Seps	40	4	4	0	36
		Beddays	239	23	23	0	216
	2011	EOC	97	10	10	0	87
		CWT Seps	52	5	5	0	47
		Beddays	309	29	29	0	280

Source: APPI Version 4.0

8.1.5. Table: Total Activity (adults and paediatrics) excludes private hospitals

ESRG	Year		Demand	Supply	Capture	Inflow	Outflow
Asthma, bronchitis and COAD	1998	EOC	3938	3760	3436	324	502
		CWT Seps	3493	3406	3114	292	379
		Beddays	16860	16532	15097	1435	1763
	2006	Seps	4277	4092	3769	323	508
		CWT Seps	3968	3888	3589	299	379
		Beddays	16489	16202	14948	1255	1541
	2011	EOC	4484	4034	3979	55	505
		CWT Seps	4286	4211	3903	308	383
		Beddays	16102	15849	14671	1177	1431

Respiratory medicine	1998	EOC	3119	2732	2450	282	2131
		CWT Seps	5297	4198	3747	451	1550
		Beddays	15433	12746	11435	1311	3998
	2006	Seps	4636	4036	3641	395	995
		CWT Seps	7932	6257	5641	616	2291
		Beddays	19560	16268	14622	1647	4938
	2011	EOC	5576	4856	4388	468	1188
		CWT Seps	9261	7578	6848	730	2413
		Beddays	21634	17940	16184	1756	5450
Respiratory infection/ inflammation	1998	EOC	2248	2162	1962	200	1714
		CWT Seps	3114	3052	2772	280	342
		Beddays	12561	12164	11015	1546	1149
	2006	EOC	3480	3339	3056	283	424
		CWT Seps	4895	4781	4379	402	516
		Beddays	16159	15819	14453	1706	1366
	2011	EOC	4263	4096	3760	336	167
		CWT Seps	6048	5911	5433	478	615
		Beddays	17645	17276	15843	1433	1802
Respiratory neoplasms	1998	EOC	304	282	258	24	46
		CWT Seps	427	397	360	37	67
		Beddays	1539	1429	1290	249	139
	2006	EOC	357	334	309	25	48
		CWT Seps	517	485	447	38	70
		Beddays	1817	1747	1598	148	218
	2011	EOC	405	379	352	27	53
		CWT Seps	582	549	509	40	73
		Beddays	1961	1894	1746	148	216
Sleep apnoea	1998	EOC	60	11	11	0	49
		CWT Seps	33	7	7	0	26
		Beddays	183	46	46	0	137
	2006	EOC	138	28	28	0	110
		CWT Seps	77	16	16	0	61
		Beddays	345	59	59	0	287
	2011	EOC	185	38	38	0	147
		CWT Seps	103	21	21	0	82
		Beddays	452	77	77	0	374

Source:APPI Version 4.0

Diagnosis Related Groups within Respiratory Service Related Group

The table below shows the DRGs designated as being with the Respiratory Service Related Group. The last three columns show the average annual number of episodes of care and bed-days used for each DRG over all SWSAHS hospitals for the four years 1995/96 to 1998/99. The proportion of all Respiratory SRG bed-days associated with each DRG is shown along with the average length of stay for each DRG.

Grouping	DRG	Description	EOC	Bed-days	%	ALOS
Asthma, Bronchitis and COAD	177	Chronic obstructive airways disease	1392	10306	29.96	7.4
	185	Bronchitis & asthma age>49 w cc	101	725	2.11	7.2
	186	Bronchitis & asthma (age<50 w cc) or (age>49 w/o cc)	261	1146	3.33	4.4
	187	Bronchitis & asthma age<50 w/o cc	462	1228	3.57	2.7
Respiratory Infection/Inflammation	170	Respiratory infections & inflammation age>54 w cc	694	6294	18.30	9.1
	171	Respiratory infections & inflammation (age>54 w/o cc) or (age<55 w cc)	408	2527	7.35	6.2
	172	Respiratory infections & inflammation age<55 w/o cc	271	1111	3.23	4.1
Respiratory Neoplasms	189	Respiratory neoplasms w cc	235	1642	4.77	7.0
	190	Respiratory neoplasms w/o cc	95	293	0.85	3.1
Sleep Apnoea	174	Sleep apnoea w cc	6	38	0.11	6.9
	175	Sleep apnoea w/o cc	2	6	0.02	2.7
Respiratory Medicine – Tertiary	163	Other respiratory system O.R. procedures w major cc	34	360	1.05	10.7
	164	Other respiratory system O.R. procedures w non-major cc	14	70	0.20	4.9
	166	Respiratory system diagnosis w ventilator support	35	355	1.03	10.1
	173	Cystic fibrosis	3	13	0.04	4.3
Pulmonary Embolism	167	Pulmonary embolism age>69 w cc	101	1068	3.10	10.6
	168	Pulmonary embolism (age>69 w/o cc) or (age<70 w cc)	135	1039	3.02	7.7
	169	Pulmonary embolism age<70 w/o cc	99	526	1.53	5.3
Pleural Disease	183	Pneumothorax w cc	44	242	0.70	5.5
	184	Pneumothorax w/o cc	70	261	0.76	3.7
	193	Pleural effusion age>64 w cc	50	389	1.13	7.7
	194	Pleural effusion (age>64 w/o cc) or (age<65 w cc)	43	237	0.69	5.5
	195	Pleural effusion age<65 w/o cc	17	58	0.17	3.4
	196	Interstitial lung disease age>64 w cc	24	235	0.68	9.7
Interstitial Lung Disease	197	Interstitial lung disease (age>64 w/o cc) or (age<65 w cc)	22	169	0.49	7.8
	198	Interstitial lung disease age<65 w/o cc	12	44	0.13	3.8
Remainder	199	Other respiratory system diagnosis age>64 w cc	134	982	2.86	7.3
	200	Other respiratory system diagnosis (age>64 w/o cc) or (age<65 w cc)	144	669	1.94	4.6
	201	Other respiratory system diagnosis age<65 w/o cc	109	285	0.83	2.6
	165	Other respiratory system O.R. procedures w/o cc	67	173	0.50	2.6
	176	Pulmonary oedema & respiratory failure	156	965	2.81	6.2

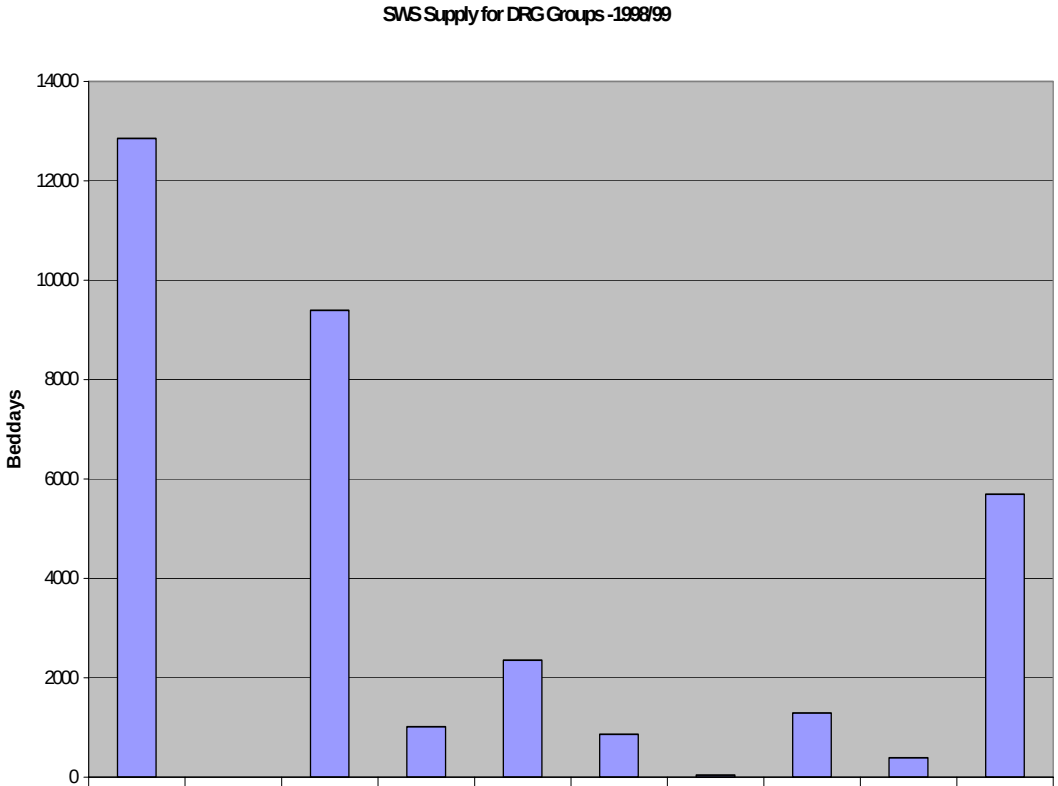
Grouping	DRG	Description	EOC	Bed-days	%	ALOS
	181	Respiratory signs & symptoms age>74 or w cc	119	366	1.06	3.1
	182	Respiratory signs & symptoms age<75 w/o cc	194	355	1.03	1.8
	188	Whooping cough & acute bronchiolitis	2	22	0.06	9.8
"Non-respiratory"	751		1	1	0.00	1.0
	818		1	9	0.03	18.0
	819		1	2	0.01	2.3
	931		3	3	0.01	1.0
	932		0	3	0.01	11.0
	934		2	2	0.01	1.0
	938		0	0	0.00	1.0
	943		1	1	0.00	1.0
	950		10	162	0.47	16.6
	954		1	21	0.06	17.0

Abbreviations:
DRG = Diagnosis related group; EOC= Episodes of care; % = % of all Respiratory SRG bed-days; ALOS =average length of stay in days (= Bed-days/ EOC)
w = with; w/o = without; cc = complications; OR = operating room

In interpreting these data it is important to be aware that the coded DRG is entirely dependent on the diagnosis recorded in the clinical notes. Where there are limitations on the availability of specialist diagnostic skills, it is likely that some of these data will be inaccurate. The nature of the misclassification will be variable.
The "supply" of bed-days in SWSAHS is shown below with DRG groups according the left hand column in the table above. The largest proportion of bed-days are attributable to obstructive lung disease (38%), but infectious lung disease, pulmonary vascular disease, and lung cancer are also substantial contributors. The second largest grouping is "others" which contains some un-diagnosed respiratory problems.

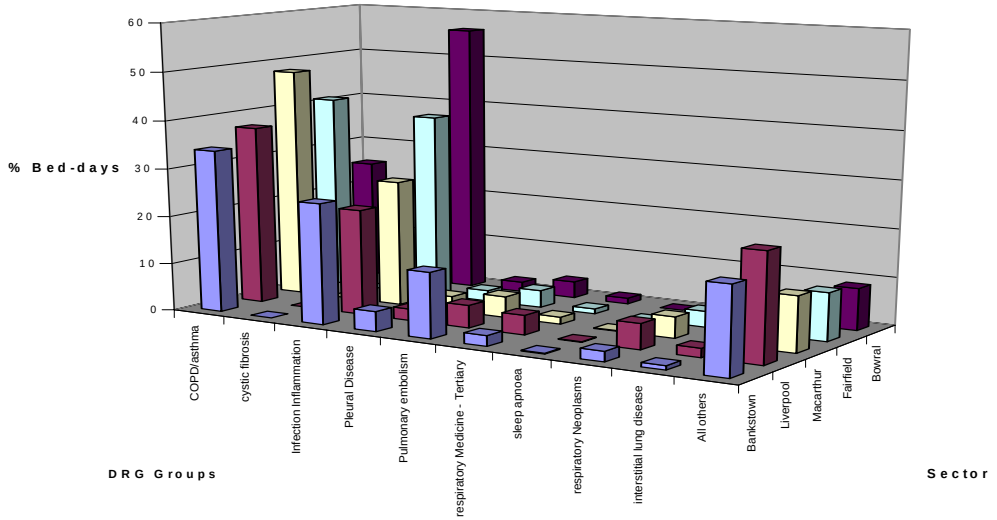
The second figure, showing % of bed-days attributable to each DRG grouping by sector, reveals substantial variation between sectors. For example, there is a higher proportion of bed-days utilised for patients with pulmonary emboli in Bankstown and higher proportion of utilisation attributed to infections and inflammation in Fairfield. It seems unlikely that these differences are explained by true epidemiological differences. The explanation probably lies in variation in clinical practice, or possibly, variation in coding practice.

8.1.6. SWS Supply for DRG Groups, 1998/99



	COPD/asthma	cystic fibrosis	Infection Inflammation	Pleural Disease	Pulmonary embolism	respiratory Medicine - Tertiary	sleep apnoea	respiratory Neoplasms	interstitial lung disease	All others
Beddays	12854	0	9395	1011	2355	862	39	1289	390	5694

8.1.7. SWS Supply for Chosen DRG Groups, 1998/99



Source: FlowInfo Version 4.0

Acute General Hospitals

8.1.8. Liverpool Hospital

Liverpool Hospital is the principal referral hospital for SWSAHS and a major teaching and research hospital for the University of NSW. Liverpool provides a range of sub specialty services, primarily at role delineation levels 5 and 6, in emergency medicine, medicine, surgery, critical care, aged care, mental health, drug and alcohol, obstetrics and gynaecology, neonatology and paediatrics (Level 4). Liverpool has 561 available beds with a 93.1% occupancy and provides Area and Statewide tertiary referral services and also district level services to the Liverpool LGA.

The Department of Respiratory Medicine at Liverpool Hospital provides the following services:

- Care of referred in-patients;
- Consultation on referred in-patients;
- Chest Clinic. In 1999/2000 the chest clinic reported 10,400 non admitted patient service equivalents;
- Comprehensive tuberculosis service for SWS Area (through the Chest Clinic);
- Bronchoscopy service; and
- Asthma Clinic for follow-up of all adults with asthma discharged from hospital or the Emergency Department.

In addition, care of outpatients with respiratory illness is undertaken in Consultants' rooms adjacent to the hospital. A lung function laboratory is available adjacent to the hospital in a private facility.

Most patients with respiratory illness attending Liverpool Hospital are managed by general physicians. Some patients are co-managed by general physicians and respiratory physicians.

The resources available at Liverpool Hospital, for the provision of care for patients with respiratory illness are as follows:

Senior Respiratory Medicine Staff

There are 0.8 FTE senior staff divided amongst three positions available to provide coverage for inpatient care, Asthma Clinic, bronchoscopies, student and registrar teaching and administration. In addition there are four sessions allocated to the Area tuberculosis service. As noted above, VMO General Physicians provide much of the in-patient care for patients with respiratory illness.

Junior medical staff for respiratory medicine

There is an allocated post for a rotating basic trainee Registrar. There is also a JRMO post but this position is periodically not filled.

Respiratory ward area and nursing staff

There is no designated respiratory ward. Patients with respiratory illness are managed in general medical ward beds and, when necessary, in Intensive Care. When the number of general medical patients in hospital exceeds the number the number of allocated medical beds, patients with respiratory illness are managed in surgical or O&G beds.

There is no acute respiratory area outside Intensive Care. There are no facilities for the administration of non-invasive ventilation or variable level positive airway pressure (biPAP) other than ICU.

There are no Clinical Nurse Consultants or Clinical Nurse Educators in respiratory medicine. There is a CNC in Tuberculosis Services and a Clinical Nurse Specialist has been appointed to the Asthma Clinic service.

Intensive care

There is a comprehensive intensive care service. There is no respiratory physician presence in intensive care apart from requested consultations.

Surgery

There is a comprehensive thoracic surgical service with approximately one routine list per fortnight and emergency services available as required.

Allied Health

Physiotherapy services for patients with respiratory illness are provided by:

- 1 senior respiratory physiotherapist grade 3 (based in ICU); and
- 1 senior pulmonary rehabilitation grade 2

All ward physiotherapy services are provided at a general medical level.

Occupational Therapy services to respiratory in-patients currently are provided by the Occupational Therapist who covers general medicine for in-patients. The occupational therapy service to all acute in-patients is currently limited due to staff numbers. Currently these patients are referred to the community therapist who has a waiting time of approximately 6 weeks. The community service is not able to provide the timely assessment needed for these patients.

Diagnostic services

There are two bronchoscopy lists each week for hospital inpatients and outpatients from the Liverpool and Fairfield Sectors. It is noted that these procedures are conducted in operating theatres.

No procedure areas available in the medical wards. Limited nursing support available for the facilitation of procedures such as pleural aspirations and biopsies on the ward. Often these procedures are required to be done in theatre with the twice weekly bronchoscopy clinics.

Respiratory function tests are conducted by the private respiratory laboratory in Liverpool. There is no hospital respiratory function laboratory and no hospital respiratory scientist/physiologist.

There is no hospital sleep laboratory.

Level 6 Diagnostic Radiology and Level 5 Nuclear medicine and anatomical pathology, microbiology Clinical chemistry, and haematology, services are located within Liverpool hospital

8.1.9. Bankstown-Lidcombe Hospital

Bankstown-Lidcombe Hospital is a major metropolitan hospital providing services, primarily at role delineation level 5, in emergency medicine, medicine, surgery, critical care, aged care,

rehabilitation, mental health, obstetrics and paediatrics. The Hospital has 364 available beds and provides services to the Bankstown and Lidcombe LGAs.

The Department of Respiratory Medicine at Bankstown-Lidcombe Hospital provides the following services:

- On call and on-take service for patients with respiratory illness requiring in-patient care
- Consultation on referred in-patients
- Bronchoscopy service

In addition, care of outpatients with respiratory illness is undertaken in Consultants' rooms adjacent to the hospital. Lung function laboratories are available adjacent to the hospital in private facilities.

Most patients with respiratory illness attending Bankstown-Lidcombe Hospital, who are aged < 70 years, are managed by respiratory physician. Those who are older than 70 years are admitted under the care of Aged Care Medicine.

The resources available at Bankstown / Lidcombe Hospital, for the provision of care for patients with respiratory disease are as follows:

Senior Staff

There are 1.2 FTE senior staff divided amongst three positions (two 0.4 FTE Staff Specialist and one VMO).

Junior medical staff

There is one Basic trainee registrar post allocated to respiratory medicine and one JRMO.

Ward area and nursing staff

There is a designated respiratory ward. Patients with are managed on this ward and, where necessary, in Intensive Care.

There is no acute respiratory area outside Intensive Care. There are no facilities for the administration of non-invasive ventilation or variable level positive airway pressure (BiPAP) other than ICU.

There are no Clinical Nurse Consultants, Clinical Nurse Specialists or Clinical Nurse Educators in respiratory medicine.

The ambulatory care service is well utilised by respiratory physicians.

Intensive care

There is a comprehensive intensive care service. ICU staff include two respiratory trained intensivists.

Surgery

There is no thoracic surgery service available on site. Most patients are referred out of Area as referral to Liverpool has reportedly been associated with longer waiting periods.

Allied Health

Physiotherapy services for patients with respiratory illnesses are provided by one senior respiratory physiotherapist (grade 2) based in ICU and 1.5 FTE medical physiotherapists grade 1. There is currently no pulmonary rehabilitation service. However a service is proposed and is in early planning stages.

Occupational therapy services to respiratory in-patients currently are provided by the Occupational Therapist who covers general medicine for in-patients.

Diagnostic services

There is one routine bronchoscopy clinic list per week for in-patients and out-patients from the Sector. This takes place in a dedicated suite in the endoscopy area. There is access for emergencies at other times.

There is no respiratory function laboratory on site. However, the hospital is serviced by two private laboratories. There is no hospital sleep laboratory.

Level 5 Diagnostic Radiology and Level 5 Nuclear medicine are available at Bankstown-Lidcombe Hospital. Anatomical pathology, microbiology Clinical chemistry, and haematology, services are provided by SWAPS.

8.1.10. Campbelltown Hospital

Campbelltown and Camden Hospitals operate under a common executive management structure. The two hospitals have 255 available beds and deliver services to the residents of the Campbelltown, Camden and Wollondilly LGAs.

Campbelltown is a district metropolitan hospital providing a range of services primarily at role delineation level 4 in emergency medicine, medicine, surgery, critical care, obstetrics, paediatrics, mental health and drug and alcohol. As part of the Macarthur Sector Strategy, 81 additional beds and upgrading of services to mainly level 5 will be achieved by mid 2003.

Patients with respiratory illness are admitted under the care of an on-take physician, acting in the capacity of a general physician. It is common practice for patients with respiratory illness to be transferred to the care of the respiratory physician on the next working day.

There is one VMO respiratory physician appointed to the hospital.

All ward, nursing, JMO, and allied health resources are provided at a general medical level. None of these resources are specifically allocated to respiratory medicine. There are no respiratory specialists in any of these fields. The overall allocation of JMO staff is very limited.

90% of respiratory patients admitted are admitted to Ward C (30 bed medical unit). This figure decreases during the winter months. Patients admitted to the surgical or orthopaedic wards with respiratory illness are generally transferred to Ward C, medical ward as soon as a bed is available. Patients requiring intubation are transferred to Ward C after extubation.

Staffing : Ward C Medical unit / Ward C

1.0 VMO, Respiratory Physician who regularly consults in-patients.
2.0 FTE Medical Registrars
1.0 FTE Resident
1.0 FTE Intern
0.5 FTE Physiotherapist, usually junior
0.5 FTE Occupational Therapist, senior
4.0 FTE Clinical Nurse Specialist (2 in respiratory illnesses)

- All nursing staff are able to perform Spirometry, commence Peak Flow Charts.
- Nursing staff have actively worked on the development of carepaths for the respiratory patient, including Uncomplicated Asthma, CAL & Pulmonary Embolus.

- 8 staff have attended the SWSAHS Respiratory course, 3 staff have attended Asthma course & 9 have attended Tracheostomy course.
- Pleural aspirations & biopsies are regularly attended on Ward C.
- Work Instructions for these procedures have been written by CNS on Ward C to assist nursing staff so they can provide adequate support.
- Respiratory Physician, holds weekly case conference on ward.
- Multidisciplinary meetings are conducted weekly on all in-patients on Ward C. The outpatient 8 week pulmonary rehabilitation program is offered to the in-patient by the OT or PHN attending this meeting prior to discharge.
- Quit kits available for distribution to patients on completion of Nursing Assessment & History, which includes a Brief Intervention on admission to ward.
- Ward C staff participated in the NDPH CAL Case Management program including CNS's, RN, NUM & Social Worker in 1996. An RN continues to forward yearly flu injection reminder letters to CAL patients instructing them to see their LMO.

A pulmonary rehabilitation program commenced in 2000 however no venue available 2001.

There is a well developed ambulatory care program with medical direction.

ICU services are limited.

One routine bronchoscopy session is conducted each week. Respiratory function testing is performed in a private facility. Level 5 Diagnostic radiology and level 5 nuclear medicine are available within the hospital. The full range of pathology services are available via SWAPS.

Patients with respiratory illness are also directed to the ambulatory care service for home treatment of COPD and pneumonia in consultation with the respiratory physician in selected cases or admission to the service under the care of respiratory physician, other physician or ambulatory care staff specialist. Area guidelines are under development for ambulatory treatment of pneumonia.

8.1.11. Camden Hospital

Camden is a district metropolitan hospital providing services in emergency medicine, medicine, surgery and obstetrics mainly at role delineation level 3. Camden also has specific roles in palliative care and aged care and rehabilitation for the Macarthur Sector. The facility is being upgraded as part of the Macarthur Sector Strategy. Acutely ill patients are transferred to Campbelltown or other SWSAHS hospitals.

8.1.12. Fairfield Hospital

Fairfield Hospital is a district metropolitan hospital providing services, primarily at role delineation levels 3 and 4, in emergency medicine, medicine, surgery, critical care obstetrics and maternal and child services. The hospital has 175 available beds and delivers services to residents of the Fairfield LGAs. Fairfield Hospital is developing a role as the centre for elective orthopaedics for the Liverpool-Fairfield Sectors.

Patients with respiratory illness are admitted under the care of an on-take physician, acting in the capacity of a general physician. Patients with respiratory illness are not routinely transferred to the care of the specialist respiratory physician. Patients who are seriously ill are admitted to the intensive care unit where they are under the care of the respiratory

physician / intensivist who runs that unit. Invasive and non-invasive ventilation is available in the Intensive Care Unit.

There is one Staff Specialist respiratory physician appointed to the hospital. His appointment is 0.2 FTE as a respiratory physician and 0.5FTE as an intensive care physician. There are four other physicians who share the on-take roster, acting as general physicians.

All ward, nursing, JMO, and allied health resources are provided at a general medical level. None of these resources are specifically allocated to respiratory medicine. There are no respiratory specialists in any of these fields including no respiratory CNC. The overall allocation of JMO staff is very limited. One grade 1 rotating physiotherapist is assigned to medical patients on the general ward and also in ICU.

A hospital based pulmonary rehabilitation program has been implemented.

There are no facilities for bronchoscopy within the hospital. There are Level 4 Diagnostic radiology and level 3 nuclear medicine facilities. A spiral CT has recently been procured with funding from the Department of Health's Health Technology Program and the Area.

8.1.13. Bowral Hospital

Bowral Hospital is a rural district hospital providing services mainly at role delineation level 3 in medicine, surgery, critical care and obstetrics. The hospital has 73 available beds and delivers services to residents of the Wingecarribee LGA.

The hospital is staffed by general physicians. There are no specialist respiratory medicine resources.

There is level 4 diagnostic radiology and Level 3 nuclear medicine.

A Pulmonary Rehabilitation Program has been proposed.

Pulmonary Rehabilitation and other Programs for COPD

A randomised controlled trial of post-discharge nursing follow-up and liaison with GPs for patients with COPD is currently being conducted in Liverpool, Macarthur and Fairfield sectors.

8.1.14. Liverpool

There is a nine week out-patient pulmonary rehabilitation program of three sessions per week. There are plans to start a support group for respiratory patients. There is no community based rehabilitation program for respiratory patients. Cardiac rehabilitation has set up a community based program at the Michael Wendon centre called "Upbeat" However, respiratory patients find the pace too fast as a result of respiratory function limitations. Also, patients requiring oxygen are not catered for at this centre. As a result the Liverpool Physiotherapy Department is in the process of trialing a maintenance program for enthusiastic patients but may be limited by staffing and space (it is considered that the gym size restricts increasing patient numbers).

8.1.15. Fairfield

The outpatient-based simplified rehabilitation program has been evaluated[56]. The outcome of the program was that an outpatient based single component pulmonary rehabilitation program based on exercise training improved exercise capacity without significant improvement in

lung function in patients with COPD. Quality of Life (QOL) assessment demonstrated improvement (appendix 11.2.8). However, more long term data is required to ascertain if hospital admission is also reduced. There is no community-based pulmonary rehabilitation program.

Lung Net has a support group running in a facility of Fairfield Hospital.

8.1.16. Bankstown

There has been some planning towards a pulmonary rehabilitation program. Currently in design phase.

8.1.17. Macarthur

There is an 8 week pulmonary rehabilitation program running once a week at the community health centre. It is currently not a funded position. It is hoped that the position will be funded in the near future which will enable the program to be offered twice a week thereby increasing access to meet increasing demand. Has not commenced in 2001 due to lack of available venue.

8.1.18. Wingecarribee

A proposal for a pulmonary rehabilitation has been submitted but is not yet approved. The intention is to establish an 8 week program, running twice per week. Funding for physiotherapist, nurse and allied health resources will be required.

8.1.19. Programs in the Home

Currently in Liverpool Occupational Therapist's (OTs) are not involved in assessment and intervention in the home for respiratory patients. However, OTs are involved in the education component of the pulmonary rehabilitation program (energy minimisation and stress management). If, during the education process, they identify patients who are very limited at home or having problems, they will arrange to see the patients at home and intervene.

8.1.20. Allied Health links with GPs

If a General Practitioner considers that a patient in the community requires chest physiotherapy, referrals can be made to the physiotherapy outpatient clinic where they can be seen. This is current practice within the Liverpool Sector. All chest physiotherapy patients will be given high priority for assessment/treatment. Currently, the Liverpool sector does not have a domicillary allied health team who would go out and treat patients in their own home. However, a submission for funding of a physiotherapy position to provide this service has been developed and is awaiting approval. Currently if a patient in the community has a carer willing to be trained in chest physiotherapy techniques a "one off" visit to train the carer can be provided.

8.1.21. Simplified Out-patient Pulmonary Rehabilitation Programme Improves Exercise Capacity and Quality of Life in Chronic Obstructive Pulmonary Disease

HEWITT A, RATHBORNE L, HUI KP. Fairfield Hospital, Sydney, Australia.

Pulmonary Rehabilitation programmes are able to improve outcomes in patients with chronic obstructive pulmonary disease (COPD). We introduced an out-patient based simplified Pulmonary Rehabilitation programme in our hospital, and evaluated the outcome. The programme consisted of exercise training by individualised exercise endurance training (walk, bicycle ergometry, steps) and upper limb training. Patients attended two times a week for over 8 weeks. Parameters measured included spirometry; 6-minute walking distance, Borg dyspnoea scale, and quality of life (QOL) assessment with the Chronic Respiratory Disease Index Questionnaire (CRDIQ). Data from the first consecutive 22 patients who participated in the programme was analysed. All patients have COPD with one patient having co-existing asbestosis. 4 patients dropped out. Mean age was 66.7 (SD 9) years and 7 (39%) are female. Baseline FEV1 was mean 1.32 (0.77) L, and FVC was mean 2.19 (0.89) L. At the end of the programme, there was no significant change in lung functions. However, 6-minutes walking distance increased from 322 (84)m to 422 (108)m ($p<0.001$) after the programme. Significant improvement in QOL assessment with respect to dsypnoea scale ($p<0.01$), fatigue score ($p<0.05$), emotional ($p<0.01$)and mastery levels ($p<0.05$) according to the CRDIQ. In conclusion, an out-patient based single-component Pulmonary Rehabilitation programme based on exercise training improved exercise capacity without significant improvement in lung functions in patients with COPD. QOL also improved, and more long term data is needed to see if hospital admission is also reduced.

8.1.22. Home Oxygen

The Department of Health (DOH) has revised policy regarding the provision of home oxygen. As from 1 January 2001, oxygen is no longer available under the NSW Program of Appliances for Disabled People (PADP). A new scheme called the *Home Respiratory Appliance Program* will be administered by Area Health Services for the supply of oxygen and related items in accordance with the guidelines of the Thoracic Society of Australia[57]. A review is to be undertaken to determine whether the current financial disadvantage test for the supply of oxygen under PADP should be retained or modified. DOH has advised that until this is conducted the existing financial criteria for the supply of oxygen and related items which allow for the provision of oxygen to those who (i) hold a health card; or (ii) whose financial circumstances are such that their situation equates with persons who hold a health card, will be retained. In 1999/2000 the estimated expenditure on Oxygen was $171,728 in South Western Sydney AHS. A benchmarking exercise was conducted with other Area Health Services to determine a per capita rate for home oxygen usage. The following table indicates the results of the exercise.

Metropolitan Area Health Service	Amount allocated per AHS for 2000/2001 based on 1999/2000 expenditure	Estimated $ spent per capita of 1998 total AHS population > 45 years
Central Coast	$160,521	$1.48
Central Sydney	$221,117	$1.40
Hunter	$236,799	$1.20
Illawarra	$99,308	$0.80
Northern Sydney	$152,789	$0..50
South Eastern Sydney	$256,283	$0..95
South Western Sydney	$171,728	$0.70
Wentworth	$154,442	$1.75
Western Sydney	$162,149	$0.80
NSW	2,539,087	$1.20

The per capita PADP expenditure on oxygen for people in SWS is half that in Central Sydney and less than that in all other metropolitan AHSs except Northern Sydney. These figures are not adjusted for the proportion of the population eligible for PAPD financial support, which is likely to be much lower in Northern Sydney than South Western Sydney. The figures demonstrate that there is substantial under-provision of home oxygen for patients in South Western Sydney compared to other areas in Sydney.

SWSAHS Ambulatory Care Models

8.1.23. Bankstown Health Service

The service commenced in 1994. The model involves a hospital-based unit with a Medical Director and nursing staff. Referrals are made to Primary Health Nurses (PHN). Medical support includes the Unit Director, a resident medical officer assigned to the unit and a General Practitioner who attends rounds daily. Nursing support includes ambulatory care registered nurses, community nurses and Nursing Home nurses. Referrals are from emergency, Visiting Medical Officer's (VMO) rooms, GPs, wards within Bankstown-Lidcombe Hospital and other hospitals.

Care for respiratory patients includes intravenous antibiotics for patients with pneumonia and anti-coagulation for patients with venous thrombo-embolism.

8.1.24. Fairfield Health Service

The service commenced in December 1998 with 8 beds allocated in Fairfield Hospital and a PHN coordinator available. Program support was provided from the General Practice Unit, senior medical officers in emergency, the Fairfield Division of General Practice, Hospital Executive and the Ambulatory Care Committee.

Following a restructure of community health nursing services in August 1998 a three monthly rotation of a PHN from each of the generalist PHN services to the ambulatory care program commenced. This provided opportunities to develop PHNs' proficiency and skills in the management of clients with acute medical conditions who are living in the community. In December 1998 the program's name was changed to the Acute Care Outreach Service (ACOS).

Referrals are from emergency departments, Specialist rooms, GPs, hospitals and Nursing Homes via GPs.Staffing includes a coordinator, two PHNs, a discharge planner and a physiotherapist. A paediatric outreach service is also provided.

8.1.25. Liverpool Health Service

Liverpool Health Service (LHS) has an organisational structure that is divided into Clinical Divisions. Each Clinical Division offers programs to facilitate transitional and ambulatory care. A focus for the development of these programs has been to build closer ties with the community. This facilitates a shared management plan for a patient. In this way services have been re-engineered and/or developed to maximise the utilisation of existing expertise and human resources.

At present the principal interventions offered for patients with respiratory disease are intravenous antibiotics and management of anti-coagulation.

8.1.26. Macarthur Health Service

Ambulatory Response Team

This component involves the follow up of patients by the Ambulatory Care Service (ACS) who have been treated in the emergency department and discharged but who may still be at risk. This is aimed to prevent patients representing at ED with the same problem.

Hospital in the Home

This involves care being provided by the ACS for a period of 3-5 days.

Supported Discharge

This involves patients being discharged from hospital and managed at home by the ACS for a period of 10-15 days. It is not an extra period of care added to the usual hospital stay, but is aimed at replacing inpatient stay with care in the community.

Specific information regarding respiratory patients is available in Macarthur from the ambulatory database for allied health . COPD is the second most common diagnosis for patients presenting to allied health outpatient Department after Diabetes. The clinical service type "respiratory" represents 7.6%(250) of total presentations (3181) over a 3 month period.

8.1.27. Wingecarribee Health Service

The transitional care program (TCP) provides a more intensive level of care than that available through other community services. The client/patient is the central focus of the program with achievement of integrated care an important goal of TCP. Appropriate care is given by the most appropriate provider in the most appropriate location. Types of respiratory conditions that are suitable are pneumonia and COPD. Treatment such as physiotherapy can be provided.

9. References

[1] South Western Sydney Area Health Service. Strategic Directions Statement and Implementation Plan 1998-2003. SWSAHS, Division of Planning, 1998.

[2] Coughlan, J, Wilson A, Gibson P, Department of Respiratory Medicine, John Hunter Hospital. Summary Report – 1999 Evidence-Based Review of the Australian Six Step Asthma Management Plan. NSW Health Department 2000.

[3] The Report of the NSW health Council – A Better Health System for NSW. NSW Health Department: Sydney, March 2000.

[4] McClelland A, Pirkis J, Wilcox S. Enough to make you sick: How income and environment affect health. National Health Strategy, Research Paper No. 1 September 1992. Cited in Webster I W. Inequalities in respiratory health: Wunderley's challenge to physicians p.3.

[5] South Western Sydney Area Health Service. Health in South Western Sydney. An Epidemiological Profile, SWSAHS, Epidemiological Unit, 2000.

[6] Gilroy N. Tuberculosis notifications in Australia, 1997. Commun Dis Intell 1999;23:337-47.

[7] South Western Sydney Area Health Service. A profile of the Health of NESB Residents of South Western Sydney. 1999a. SWSAHS

[8] South Western Sydney Area Health Service. Health in South Western Sydney. An Epidemiological Profile op.cit.

[9] Public Health Division, *The Health of the People of New South Wales – Report of the Chief Health Officer, 2000*. NSW Health Department: Sydney, 2000 p.117

[10] Data Services/Analysis Unit, NSW Ageing and Disability Department Minimum Dataset (MDS) data, 1997.

[11] South Western Sydney Area Health Service. The SWSAHS Strategic Framework for Women's Health 2000-2005, May 2000. p.37

[12] South Western Sydney Area Health Service Disability Action Plan 2000-2003, March 2000.

[13] HIV Services Public Health Unit, South Western Sydney Area Health Service. *HIV Trends, July 2000.*

[14] NSW Department of Health. NSW Public Health Bulletin. December 2000 Vol 11 No. 12.

[15] HIV Services Public Health Unit op.cit.

[16] South Western Sydney Area Health Service Health in South Western Sydney. An Epidemiological Profile op.cit.

[17] Public Health Division, op. cit.

[18] Jukic A, Pino N, Flaherty B. Alcohol and other drug use, attitudes and knowledge amongst Arabic speakers in Sydney. CEIDA, 1996 cited in Division of Population Health. Tobacco Control in South Western Sydney. Strategic Plan for Improving Health 2000-2005.

[19] Australian Institute of Health and Welfare. Australia's Health 2000. AIHW, 2000.

[20] Public Health Division, op. cit.

[21] ibid.

[22] ibid.

[23] Health Promotion Unit. Tobacco Control in South Western Sydney Strategic Plan for Improving Health 2000-2005. South Western Sydney Area Health Service.

[24] South Western Sydney Area Health Service op.cit. cited in Health Promotion Unit. Tobacco Control in South Western Sydney Strategic Plan for Improving Health 2000-2005. South Western Sydney Area Health Service.

[25] Australian Institute of Health and Welfare, op.cit. p.92

[26] Gibson P, Coughlan J, Wilson A et al. 1999. Self-management education and regular practitioner review for adults with asthma (Cochrane Review). Oxford: Cochrane Library cited in Australian Institute of Health and Welfare, op.cit

[27] Ruffin R & Southcott A 1997. Recent advances in asthma management. Current therapeutics 38:19-27 cited in Australian Institute of Health and Welfare, op.cit. p.92

[28] South Western Sydney Area Health Service, op.cit. Australian Institute of Health and Welfare, op.cit. p.95

[29] Tirimanna PRS, Van Herwaarden CLA, Van Schayck CP, Van Den Boom G, Den Otter JJ, Van Grunsven PM, Van Den Bosch WJHM. Prevalence of asthma and COPD in general practice in 1992: Has it changed since 1977. British Journal of General practice. 1996; 46: 277-281.

[30] Goldring JM, James DS &Anderson HA 1993. Chronic Lung Diseases. In Brown R, Remington PI & David JR (eds). Chronic disease epidemiology and control. Washington: American Public Health Association. Cited in Australian Institute of Health and Welfare, op.cit. p.92

[31] Keistinen T, Tuuponen T and Kivela S-L. Survival experience of the population needing hospital treatment for asthma or COPD at age 50-54. Respiratory Medicine 1998; 92: 568-572.

[32] Gibson PG, Wlodarezyk JH, Wilson AJ, Sprogis A. Severe exacerbation of chronic obstructive airways disease: health resource use in general practice and hospital. J Qual Clin Pract 1998; 18(2):125-33.

[33] Travers GA. Measures of symptoms of life quality to predict emergency use of institutional health care resources in chronic obstructive airways disease. Heart Lung 1998; 17: 689-697.

[34] Public Health Unit, South Western Sydney Area Health Service. Weekly Report for EPI Week 1 Year 1999 to week 53 EPI Year 1999.

[35] South Western Sydney Area Health Service Health in South Western Sydney. An Epidemiological Profile op.cit.

[36] ibid.

[37] Worthington J, Proposal for a Sleep Laboratory at Liverpool Hospital (Draft) September 2000.

[38] Public Health Division, op.cit.

[39] Department of General Practice, South Western Sydney Area Health Service. Annual Report 1994/5.

[40] Gleeson Health Care Consulting Pty Ltd, Gorman D, O'Keefe K. Report of the Review of Palliative Care Service in South western Sydney Area Health Service.2000

[41] Britt H, Sayer GP, Miller GC, Charles J, Scahill S, Horn F, Bhasale A, McGeechan K.General practice activity in Australia 1998-99. AIHW Cat. No. GEP2. Canberra: Australian Institute of Health and Welfare

[42] Birkett DJ, Mitchell AS, Godeck A, Grigson T, Cully R, Lee C. Profiles of antibacterial drug use in Australia and trends from 1987 to 1989. Med J Aust 1991; 155: 410-15

[43] Couglan J, Wilson A, Gibson P. op.cit.

[44] Gibson PG, Coughlan J, Wilson AJ, Abramson M, Bauman A, Hensley MJ, Walters EH. Self-management education and regular practitioner review for adults with asthma. Cochrane database of systematic reviews, 1999;2:x

[45] Gibson PG, Coughlan J, Wilson AJ, Hensley MJ, Abramson M, Bauman A, Walters EH. Limited (information only) patient education programs for adults with asthma. Cochrane database of systematic reviews, 1999; 2:X

[46] Marks G, Heslop W, Yates D. Prehospital management of exacerbations of asthma: Relation to patient and diseases characteristics. Respirology 2000; 5:45-50.

[47] Gravil JH, Al-Rawas OA, Collon MM, Flanigan U, Irwin A, Stevenson RD. Home treatment of exacerbations of chronic obstructive pulmonary disease by an respiratory assessment service. Lancet 1998; 351 (9119): 1853-5.

[48] Shepper S, Harward D, Gray A, Vessey M, Morgan P. Randomised controlled trial comparing hospital at home care with inpatient hospital care. II cost minimisation analysis. BMJ 1998; 316: 1791-1796.

[49] Strijbos JH, Dirkje SP, van Altena R, Gimeno F, Koeter GH. A comparison between an outpatient hospital based pulmonary rehabilitation program and a home care pulmonary rehabilitation program in patients with COPD. Chest 1996; 109: 366-72.

[50] Clini E, Viacca M, Foglio K, Simoni P, Ambrosino N. Long term home care programmes may reduce hospital admission in COPD with chronic hypercapnia.

[51] Jones SE, Packham S, Hebden M, Smith AP. Domiciliary nocturnal intermittent positive pressure ventilation in patients with respiratory failure due to severe COPD: long-term follow up and effect on survival. Thorax 1998; 53(6): 495-8.

[52] Marks, Heslop, Yates, op.cit.

[53] Iven H Young, Alan J Crockett, Christine F McDonald. Adult domiciliary oxygen therapy [Position statement of the Thoracic Society of Australia and New Zealand] Med J Aust 1998; 168: 21-25

[54] Marks G. NSW Priority Health Care Program, Proposal for Improved Management of Chronic and Complex Respiratory Disease. December 2000. South Western Sydney Area Health Service.

[55] South Western Sydney Area Program Implementation and Evaluation Plan – Chronic Obstructive Pulmonary Disease and Asthma. February 2001.

[56] Hewitt A, Rathborne L, Hui KP. Simplified Out-patient Pulmonary Rehabilitation Programme Improves Exercise Capacity and Quality of Life in Chronic Obstructive Pulmonary Disease. Fairfield Hospital, Sydney Australia

[57] Iven H et al, op.cit.