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Non-Surgical Cancer Treatment Service Plan for the Midland Region

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Midland
District Health Boards

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Executive Summary and Recommendations

The Midland DHB CEO group have determined non-surgical cancer treatment services should be planned at a regional level. This plan reviews the national & DHB position in relation to cancer care, the impact of demographic changes and future options for service delivery for those services provided regionally, in particular – medical oncology, radiation oncology and haematology.

This regional plan supports the Midland DHBs in planning non-surgical cancer treatment services in order to meet the needs of the population and to work towards achieving the goals of the New Zealand Cancer Control Strategy:

1. Reduce the incidence of cancer through primary prevention;
2. Ensure effective screening and early detection to reduce cancer incidence and mortality;
3. Ensure effective diagnosis and treatment to reduce cancer morbidity and mortality;
4. Improve the quality of life for those with cancer, their family and whānau;
5. Improve the delivery of services across the continuum of cancer control through effective planning, co-ordination and integration of resources and activity, monitoring and evaluation;
6. Improve the effectiveness of cancer control in New Zealand through research and surveillance.

Many countries in the world have identified cancer as a major cause of morbidity and mortality and have developed strategies to help manage all aspects of health care that relate to incidence and treatment of cancers. The themes for improving the service in each country are similar and can be summarised as:

- Patient focus through the continuum of care
- Integrated care through a multidisciplinary approach
- Resource - workforce & equipment

The goals of New Zealand Cancer Control Strategy are supported by these themes, which have been used as a framework for this plan.

The Regional Cancer Centre currently provides clinical haematology, medical oncology, and radiation oncology services to the Bay of Plenty, Lakes, and Waikato DHB populations. This is based on a 'hub and spoke' approach. The following recommendations for the Regional Cancer Centre are made to strengthen this approach and to enable the service to meet the increasing needs of cancer services for this population. Within the body of the document the data for Tairawhiti and Taranaki populations are included, together with implications for the Regional Cancer Centre should the DHB's wish to consider the option of service provision from Waikato.

It is important that the DHBs work together on the implementation of this plan, as a regional approach is required to ensure a networked and coordinated cancer service which will improve integration, coordination and continuum of care for patients across the region.

This plan is based on international and New Zealand guidelines for best practice. It is acknowledged that implementation of the plan will be undertaken with local factors taken into consideration. It is also recognised that implementation will be dependent on the funding available. The cost to implement this plan has not been developed but it is recognised that the cost may be greater than the revenue available and prioritisation of the plan recommendations will be required.

Throughout the development of this plan consultation has taken place with staff at each DHB including: cancer service staff - specialists, nursing, radiation therapists, medical physicists, and management; clinical support service management and heads of departments; cancer surgeons; medical, and surgical business managers. The input of these individuals is acknowledged and appreciated.

RECOMMENDATIONS

With the increase in predicted cancer cases, there is an option to increase the amount of service delivered from the Bay of Plenty, where a significant proportion of the workload is based. This would decrease issues relating to travel from Waikato and improve local access. However is should be recognised that the Regional Cancer Centre would remain the 'hub' of cancer services for the region and some services will still only be available at the centre in Hamilton. Staff based outside of Waikato would be linked to the 'hub' for peer review, continuing education etc.

PATIENT FOCUS

1. Care coordination is needed to ensure patients are supported through the treatment systems. This is variable across the region and the tumour groups. In general, breast patients receive a significantly better service than other patients do. It is recommended that a review of care coordination be undertake across the DHBs and options identified for improving links with community services and provider arm services (e.g. surgery, radiation therapy, medical oncology). This will enable a patient focus across the continuum of care; ensuring cultural, physical and psychosocial aspects of care are addressed, together with improvement of efficiencies for services.
2. Care coordinators facilitate the delivery of culturally appropriate services by linking with Māori providers. This, together with primary prevention methods and effective screening and early detection specifically aimed at Māori, will help to address the higher mortality rates from cancer for Māori.
3. Access to high-risk assessment services for patients with genetic predispositions to cancers is currently limited. The opportunity to investigate options for improving access to this service should be undertaken with the appointment of the genetic oncologist.

INTEGRATED CARE

Multidisciplinary approach

Multidisciplinary care (MDC) relates to the team, communication, the full therapeutic range, standard of care and involvement of the patient. The term integrated multidisciplinary care (IMDC) is used to emphasis integration of the services provided, with the patient as the point of focus being essential. IMDC is based on many people living with cancer, requiring input from more that one discipline to optimise treatment and care. A team agrees on the diagnosis and staging of the disease and the best treatment option for the patient – considering the patient's preferences.

Multi-service meeting (MSMs) are in place at Health Waikato for most tumour groups. A multidisciplinary team approach to care is not formalised in all services and all DHBs. Oncologists and surgeons at Waikato and the outreach facilities recommend that IMDC should be a priority.

The most favoured option of IMDC is for staff in the outreach centres to link with the MSMs at Waikato. This improves linkages across the service and provides positive learning opportunities for all team members.

4. Telemedicine links to the outreach sites – currently Tauranga, Whakatane, Rotorua and Thames are essential to facilitate integrated multidisciplinary care and the option for this technology to be installed at all sites should be undertaken. Telemedicine is even more critical in times of resource constraint and should be viewed as a priority.

Role Designation

5. To strengthen the Hub and Spoke approach to services it is recommended that DHB's should also consider the options identified in relation to the site of service delivery. It is also recommended that there is clarification of the support services required for the level of service provided at each site. That a role designation for each level of cancer service be defined and adopted as recommended in this paper.

RESOURCE

Staff

6. The requirement for Clinical Haematologists is based on the AMWAC recommendations. This indicates that 5.7 FTE haematologists are required currently to provide a sustainable service with a minimal increase to six FTE by 2011. One of the impacts on the need for Clinical Haematologists is whether Haematology or Oncology will manage lymphoma patients – currently this is split between the specialties depending on current workload.

   – The option for one Haematologist to be based in the Bay of Plenty is noted.

7. Medical Oncologist requirement planning for the Regional Cancer Centre should be based on one per 180 new patients and an expectation that the referral to oncology will be at 44% of cancer cases in 2006 and 50% by 2011. This indicates a need for 5.9 FTE Medical Oncologists in 2006 increasing to 7.6 by 2011. It must also be recognised that Medical Oncologists tend to be full-time employees as there is no private oncology service in the Midland region.

   – The option by 2006 for two Medical Oncologists to be based in the Bay of Plenty and one based in the Lakes region is noted.

8. That a review of radiation oncology staffing be undertaking based on the proposed FTE levels for 2006 of 7 radiation oncologists, 32 radiation therapists, and 8 medical physicists.

   – Should a linear accelerator be sited in Tauranga then the option for one oncologist to be based in the Bay of Plenty should be considered along with 3-4 radiation therapists and 1 medical physicist.

9. Each DHB should review the number of Chemotherapy Nurses required in the future based on the predictions included in the plan. The number of chemotherapy chairs likely to be required has also been predicted.

10. Care coordinators should be appointed to each patient receiving two or more treatment modalities, at a ratio of one coordinator to 100 cancer patients, as per the predicted numbers included in this plan. This will enable a patient focus across the continuum of care and improve efficiencies for services.

11. Multidisciplinary coordinators are required for effective and efficient meetings. A review of the need of each DHB is required to determine options for the current situation (without full telemedicine links) and for the future when coordination from Waikato will be required for each tumour group, with appropriate support from staff in each facility.

12. Currently there is a lack of formal links with the Regional Cancer Centre for staff employed by Lakes and BoP providing services to Oncology patients, in particular the chemotherapy nurses. It is recommended that a review of the staffing links is undertaken including the option for the appointment of a Regional Oncology Liaison Nurse. The prime responsibility of this position would be to facilitate the coordination of outreach oncology services within the Midland Regional Cancer Service, including: regular contact with chemotherapy nursing staff, maintenance of regional cancer service protocols and procedures, and facilitation of professional development and education for outreach oncology nursing staff.

13. It is recommended that Bay of Plenty and Lakes DHBs should consider the appointment of a Clinical Nurse Specialist or a Nurse Practitioner to provide a leadership role for cancer services and staff in the region. This role would link with the Waikato Centre through the Oncology liaison nurse and with Care Coordinators and MSM coordinators to ensure an oversight role for Cancer Services in each of the DHBs.

Leadership

14. That a Regional Cancer Control Group should be established to provide learning opportunities and identification of issues in relation to the implementation of the New Zealand Cancer Strategy for the region.
15. That 'ad hoc' Regional Cancer Treatment Working Parties should be established when the Midland DHBs do not feel the national working parties are meeting the needs of the region or there is a need to implement a national recommendation locally.
16. There is currently no 'owner' of Cancer Services' at Lakes or Bay of Plenty DHBs other than the DHB planning staff and medical and surgical business managers for service delivery. To enable the ongoing input of the DHBs to planning of cancer services it is recommended that the Chief Medical Advisors should consider this issue and make recommendations to the Chief Executives.
17. It is also essential to ensure that there is Clinical Leadership of cancer services across the region. A director or coordinator of cancer services should have responsibility for the development of cancer services across the continuum in accordance with good practice.

Equipment

The New Zealand and international recommendation that 50 percent of patients with cancer should have access to radiation therapy has significant impact on the radiation therapy resource needs to enable this level of service.

18. Planning for a fifth linear accelerator should be undertaken to allow installation for the 2007-08 year. Consideration should be made for this machine to be based in Tauranga as a satellite service managed from the Regional Cancer Centre – depending on the outcome of the Australian National Radiotherapy Single Machine Unit (SMU) Trial.

Systems

19. Data systems – currently there is no system to collate clinical or contract data across the DHBs. There is also no ability to monitor performance or recurrence rates across treatment modalities. At a minimum, the DHBs should participate in the national working party on cancer information management to ensure the needs of the Regional Cancer Centre are met.
20. Provider arm contracts should utilise the available haematology, oncology and radiation therapy Purchase Units to enable monitoring, and ease planning for services.
21. The Ministry of Health / DHBNZ should consider the development of separate purchase units for radiation oncology and medical oncology, inpatient DRGs and outpatient clinics. These are currently incorporated into a single oncology purchase framework.
22. DHBs should negotiate with Waikato DHB the appropriate changes to contract volumes to ensure appropriate access to service is available. This should include the site of delivery for FSA and subsequent appointment clinics, acknowledging that not all clinics will be delivered at Rotorua, Tauranga, Thames, and Whakatane until there is a full complement of staff for the discipline.
23. A recommendation is made that the Haematologists work with appropriate staff and the DHB GP liaison to review lists and determine options for managing referrals and discharging patients to primary care.
24. Access to clinical trials for all cancer patients should be improved. There is currently little access to patients who live outside of the main centre. Clinical trials have recognised benefits for patients and some financial benefit for DHBs.
25. Breast Screen Midland should provide each DHB with a list of the NHI's of each women-receiving treatment through the BSA agreement, in order that DHB's can undertake a regular audit to ensure that accurate information is maintained and appropriate funding streams are accessed for treatment provided.

Background

Cancers are known to cause 27% of deaths in New Zealand and hold eight of the top 20 causes of death.[1] The 1996-1998 data shows the following rankings:

- 5th lung cancer,
- 6th colorectal cancer,
- 8th breast cancer
- 12th prostate cancer,
- 16th pancreatic cancer
- 17th non-Hodgkins lymphoma,
- 18th stomach cancer
- 20th leukaemia.

The New Zealand Cancer Control Strategy[2] is the first phase in the development and implementation of a comprehensive and co-ordinated programme to control cancer in New Zealand. The next phase will involve identifying priorities for action, planning implementation, and defining processes to manage, monitor and review implementation. The Cancer Control Strategy has been developed with the overall purpose of:

- Reducing the incidence and impact of cancer
- Reducing inequalities with respect to cancer.

This regional plan supports the Midland DHBs in planning non-surgical cancer treatment services in order to meet the needs of the population and to work towards achieving the goals (as below) of the New Zealand Cancer Control Strategy:

1. Reduce the incidence of cancer through primary prevention;
2. Ensure effective screening and early detection to reduce cancer incidence and mortality
3. Ensure effective diagnosis and treatment to reduce cancer morbidity and mortality;.
4. Improve the quality of life for those with cancer, their family and whänau;
5. Improve the delivery of services across the continuum of cancer control through effective planning, co-ordination and integration of resources and activity, monitoring and evaluation;
6. Improve the effectiveness of cancer control in New Zealand through research and surveillance.

THE RISKS OF REGIONAL SERVICE PROVISION

In September 2002, Audit New Zealand published a newsletter entitled The Risks of Regional Service Provision[3] as the results of a high-level review of the effectiveness and efficiency of management processes for a District Health Board (DHB) Regional Oncology service. The recommendations from this audit are listed below and will be considered in this plan.

This publication indicated that any regionally provided service has a high public and political profile, so transparency, credibility, and risk management are key concerns for a lead DHB. Failure to take account of stakeholder interests and concerns may increase the risk to current and future investments in regional services.

Aspects covered included:

- Service planning (including processes for understanding stakeholder expectations);
- Effectiveness of service delivery and performance management;
- Culture; and
- Awareness of and compliance with policies.

Because of this work, Audit New Zealand recommended the following key messages for the sector:

Closer Sector Relationships - The new collaborative environment requires closer working relationships with other DHBs. This is significant especially in areas of regional services. The lead DHB may need to invest appreciably in resources to meet the needs of relationship management to establish and maintain closer links with their stakeholder DHBs. The opportunities include: sharing risks, coordinating service development, joint purchasing and informal networking on contract intentions.

Funding Constraints - There is a constrained level of funding available to DHBs, and regional services must meet the needs not only of the local district but also the wider regional catchment. This raises the risk of a negative impact on local services when regional services such as Oncology are demand-driven and a high public interest risk.

Service Level Agreements - If they are done well service level agreements are a means by which DHBs can improve forward planning, spread risk and improve longer-term relationships.

Use of Information - There are significant opportunities for lead DHBs to improve access to information internally and externally and utilise information management to improve services.

Referral Process - Equitable access to services is impacted by inconsistencies in managing referral processes across a region.

Focus of Performance Measures - Performance measures for services risk being focused on volumes and costs and, with the exception of timeliness; there can be a shortage of quality measures that will inform the DHB of the effectiveness of service delivery.

REVIEW OF CANCER SERVICES MIDLAND REGION

In 2003, the Midland District Health Board Chief Executives requested a review of Cancer services in the Midland Region to determine how regional cancer services should be provided. The drivers for this review were the draft release of the New Zealand Cancer Control Strategy and issues raised by key stakeholders in relation to the current service provision. The outcomes of this review[4] are included below and considered in this report

Midland Region Review Recommendation

- A Regional Cancer Control Group should be established. Membership should comprise DHB and non-DHB providers, advocacy groups, and users. The focus of the group should be across the continuum and concentrate on the implications of the national cancer control strategy for the Midland region.
- A Regional Cancer Treatment Working Party should be established, consisting of clinicians and managers, to link with the national Working Party. It should be responsible for the detailed planning of service provision within the general framework outlined in this report. A crucial element, which must be included in these plans, is the adequate provision of an appropriately trained workforce in the future.

Specific recommendations relating to treatment services are detailed below:-

- The provision of oncological services, both medical and radiation, continue to be provided from the tertiary centre in the Midland region.

- Secondary centres should continue to provide a chemotherapy service in conjunction with the tertiary provider.
- Radiation oncology is to remain at the tertiary centre. Future planning should be undertaken by the Treatment Working Party as to when more locally based provision may become appropriate.

Regional Service Provision Capital Investment Needs - The establishment of the Midland Regional Capital Committee provides a mechanism for ensuring good linkage between service planning and capital requirements. It also provides a mechanism for ensuring that maximum value is gained from investment across the region.

Tele-Medicine is a much-needed resource given the dispersed nature off the Midland region and the distance between secondary and tertiary hospitals. The ability to provide advice and consultation via a televised network cannot be under estimated as a future resource in the region. The ability to seek second opinions and gain medical advice with information available visibly to assist clinicians is a valuable tool. This function may well reduce the need for valuable clinician time currently lost in non-productive travel time and provide a collegial collaboration between providers in terms of confidence and quality outcomes resultant from an ability to consult and present clinical findings in an accessible and timely manner.

Recommendation: That the Midland DHBS plan jointly to provide a linked telemedicine function across the region.

Screening services are currently supported with sufficient capital to meet demand. The intent of the Ministry of Health to extend the Breast Screening program from the ages of 50-64 to 50–69 years will impact on these needs. These needs will require consideration by the Regional Capital Committee.

A watching brief will need to be kept on the possible development of new screening programs as their effectiveness and benefit is proven.

Imaging and Diagnostic Services**.** Primary health providers attempting to access imaging services view availability of diagnostic imaging services as a severely limiting factor. Current contract volumes need to take into consideration trends for referrals in the immediate and medium/long term future. Access to pathology has not been raised as a key-limiting factor by those consulted in the development of information. However, timeliness of provision of reports and information is key and credentialing of laboratories has meant the utilisation of private providers has increased for some aspects of service provision, e.g. cervical cytology. Co-ordination between the private and public sectors is required to ensure the best use of funds provided for this purpose.

Access to imaging to determine diagnosis needs to be provided in the vicinity of all the regions major communities. Frustrating this situation is the recruitment and retention of key imaging professionals e.g. ultrasonographers and radiologists who meet the credentialing requirements.

Hospital Capacity remains a concern for some DHB's. Some providers within the region are considering or are already accessing private theatre capacity to meet demand whilst others struggle to service beyond acute driven demands.

Recommendation: *Each DHB review facility requirements including theatres and beds to meet current and projected demand for hospital based services*.

REGIONAL APPROACH

The Midland DHB CEO group have determined that there are a number of regional services that require service planning at a regional level. This requires the understanding of any national or DHB level strategic plans, together with specific issues for each of the DHBs now and into the future.

This plan reviews the national & DHB position in relation to cancer care, the impact of demographic changes and future options for service delivery for those services provided regionally, in particular – medical oncology, radiation oncology and haematology. However, where there are regional

services provided in other areas some consideration of the issues for future planning have been included.

This plan does not address paediatric cancer services, which are provided by Starship Hospital in Auckland. The Midland DHBs endorse the national approach of two specialty paediatric oncology centres. The Midland DHBs would anticipate participation in any review of this service with Auckland DHB, including any review of outreach services, options for delivery of treatment and future directions.

The majority of non-surgical cancer treatment services (excluding palliative care) are provided by Waikato DHB for the Waikato, Bay of Plenty, and Lakes District Health Board populations. Taranaki and Tairawhiti DHB's purchase these services from Mid-Central District Health Board. Waikato may provide oncology treatments to all Midland DHB populations for those patients whose surgery is undertaken at Health Waikato e.g. head & neck, lung, and plastic surgery. Waikato has the only publicly funded high dose (HDR) brachytherapy service within New Zealand, although there are few referrals to the service from outside the region currently, this may change as the international literature identifies this as a safe and appropriate service for a greater number of tumour types. USL and Venturo are contracted to provide urology surgical cancer services for the region.

It should be noted that Counties Manukau DHB has indicated that, at sometime in the future, they may review the option to purchase oncology services from Waikato DHB.

Planning for non-surgical cancer treatment services in the Midland region has traditionally been undertaken by the Regional Cancer Centre in discussion with individual DHBs about their individual needs, rather than with a long-term overall regional approach to the service. For the future, the Midland DHB's have agreed that a 'Hub and Spoke' approach to oncology services should continue with the Regional Cancer Centre as the 'hub'. Options for formalising this approach will be included in this plan.

With the Audit NZ report and understanding that one of the statutory objectives of DHBs is to promote effective care for support of those in need of personal health services or disability support, it is reasonable to expect DHBs to undertake collaborative planning for services that involve the population of a number of DHBs. The Northern District Health Boards Support Agency (NDSA) have determined that regional service configuration would encompass[5]:

- Regional funding and planning – inter-district flows, implementation of population based funding, funding implications of service planning and capital investment decisions;
- Regional service planning – equity of access, critical mass for relatively small and highly specialised services; and
- Regional capital planning – significant proposed Capital expenditure.

Overall, collaboration across these components by DHBs should enable service changes that will facilitate the maximising of the health of the region's population.

Many countries in the world have identified cancer as a major cause of morbidity and mortality and have developed strategies to help manage all aspects of health care that relate to incidence and treatment of cancers. The themes for improving the service in each country are similar and can be summarised as:

- Patient focus through the continuum of care
- Integrated care through a multidisciplinary approach
- Resource - workforce & equipment

These themes are used as a framework for this plan and to support the goals of the New Zealand Cancer Control Strategy.

Ministry of Health / DHB Health Objectives and Guidelines

The Ministry of Health strategy, and DHB objectives and guidelines that relate to cancer services have been considered in the development of this service plan.

The New Zealand Cancer Control Strategy

One of the New Zealand health strategic priorities is to reduce the incidence and impact of cancer. To assist in meeting this priority the Ministry of Health launched the New Zealand Cancer Control Strategy[6] in 2003. This is the first phase in the development and implementation of a comprehensive and co-ordinated programme to control cancer in New Zealand. The next phase will involve identifying priorities for action, planning implementation, and defining processes to manage, monitor and review implementation. The Cancer Control Strategy has been developed with the overall purpose of:

- Reducing the incidence and impact of cancer
- Reducing inequalities with respect to cancer.

Bay of Plenty District Health Board

Bay of Plenty District Annual Plan 2004-05

In 04_05, we will have the opportunity to use money to meet the needs of a growing population by making sure that all current services, from primary to tertiary services, are expanded. This not only assures a growing population of services delivered in a timely fashion, but also allows us to take into account the mix of the population.

Alongside this we will continue to provide and increase services, particularly around the priorities set by the Minister and taking into account the evidence based planning that has been done by the District Health Board. Some of the priorities of the Board are:

- Dental health, particularly in children and beneficiaries
- *Cancer services, both local, district wide and regional*
- Health of older people, a particular need in the Western Bay of Plenty
- Management of co-morbidities, particularly those associated with diabetes

The Bay of Plenty DHB is developing a number of Programmes of Care including a Cancer Control Programme of Care in 2005.

The BOPDHB is developing new directions for Cancer Control within the following goals:

- to reduce the number of people experiencing cancer
- to create a system of care that improves the patient's journey through coordinated interventions across the continuum of care activities which maximises quality of life
- to continuously improve cancer care resources, infrastructure and support systems

The BOPDHB Chronic Progressive Conditions Conceptual Model will underpin the Cancer Control Programme of Care. This model is already being applied to the palliative care services framework.

The following objective is included in the Bay of Plenty 2004 DAP.

3.3.1	Objective:	To provide contracted health and disability services in a coordinated, collaborative and integrated manner	
Approach:		Milestones:	
A.3	To ensure service development occurs in alignment with the priorities of the DHB including:	A.3.1	District-wide services developed – Quarterly[1]
		A.3.2	Satellite dialysis unit at Tauranga Hospital established – Sept 04
		A.3.3	Rheumatology service provision arising from the Midland Regional Rheumatology Review Programme implemented - Aug 04
		A.3.4	Recommendations from the Midland Regional Cancer Review implemented[2] – June 05
		A.3.5	Linkages with relevant tertiary service providers formalised - Aug 04

[1]Palliative, Cardiac Care Services
[2]This includes the recruitment of a medical oncologist

Lakes District Health Board

Lakes District Annual Plan 2004

The Board intends addressing priorities through:

- Implementation of the recommendations of a number of hospital and regional service reviews, including laboratory and radiology (hospital) and rheumatology, renal, oncology and diabetes (regional).

Reducing the Incidence and Impact of Cancer

Lakes DHB recognises that an increasing number of individuals and their family/whanau are being affected by cancer. Cancer rates in our area are rising, compounded by the aging population, in particular the increase in the over-55 Maori population who have higher than average cancer rates.

Lakes DHB follows national guidelines for established cancer-screening programmes and we plan to participate in national initiatives to establish smoke-free DHB workplaces and sites, along with healthy eating workplaces. In addition, Lakes DHB purchases community smoking cessation programmes and plans to participate in the regional oncology review and implement recommendations from that review.

Regional Collaboration	
Annual Objective	Regional ▪ To progress collaborative programmes / activities co-ordinated via the Midland Chairs and CEOs group. Examples include the regional mental health network, regional adolescent oral health programmes, joint purchasing initiatives, and regional service review implementation e.g. renal, oncology, rheumatology, diabetes.
Milestones	▪ Regional renal and oncology reviews – Lakes components assessed, prioritised and agreed recommendations implemented.

Waikato District Health Board

Waikato District Annual Plan 2004

2.4.5 Effective Planning

Now that the Waikato DHB has developed in its role as a service planner and funder, additional focus will be placed on a regional approach to service planning. This will entail working with other local DHBs to develop and deliver on regional cancer, forensic mental health, rheumatology, diabetes and renal service plans initially. A number of these plans commenced in 2003/04 and will progress to the second phase of implementation during 2004/05.

Service planning will encompass analysis and evaluation of current service delivery arrangements and assessment of alternative national and international models to identify examples that are suitable for the local environment and pathways for implementation. There will be a strong emphasis placed on a seamless continuum of care across the providers, as well as across the DHB boundaries.

Areas where Service Reviews to be undertaken

There are a number of services where service reviews are currently being undertaken. These reviews, many of which are occurring on a regional basis, include oncology, renal medicine, urology, mental health forensic services and dental services. The provider division intends to review the type and range of services that are delivered from Matariki and Rhoda Read Hospitals to ensure that optimum use is made of the facilities in a way that best meets the needs of their constituent communities. It is not anticipated that there will be reductions in these services as a result of the reviews however there is the potential for service reconfigurations to reflect the proposed outcomes of the reviews. Should service reconfigurations be required Waikato DHB will adhere to the processes outlined in chapter 5, whilst noting that such changes are not expected to impact upon service coverage, or the level of service provided to the local population.

In Provider Division section:

Waikato Hospital will continue to strengthen as a tertiary referral centre for the Midland region DHBs, with an emphasis in 2004/2005 on further developing regional neurosurgical, renal, rheumatology, oncology and diabetes services. It will continue to work collaboratively with the Lakes, Bay of Plenty, Tairawhiti and Taranaki DHBs in the development of these services, and will continue to strengthen its relationships with the three Auckland DHBs.

National Screening

Waikato DHB holds the National Screening Unit contract for the Midland region for Breast Screening and the Cervical contract. A full multidisciplinary team approach to planning and co-ordinating services for women with screening detected breast cancer exists for the Midland region. This includes oncology, surgery and clinical support services. For cervical screening, a register and health promotion service function is provided for/and by the Waikato DHB. Once diagnosis is confirmed, Waikato DHB services, again utilising a multidisciplinary clinical team, provide necessary treatment across the continuum. In 2004/05 there will be an emphasis placed on enhancing relationships with PHOs.

Pacific Cancers

It is expected that by improving access for Pacific people to primary health care, that outcomes associated with high incidence cancers will be improved. During 1996-98 there was a small number (27 out of 3901 registrations) of Pacific people registered with cancer. Of concern were the relatively high number of head and neck cancers (standardised registration ratio 3.71). The regional oncology service plan, which will be developed in 2004, will also address the needs of Pacific people.

4.5.3 The New Zealand Cancer Control Strategy

The first stage of a regional oncology plan has been undertaken by the DHBs that access services through the Regional Cancer Centre. The purpose is to implement the New Zealand cancer control strategy by first identifying the continuum of regional oncology services and the approaches needed to ensure services improve and are co-ordinated.

In addition Waikato DHB will be developing radiation therapy capacity with the commissioning of a 4th bunker which is due for completion in 2004 with Linac installation in late 2004 or early 2005. This work will then allow for the decommissioning and replacement of the single energy Linac currently in operation.

Linked with the regional oncology services plan will be the development of a separate palliative care service plan for the Waikato District. This plan will encompass the spectrum of palliative care services from primary to tertiary with particular focus on service availability in rural areas.

Waikato DHB supports the concept of the Pharmaceutical Cancer Treatment Budget Management project and will work with PHARMAC through DHBNZ to progress this initiative.

Tairawhiti District Health Board

Tairawhiti DHB District Annual Plan 2003-04

Cancer is one of the leading causes of death amongst New Zealanders. One in three New Zealanders will at some point in their lives be affected by cancer, either personally or through a relative or friend.

In August 2003, the Minister of Health launched the New Zealand Cancer Control Strategy (NZCCS). The strategy was written in response to a perceived lack of coordination of cancer control in New Zealand. Tairawhiti has some of the highest incidence and mortality rates of cancers, in comparison to other DHB regions.

Tairawhiti District Health Board has reviewed the local situation with respect to the strategy.

The next step for Tairawhiti will be the development and implementation of a local cancer control plan and reviewing cancer services across the cancer continuum. The continuum extends from healthy lifestyles to preventing cancer through screening, diagnosis, treatment, and palliative care. A cooperative approach is required from all sectors to harness efforts to control and treat cancer to best effect for the Tairawhiti population.

Objectives	Actions	Targets	Timeframe
Reduce the incidence and impact of cancer	Develop local actions to implement the Cancer Control Strategy through the local advisory group	Population Health coordinator to work with Cancer Control group to plan for Tairawhiti.	Sep 2004
	Review of cancer services in Tairawhiti	Completed report	June 2005
	Review of Tertiary cancer services	Completed report	June 2005

Taranaki District Health Board

Taranaki District Annual Plan 2004

Oncology Objectives:

- Develop in collaboration with key stakeholders a Disease Prevention & Management Strategy for Diabetes, Cancer and Cardiovascular diseases (some work will occur through the year on this but the strategy won't be complete until the following year)
- Provide input to regional cancer treatment service through MidCentral DHB

Disease Prevention and Management Strategy

Diabetes, Cardiovascular disease and Cancers are all recognised nationally as being important disease groups to target to improve the health of the population. They share the same risk factors, for example, nutrition, obesity, smoking, blood pressure, except for Cancer which has sun as an additional risk factor. They also have the same ability to drive costs at the secondary-tertiary end of

care if population and primary focused disease prevention and management activities are not focused upon. Therefore, this is a priority area for us to focus on the Continuum of Care approach we have outlined in other parts of this Plan. We want to ensure that all sectors [from Population health to tertiary services] are linked in a strategic response to these disease states. There will be an over-arching Disease Prevention and Management Strategy, with supporting strategic work for each of the particular disease states. This work will be aligned with national and regional work.

Current Situation and Issues

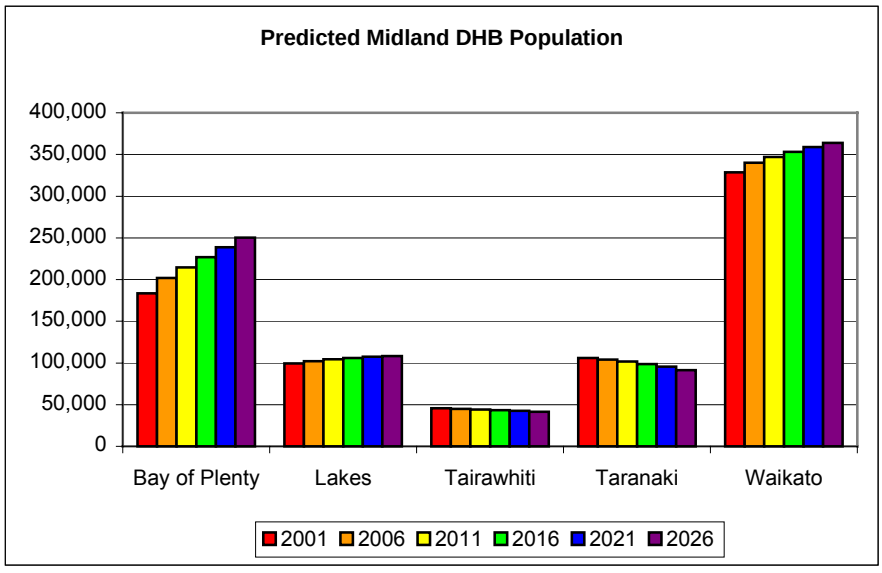
Demographics

The demographics of the Midland DHB populations and the predicted changes over the next five years are identified below. These are based on the medium predictions as per Statistics New Zealand Census 2001 data.

Table 1. Midland DHB Population and predicted changes

DHB	2001	2006	2011	2016	2021
Bay of Plenty	183,400	201,800	214,500	226,800	238,800
Lakes	99,400	102,200	104,300	105,900	107,400
Waikato	328,600	340,000	347,000	353,200	359,100
Regional Cancer Centre (current)	611,400	644,000	665,800	685,900	705,300
Tairawhiti	45,500	45,000	44,300	43,500	42,600
Taranaki	105,900	104,200	101,700	98,800	95,500
Midland Total	762,800	793,200	811,800	828,200	843,400

Figure 1. Midland DHB Population and predicted changes



The age of the population, most at risk of developing cancer, are those in the middle to older age group. While the overall population for Tairawhiti and Taranaki decreases over the period in all the Midland DHBs, the proportion of the population over 40 is predicted to increase. The number over 65 years continues to increase at a significantly greater rate than the overall population in each of the DHB areas.

Figure 2. Predicted population 40_Plus by DHB 2001 - 2026

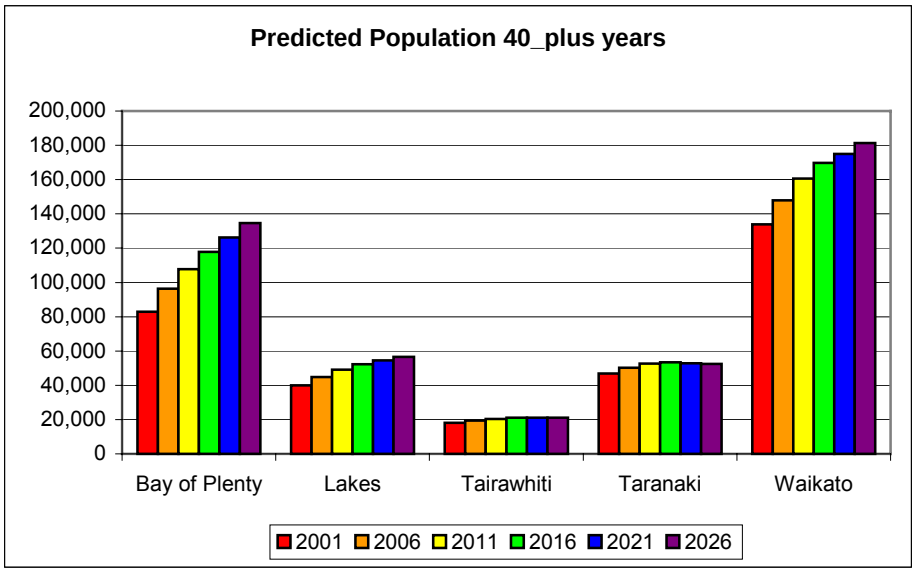
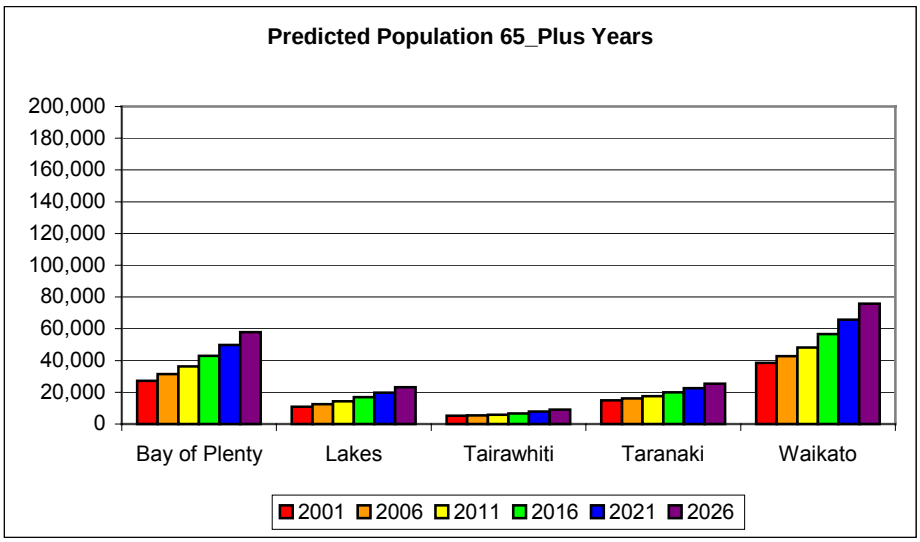


Figure 3. Predicted population 65_Plus by DHB 2001 - 2026



Service Levels

The current purchasing levels by DHB are identified in the Contracting and Funding section. It is difficult to use current purchasing levels to determine the needs going forward due to:

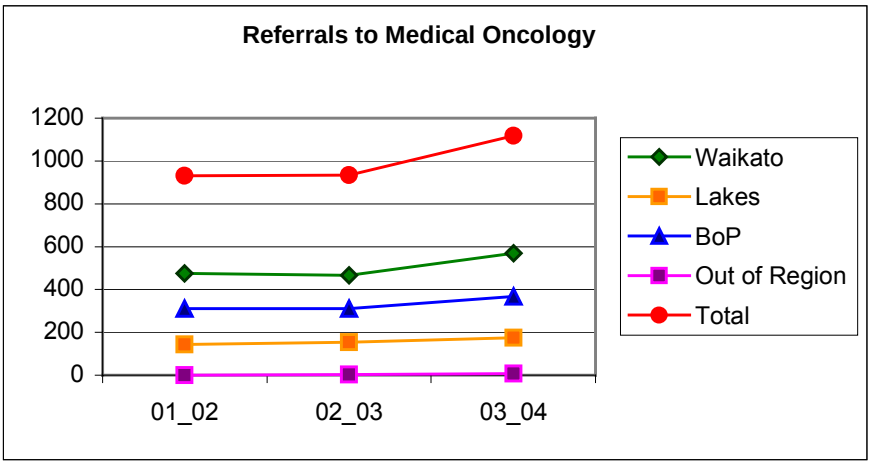
- Workforce issues that have impacted on service levels over the last five years.
- Anecdotal evidence of patients choosing surgery that is more radical rather than waiting for oncology treatments.
- DHBs not utilising the all purchase units available to them e.g. frequently M30004 Haematology Chemotherapy – in all DHBs chemotherapy is contracted as M50004 Oncology Chemotherapy.

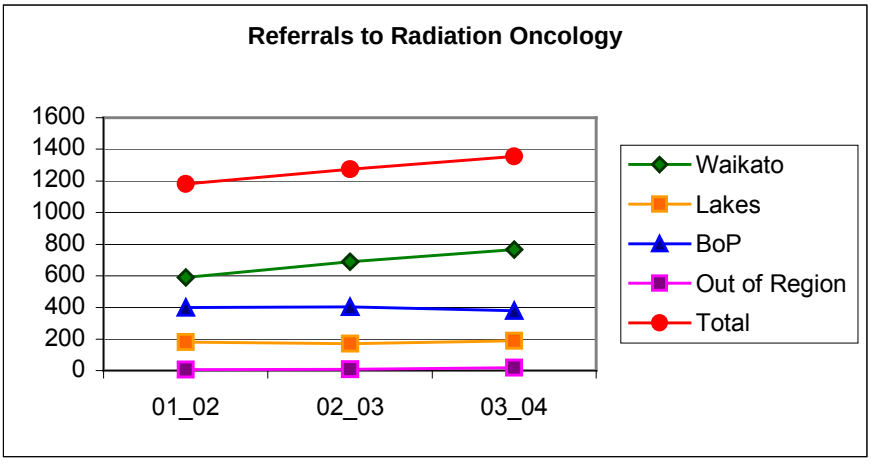
- Issues relating to coding of outpatient services have been identified at Lakes and Waikato DHB and bought to the attention of the provider and funder.
- Currently all radiation and medical oncology outpatient visits are coded together as separate purchase unit codes are not available.
- Integrity of Breast Screen Aoteoroa contract data.

Despite these issues, it is clear that the number of referrals to oncology services is increasing (Figures 4 & 5). It is unclear whether the increased referral rate to Medical Oncology between 2003 and 2004 is due entirely to new demand or whether a component is due to the perceived improving resource situation and therefore Waikato's improved ability to deliver services.

Both oncologists and surgeons believe that the introduction of integrated multi-service meetings would decrease the number of inappropriate FSA's. This would be due to the opportunity to plan the care of the patient as part of the multidisciplinary team, rather than referring a patient because of uncertainly as to whether or not chemotherapy or radiation therapy may play a part in the treatment of the patient.

Figure 4. Referrals to Waikato Oncology Services





Little information is available on a recommended First Specialist Attendance (FSA) to Subsequent attendance (F/up) ratio for oncology services. The Royal College of Physicians have identified ratios of between 1:3 and 1:10[7] from a 1994 review but have not commented on the appropriateness of these ratios. The British Society for Haematology recommends a ratio of 1:6 for haematology patients. Most radiation oncology patients are followed-up on a weekly basis in Hamilton while receiving radiation therapy. Medical oncology patients in other New Zealand Oncology Centres are

seen following each chemotherapy cycle, however due to resource constraints this does not routinely occur in the Regional Cancer Centre outreach sites. Chronic malignant haematology patients may be followed up by haematologists on a regular basis or discharged back to the GP with guidelines or protocols

The ratio of FSA: subsequent attendances in the 2003 and 2004 years for the Regional Cancer Centre DHBs are as below. Unfortunately, it is not possible to split the Medical and Radiation Oncology volumes due to use of the same purchase unit code.

Table 2. Ratio of First Specialist Assessments to Subsequent Attendances

	2003	2004
Haematology	8.5	9.0
Oncology	5.9	5.9

On completion of treatment, oncology patients are discharged back to the original referrer – often the surgeon. The referrer then follows up most patients on an annual basis for 3-5 years.

Further detail and discussion on contract levels and where services are required is provided in the Contracting and Funding Section.

Service Requirements

The move to Population Based Funding Formula (PBFF) will require DHB's to fund the services provided to its respective population, irrespective of which DHB provides delivery of the service. Ideally, the service should be delivered:

- With an emphasis on multidisciplinary care to ensure that services are effective and efficient, and fulfill the needs of patients and their families and other non-professional carers;
- As close to patients' homes as is feasible; and
- Ensuring quality and safety in all aspects of patient care.

The population demographics and increasing cancer cases mean the demand for cancer treatments will continue to rise. The demand for services will therefore grow and efficiencies and innovative approaches to care be developed in order to provide patient centred care within the confines of the constraints of resources available.

Although oncology services have been traditionally located in the main centres, supporting mechanisms such as the provision of outreach clinics have improved access to oncology services for rural populations. This is provided by Waikato through the 'Hub and Spokes' model.

When DHBs are planning for outreach clinics due consideration should be given to a comprehensive approach whereby medical oncology and radiation oncology consultative clinics are provided conjointly, ideally from the same centre.

Currently most patients are unable to access care coordination that supports them through the continuum of care.

Health Waikato and Tauranga Hospital have completed Clinical Services Plans that include the reference to Oncology Services as below. Also included is information documented in the Taranaki District Annual Plan 2004 in relation to Oncology Services.

TAURANGA HOSPITAL CLINICAL SERVICES PLAN – NOVEMBER 2003

Oncology

Scope: Provision of services funded by BOPDHB to adults and children as inpatients, day patients and outpatients complemented by diagnostic services. Specialist services are managed by Waikato Hospital through a "Hub and Spokes" model. Visiting oncology specialists are provided at Tauranga Hospital for both radiation and medical oncology. Chemotherapy is provided at Tauranga Hospital for an extensive and increasing range of chemotherapeutic agents.

Key issues affecting this service:

- Increased chemotherapeutic drug costs for services
- Increase in demand exceeding current specialist resources available at Waikato Hospital
- Poor geographic access for patients with reduction in locally-provided tertiary services
- Increasing pressure on physicians to manage complex inpatients locally
- Future of gene therapy and immunotherapy will affect future demand and service levels
- Inappropriate waiting times for consultation and treatment (both radiation and medical oncology).

Proposed Service developments

- Implementing the recommendations of the Cancer Services Strategy
- Reduced waiting times for assessment and treatment increasing local provision of visiting outpatient services
- Early intervention and better access district-wide to First Specialist Assessments
- Increased substitution of oral chemotherapy for intravenous chemotherapy will result in changes in practice in the Chemotherapy service
- Incorporation of developments in genome/gene medicine.

Haematology

Scope: Provision of services funded by BOPDHB to adults and children as inpatients, day patients and outpatients complemented by diagnostic services. Specialist haematology services are managed by Waikato Hospital through a "Hub and Spokes" model. Visiting haematology services are provided at both Tauranga and Whakatane Hospitals. Chemotherapy is provided at Tauranga Hospital for an increasing range of chemotherapeutic agents.

Key issues affecting this service:

- Increased pharmaceutical costs for services
- Increase in demand exceeding current specialist resources available
- Increasing pressure on physicians to manage complex inpatients locally
- Future of gene therapy and immunotherapy will affect future demand and service levels
- Limited on-site Physician presence.

Proposed Service Development

- Development of increased on-site visiting clinics
- Increased substitution of oral chemotherapy for intravenous chemotherapy
- Incorporation of developments in genomic/gene medicine.

HEALTH WAIKATO CLINICAL SERVICES PLAN

The Health Waikato Clinical Services Plan released for discussion in November 2001 identified the following proposed changes for Oncology Services.

- Mixed networked (for chemotherapy and palliative care) and centralised (radiation therapy, medical oncology and cancer surgery)
- Increased radiation therapy throughput with expanded capacity
- Continued development of decentralised chemotherapy service
- Expanded nurse practitioner role
- Develop and implement staff recruitment/retention strategy

With key partnership links to:

- Breast service
- General surgery
- Gynaecology
- Urology
- Palliative care
- GPs and community health.

TARANAKI DISTRICT HEALTH BOARD – DISTRICT ANNUAL PLAN 2004

Taranaki DHB provides secondary oncology outpatient and treatment services with the support of MidCentral DHB (Palmerston North) and the Regional Cancer Treatment service. MidCentral DHB holds the contract for radiation therapy services for the Taranaki region and a range of outpatient and chemotherapy services are provided locally with the support of resident clinical staff. Radiation therapy treatments and more specialised oncology services are provided in Palmerston North.

The need to plan for the expected growth in this area is as vital as the need for strategies aimed at prevention. MidCentral Health DHB have proposed the establishment of a Regional Central Cancer (Treatment) Advisory Board to initiate planning. Taranaki DHB supports this approach and the idea that this model could extend into the screening, health promotion and palliative care areas to forge an integrated collaborative model of cancer services. Patients requiring cancer services ultimately may live with a significant level of disability on a temporary or longer-term basis, and also often fall within the older age group. Therefore strategies directed at optimising the health and well being of older people, and those with disability, will often also support patients requiring cancer treatment.

Cancer Rates

The Ministry of Health published Cancer in New Zealand: Trends and Projections[8] in 2002. This document identifies that an increased risk of cancer has been identified with two-thirds of the increase due to demographic changes and, in particular, growth in the adult population. The incident rate of 'all adult cancer' (i.e. all adult cancers treated as a single entity) is predicted to increase for both genders over the next decade but at a slower rate than the past decade. A 6% increase is predicted for females between 1996 and 2011 to an incidence rate of 450 per 100,000 and 7% for males to an incidence rate of 510 per 100,000.

The MoH and NZHIS publication Cancer: New Registrations and Deaths 1999[9], indicates that there is a relatively high proportion of registrations where ethnicity is not recorded. The majority of these are where the diagnosis of cancer has been made in the private sector and the only information available may be the laboratory form, which does not include information about ethnicity. These registrations have been omitted from the analysis and therefore the rates indicated below are understated.

The 1999 cancer registration rate for Māori (300.4 per 100,000 population) was higher than for non-Māori (287.3 per 100,000 population). The Māori female rate (303.6 per 100,000 female population) was nearly equal to the Māori male rate (309.3 per 100,000 male population).

The mortality rate from all adult cancer has fallen from a rate of 261 per 100,000 in 1972 to 181 per 100,000 in 1997, with some rises and falls over that time. The decline in mortality is expected to continue at an accelerated pace to 198 per 100,000 for males and 162 per 100,000 for females by 2012. Māori age standardised cancer mortality rates exceeded those of non-Māori.

Despite the decline in mortality the annual number of cancer deaths is forecast to rise each year reflecting population growth and increase in the proportion ageing.

The cancer registration rates for the Midland DHBs for 1996-1998 are identified in the Review of Cancer Services Midland Region 2003[5] document. A summary of this data is provided in Table 2.

Tables 3 & 4 use the Ministry of Health Trends and Projections information to predict the number of cancers expected in the Midland DHB regions in 2001, 2006 and 2011. This data is based on TLA demographic medium predictions as provided by Statistics NZ and the cancer rates for the age groups as predicted by the Ministry of Health. There is no specific regional or ethnic influence on these predictions.

There are obvious limitations to this data as the numbers of cancers per age and DHB sub region become small, however this is useful information in providing an indication of service needs over the next few years.

Table 3. Number of Cancer Registrations for the Midland DHBs 1996-1998

	Bay of Plenty		**Lakes**		**Waikato**		**Tairawhiti**		**Taranaki**	
	#.	SRR	#.	SRR	#	SRR	#	SRR	#	SRR
Total 96_98	2470	0.97	1152	0.98	3901	0.95	616	1.00	1321	0.87
Average per annum	823		384		1300		205		440	

SSR = standardised registration ratio

Table 4. Predicted Cancer Cases by Sub-region for Midland DHBs 2001-2011

Table 3a

Bay of Plenty	**Eastern Bay of Plenty**			**Western Bay of Plenty**		
Site of Cancer	**2001**	**2006**	**2011**	**2001**	**2006**	**2011**
Breast	26	30	35	87	108	130
Cervical	2	2	8	7	8	8
Prostate	18	24	31	65	91	123
Colorectal	29	33	36	105	124	100
Pancreas	4	5	5	15	17	19
Stomach	5	5	5	17	19	20
Lung	19	20	21	66	75	82
Melanoma	16	21	23	54	70	85
Leukaemia	4	7	5	13	24	21
Non-Hodgkins Lymphoma	7	11	10	24	38	37
Other	73	83	91	247	284	400
All Cancers	**204**	**241**	**269**	**698**	**857**	**1,026**
Bay of Plenty Total	**902**	**1098**	**1295**			

Table 3b

Lakes	**Rotorua**			**Taupo**		
Site of Cancer	**2001**	**2006**	**2011**	**2001**	**2006**	**2011**
Breast	35	41	47	18	21	25
Cervical	3	3	3	2	2	2
Prostate	22	39	39	13	18	25
Colorectal	37	42	47	21	24	28
Pancreas	5	6	6	3	3	4
Stomach	6	6	7	3	4	4
Lung	24	25	27	13	15	16
Melanoma	21	26	30	11	14	17
Leukaemia	5	10	13	3	5	7
Non-Hodgkins Lymphoma	9	16	19	5	8	11
Other Cancers	95	134	115	51	58	64
All Cancers	**262**	**348**	**353**	**143**	**170**	**202**
Lakes Total	**405**	**518**	**555**			

Table 3c

Thames - Thames-Coromandel, Hauraki DIstricts

Cancer	**2001**	**2006**	**2011**
Breast	30	34	40
Cervical	3	2	2
Prostate	26	33	43
Colorectal	39	45	51
Pancreas	5	6	7
Stomach	6	6	7
Lung	24	26	28
Melanoma	21	25	29
Leukaemia	6	8	9
Non-Hodgkins Lymphoma	10	12	15
Other cancers	89	101	114
All Cancers	**259**	**299**	**344**

Waikato - Waikato, Matamata-Piako, Hamilton, Waipa

Cancer	**2001**	**2006**	**2011**
Breast	123	144	166
Cervical	11	11	11
Prostate	76	102	135
Colorectal	132	147	166
Pancreas	19	20	22
Stomach	21	23	24
Lung	84	90	96
Melanoma	74	90	105
Leukaemia	19	31	26
Non-Hodgkins Lymphoma	33	49	46
Other cancers	338	373	453
All Cancers	**931**	**1,080**	**1,250**

Te Kuiti - Otorohanga, Waitomo)

Cancer	**2001**	**2006**	**2011**
Breast	9	11	12
Cervical	1	1	1
Prostate	7	9	11
Colorectal	11	12	13
Pancreas	1	2	2
Stomach	2	2	2
Lung	7	7	7
Melanoma	6	7	8
Leukaemia	2	2	2
Non-Hodgkins Lymphoma	3	4	3
Other cancers	27	30	34
All Cancers	**75**	**86**	**94**

Tokoroa - South Waikato

Cancer	**2001**	**2006**	**2011**
Breast	12	13	14
rvical	1	1	1
Prostate	8	11	13
Colorectal	13	14	15
Pancreas	2	2	2
Stomach	2	2	2
Lung	8	9	9
Melanoma	7	9	10
Leukaemia	2	3	2
Non-Hodgkins Lymphoma	3	5	4
Other cancers	33	35	10
All Cancers	**91**	**102**	**82**

Taumaranui - Ruapehu (WDHB portion)			
Cancer	**2001**	**2006**	**2011**
Breast	5	6	6
Cervical	0	0	0
Prostate	4	5	6
Colorectal	6	6	7
Pancreas	1	1	1
Stomach	1	1	1
Lung	4	4	4
Melanoma	3	4	4
Leukaemia	1	1	1
Non-Hodgkins Lymphoma	1	2	2
Other cancers	15	15	18
All Cancers	**41**	**45**	**50**
Waikato Total	**1,397**	**1,613**	**1,821**

Table 3d

Tairawhiti			
Site of Cancer	**2001**	**2006**	**2011**
Breast	24	27	30
Cervical	2	2	2
Prostate	16	20	25
Colorectal	27	28	30
Pancreas	4	4	4
Stomach	4	4	4
Lung	17	17	18
Melanoma	15	17	19
Leukaemia	3	5	6
Non-Hodgkins Lymphoma	6	9	11
Other cancers	57	61	32
All Cancers	**175**	**195**	**183**

Table 3e

Taranaki			
Site of Cancer	**2001**	**2006**	**2011**
Breast	64	72	80
Cervical	6	5	5
Prostate	41	57	74
Colorectal	72	80	88
Pancreas	10	11	12
Stomach	11	12	12
Lung	45	48	50
Melanoma	38	45	52
Leukaemia	10	16	17
Non-Hodgkins Lymphoma	17	25	32
Other cancers	174	190	85
All Cancers	**488**	**563**	**507**

The majority of the increase in cancer cases is due to population growth and the increasing age of the population. Major cancers showing changes are:

Female breast cancer, where the incidence is predicted to account for 28% of all female registrations by 2011, however, the mortality rate is projected to continue to decline. Māori registration rates are slightly higher than non-Māori with a considerably higher mortality rate.

Cervical cancer incidence and mortality have been falling and this trend is predicted to continue. Māori females are twice a likely to be diagnosed with cervical cancer as non-Māori females with a mortality rate four times higher.

Colorectal cancer is predicted to decline in both men and women, possibly due to improved diet and exercise. Māori registration rates are lower for colorectal cancer than non-Māori.

Lung cancer continues to decrease in incidence and mortality for men, while female incidence is expected to rise slightly then stabilise. Lung cancer mortality rates are two to three times higher among Māori males and more than three to four times higher in Māori females than non-Māori females. This is thought to be due to tobacco exposure and poorer survival. The increase in mortality for females will mean lung cancer will become the leading cause of female cancer death by 2012.

Melanoma is expected to remain among the top five or six cancers for males and females in the forecast period to 2011. Non-Māori registration rates for melanoma in 1999 were 10 times higher than the Māori rate.

Prostate cancer, corrected for the 'PSA effect' shows a small increase in cancer incidence with the majority of the increase shown being due to population increase and accelerated population ageing. Māori registration rates are lower for prostate cancer than non-Māori are but the mortality rate is higher for Māori than non-Maori. This cancer is predicted to be the leading cancer for male incidence and death by 2011.

In addition to the cancers above, the 1999 registration rates show Māori had considerably higher registration rates than non-Māori for cancer of the liver (over three times the non-Māori rate), stomach (two and a half times the non-Maori rate) and secondary cancer of the respiratory and digestive system (one and half times the non-Māori rate).

Figure 5. Graph of Predicted Cancer Cases for Midland DHBs 2001 - 2011

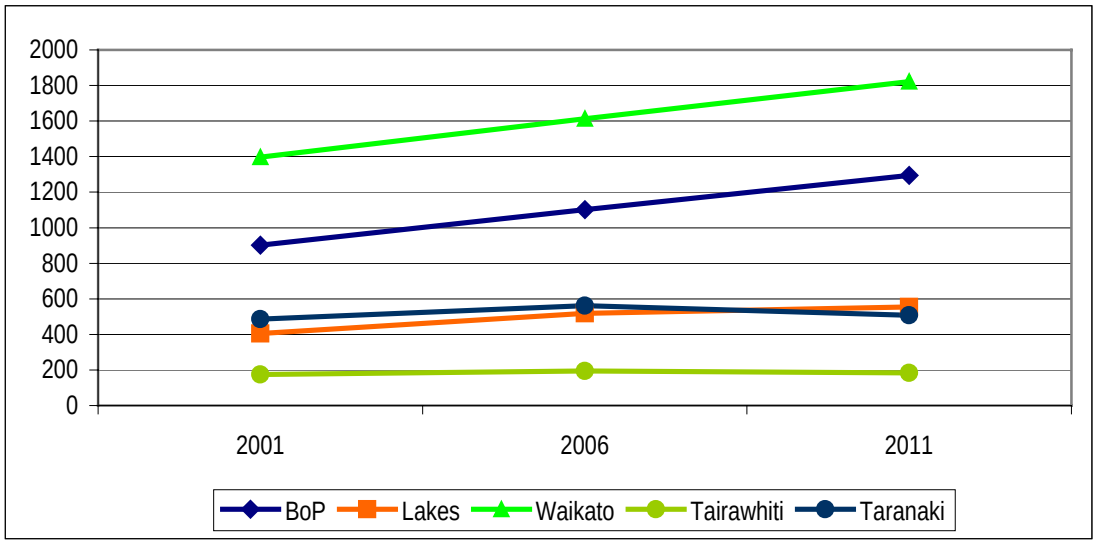


Table 5. Predicted Cancer Cases by Midland DHB 2001 - 2011

All Cancers	BoP	Lakes	Waikato	RCC Total	RCC Inc Tairawhiti	RCC inc Taranaki	Midland DHB Total
2001	902	405	1,397	2,704	2,879	3,190	3,366
2006	1101	518	1,613	3,231	3,425	3,793	3,988
2011	1,295	555	1,821	3,671	3,854	4,178	4,361

RCC = Regional Cancer Centre

Table 6. Regional Cancer Centre Referrals 2002-2004

	2002	2003	2004	Average
Cancer Cases Predicted	2704	2809	2914	
Referrals to Medical Oncology	931	934	1118	
% Cases referred to Medical Oncology	34.4%	33.3%	38.3%	35.33%
Referrals to Radiation Oncology	1180	1273	1355	
% Cases referred to Radiation Oncology	43.6%	45.3%	46.5%	45.13%

Based on the predicted cancer cases and the numbers of referrals received by the Oncology service between 2001 and 2004 fiscal years, the following referral numbers could be expected in 2006 and 2011. It should be recognised that these are likely to be an underestimate as, there is a known increase in oncology treatment rates greater than the increase in incidence, plus, anecdotally during times of resource constraint, patients have opted for surgery that is more radical rather than wait for oncology treatments. Surgeons in Waikato, Bay of Plenty, and Lakes DHBs have confirmed this information. It should also be noted that patients may be referred to both medical and radiation oncology.

Table 7. Expected Referrals to Waikato Oncology Services 2006 & 2011

	BoP	Lakes	Waikato	RCC* Total	RCC Inc Tairawhiti	RCC inc Taranaki	Midland DHB Total
All Cancers **- 2006**	**1,101**	**518**	**1,613**	**3,229**	**3,425**	**3,794**	**3,988**
Expected Referrals Med Onc	388	183	570	1141	1210	1340	1409
Expected Referrals Rad Onc	496	234	728	1457	1546	1712	1800
Total Oncology Referrals	**884**	**417**	**1298**	**2598**	**2756**	**3052**	**3209**
% Annual increase 2001-2006				**4%**			**4%**

All Cancers **2011**	**1,295**	**555**	**1,821**	**3,631**	**3,814**	**4,138**	**4,321**
Expected Referrals Med Onc	458	182	643	1283	1348	1462	1527
Expected Referrals Rad Onc	584	232	822	1639	1721	1868	1950
Total Oncology Referrals	**1042**	**414**	**1465**	**2922**	**3069**	**3330**	**3477**
% Annual increase 2006-2011				**2%**			**2%**

* RCC = Regional Cancer Centre

Clinical Services

Clinical Haematology

Haematology services involve clinical and laboratory responsibilities including:

1. Management of haematological malignancy;
2. Bone marrow transplantation;
3. Management of non-malignant haematological disorders;
4. Management of thrombolytic and bleeding disorders, including haemophilia;
5. Haematological laboratory service provision;
6. Transfusion medicine service (in association with New Zealand the Blood Service).

CURRENT SITUATION

The Haematology department at Health Waikato currently provides clinical haematology services to the Bay of Plenty, Lakes, and Waikato DHB populations. As at June 2004 Waikato DHB employed three haematologists (2.8 FTE) with a further vacant 1FTE position. An offer for this position has been made to and accepted by a Haematologist currently in Australia.

Outreach clinics are provided in Rotorua (monthly), Tauranga (twice monthly), Whakatane (monthly), and Thames (monthly). Waiting times for these clinics vary and have increased significantly since January 2004.

Inpatient services, including autologous bone marrow transplants, are provided at Waikato Hospital. Patients requiring allogeneic bone marrow transplants are referred to the haematology service at Auckland Hospital.

MALIGNANT HAEMATOLOGY TRENDS AND PROJECTIONS

Haematology encompasses both acute and chronic malignancies. The Ministry of Health 2002 publication, Cancer in New Zealand: Trends and Projections[7] provides the incidence and mortality rates of the major malignant haematological conditions, for those aged over 15 years, together with predictions for 2011.

Hodgkins disease is a relatively rare form of cancer (0.4% of all cancer registrations in 1996/7). Males tend to have a 50% higher risk than females for this disease. The incidence peaked in the late 1960's but has declined since that time. The mortality rate also continues to decrease, and is projected to be 0.2 per 100,000 for both males and females by 2012. The impact of ethnic and socio-economic factors on this disease is unclear due to the small numbers.

Myeloma accounts for less than 2% of cancer registrations currently. The incidence is higher in males that females (40% higher in late 1990's), Māori than non- Māori and in the older population (75% of registrations and mortality occur in the over 65 year age group). The 15% increase in incidence predicted between 1996 and 2011 is mainly due to the projected growth in the population and the aging of the population.

Leukaemia accounts for 3% of all cancers and covers a diverse group of malignancies. Currently leukaemia rates ninth in cancer incidence cases. The mortality rate from leukaemia has declined over the past three decades. The incidence rate at 65 years and over is five times that at age 45-64 and the mortality rate is seven times higher. Males have a 70% higher incidence rate of leukaemia than females. There is no clear ethnic or socio-economic differential in leukaemia risk. The population demographic changes clearly offset any decrease in risk for leukaemia.

Non-Hodgkin's lymphoma is identified as once of the cancers with the most dramatic expected increase in incidence from 4% to 6% of the total cancer registrations, with the incidence in females rising from 3% to 6% between 1996 and 2011. The increase is due to population increases - 50%, population ageing – 17%, increased risk of disease – 33%. There is no strong evidence of ethnic and socio-economic associated risks.

NB: Medical oncologists or haematologists, depending on the workload and agreement in place, may manage patients with lymphomas.

Tables 6 and 7 show the overall trends predicted for haematological cancers.

Figure 6. Haematological Cancer Incidence per 100,000 in 1996 and predicted levels in 2011

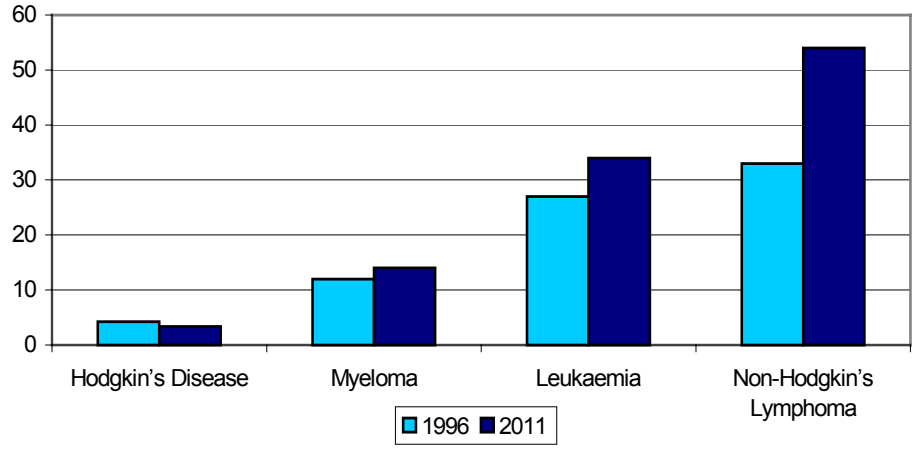


Figure 7. Mortality rate for haematological cancers in 1996 and predicted rate in 2011

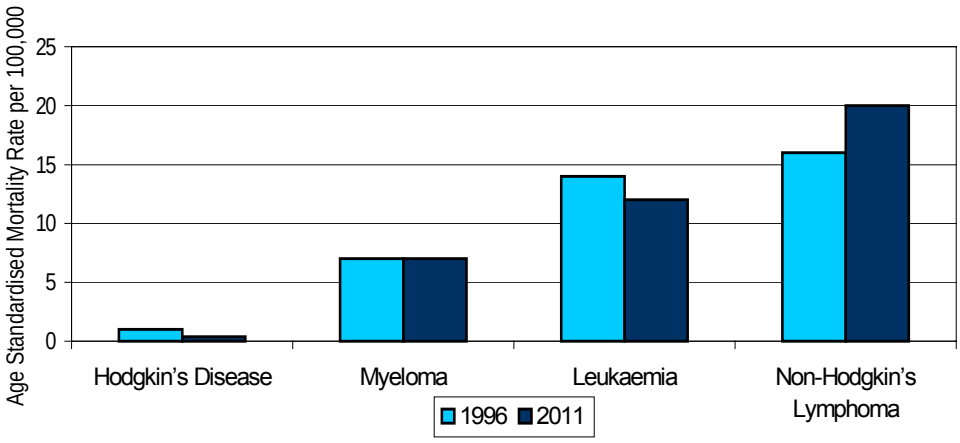


Figure 8. Haematology Outpatient Data 2002 - 2004

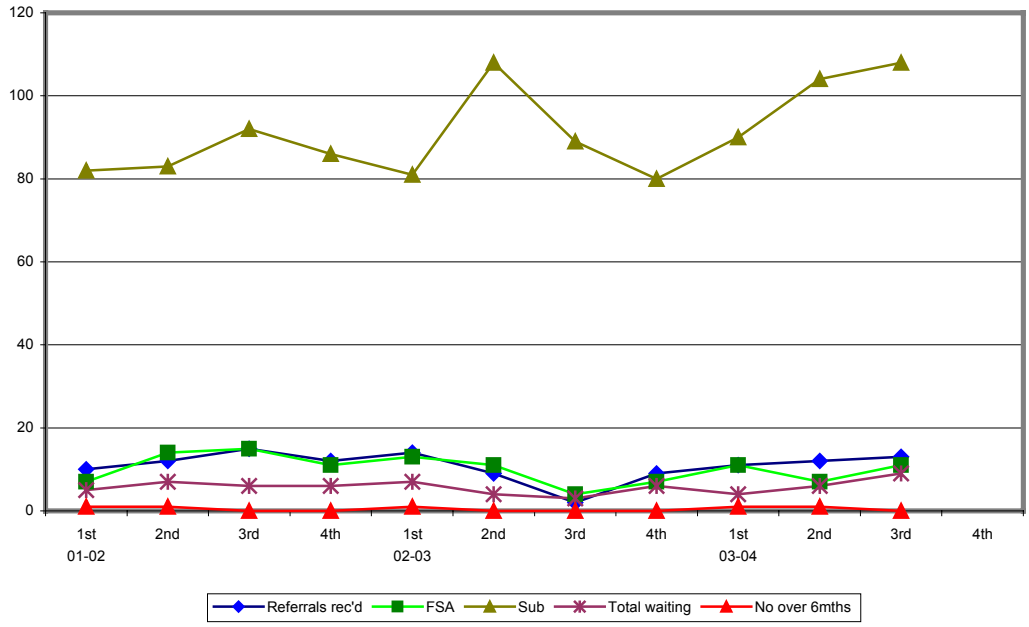
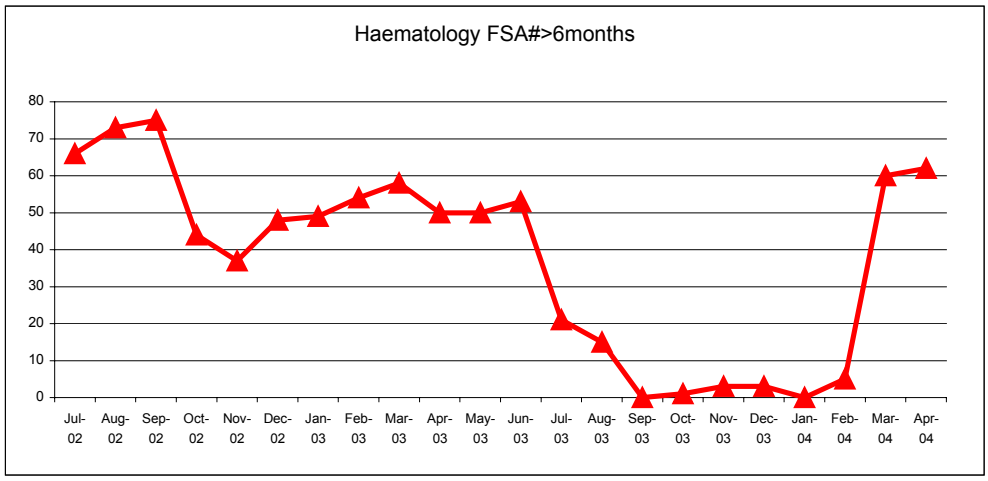


Figure 9. Haematology FSA numbers waiting greater than six months



While some of the issues regarding haematology waiting lists have been due to workforce issues, it is recommended that the Haematologists work with appropriate staff and GP liaison to review lists and determine options for managing referrals and discharging patients to primary care.

It should be noted that a meeting of staff was held in May and the waiting list for haematology has been identified as an issue. It is understood that general agreement has been reached to look at the options for better managing waiting lists

HUMAN RESOURCES

The British Society for Haematology published recommendations for Consultant Haematologists in 2001[10]. The recommended levels were that clinical activity limits per fulltime consultant should not exceed:

- 250 inpatients;
- 250 new patients;
- 1,500 follow-up patients;
- 1,500 day case/ward attendees; and,
- 100 ward consults

plus:

- Departments in hospitals with a large population base and departments of Obstetrics and Gynaecology, Cardiothoracic Surgery, Oncology and Renal Services will need additional Consultants to cover clinical care.
- Three Consultants will be needed for a population in excess of 250,000 regardless of specialist Haematology in-patient services and populations of over 400,000 may justify further posts.

On this basis with a population of over 600,000 in the Regional Cancer Centre catchment area, there is a need for a minimum of 3 FTE Clinical Haematologists. Given the tertiary nature of Health Waikato, the geographic nature of the region and the lack of general physicians in the out-reach sites with an interest in oncology, it is more reasonable to suggest a minimum of 5 FTE's are required for the Midland region. New Zealand Clinical Haematologists also have a college requirement to spend 10% of their time working in the laboratory.

The Australian Medical Workforce Advisory Committee (AMWAC) Report for The Specialist Medical and Haematological Oncology Workforce in Australia[11] recommendations are that there should be 1.6 FTE medical and haematological oncologists per 100,000 population nationally in Australia. Given that there are some malignancies that may be managed by either speciality, it is expected that the ratio of 1-1.1 FTE medical oncologists to 0.5-0.6 FTE haematology oncologists would be appropriate.

The ratio of FSA's to follow-up patients recommended by the British Society for Haematology is 1:6. The ratio of 1:9 for the Waikato centre should be reviewed, particularly with the increase in the number of patients waiting greater than six months for an FSA (See Fig.7).

Table 8. Haematology Oncologist requirements based on AMWAC recommendations

	BoP	Lakes	Waikato	RCC*	RCC including Tairawhiti	RCC including Taranaki	Midland Total
2001 Population	183,400	99,400	328,600	611,400	656,900	717,300	764,800
0.5FTE / 100,000	0.9	0.5	1.6	**3.1**	3.3	3.6	3.8
0.6FTE / 100,000	1.1	0.6	2.0	**3.7**	3.9	4.3	4.6
2006 Population	201,800	102,200	340,000	644,000	689,000	748,200	786,400
0.5FTE / 100,000	1.0	0.5	1.7	**3.2**	3.4	3.7	3.9
0.6FTE / 100,000	1.2	0.6	2.0	**3.9**	4.1	4.5	4.7
2011 Population	214,500	104,300	347,000	665,800	710,100	767,500	806,800
0.5FTE / 100,000	1.1	0.5	1.7	**3.3**	3.6	3.8	4.0
0.6FTE / 100,000	1.3	0.6	2.1	**4.0**	4.3	4.6	4.8

* RCC –Regional Cancer Centre

Based on the AMWAC recommendations, the Regional Cancer Centre, under the current configuration of service delivery to the Bay of Plenty, Lakes, and Waikato DHB populations, would require a minimum of 3.8 FTE Haematological Oncologists now, with minimal increases expected over the next five years. It should be noted that Haematologists employed at the Regional Cancer Centre are Clinical Haematologists with a rough estimate that 60-70% of time employed is spent on malignant haematology workload. This would lead to a recommendation of 5.7 FTE Clinical Haematologists for the Regional Cancer Centre currently increasing to 6 FTE by 2011.

It should also be noted that using a population basis for determining workforce needs does not take into consideration the changing impact of demographic factors on workload, nor the increased workload due to the decreased mortality of these patients.

Recommendation

That the Regional Cancer Centre base the requirement for Clinical Haematologists on the AMWAC recommendations and that 5.7 FTE haematologists are required currently to provide a sustainable service with a minimal increase to 6 FTE by 2011. One of the impacts on the need for Clinical Haematologists is whether Haematology or Oncology will manage lymphoma patients.

The option for one Haematologist to be based in Tauranga is noted.

It is also recommended that the Haematologists work with appropriate staff and GP liaison to review waiting lists and determine options for managing referrals and discharging patients to primary care.

Medical Oncology

The Ministry of Health has published a draft service specification for Medical Oncology. The Service Specification Executive is currently reviewing this service specification. The draft includes the following definition of Medical Oncology - 'Medical Oncology services provide specialist assessment and management of patients with malignant tumours. Efficient delivery of this service requires close working relationships with a number of other secondary and tertiary specialities (e.g. by means of multi-disciplinary meetings), to allow multi-disciplinary and co-ordinated management of cancer patients. Medical oncology co-ordinates the aspect of cancer care related to systemic therapy, including cytotoxic chemotherapy, targeted hormonal and molecular therapy or immunotherapy, and aspects of supportive care'.

Medical oncology includes the following service components

- Assessment of patients, including prognosis, likely benefit from and tolerance of treatment;
- Management of patients with progressive cancer, including specialist advice to referring clinicians, patient education and counselling;
- Prescription, preparation and administration of chemotherapy, supervision and review of patients on chemotherapy;
- Management of side effects and toxicity of treatment (including nausea and vomiting and the risk of serious or life –threatening infection);
- Education of medical and nursing staff, joint review meetings with other clinical services, clinical trial involvement, quality and risk management activities.

Medical oncology services are often used in conjunction with other forms of cancer treatment such as radiation therapy and / or surgery.

CURRENT SITUATION

Currently the Regional Cancer Centre provides medical oncology services to the Bay of Plenty, Lakes, and Waikato DHB populations. As at May 2004 Waikato employed three medical oncologists with a fourth due to start mid-2004 and a fifth early 2005.

There has been some variability in the level of service provided in the out-reach hospitals over the last few years due to oncologist resource constraints. Outpatient clinics have traditionally been provided in Tauranga, Whakatane, Rotorua, Thames, and Hamilton. In order to manage the delivery of the service within the constraints of available workforce, the majority of First Specialist Assessments have been provided in Hamilton.

There is an expectation that with full staffing that there will be an increased ability for oncologists to provide services closer to the patients domicile. However, the balance between the limited amount of time for staff and the wish to provide services as close as feasible to the patients domicile is an ongoing tension.

HUMAN RESOURCES

In the development of the Improving Non-Surgical Cancer Treatment Services in New Zealand document[12] the Medical Oncology working party determined that medical oncology workforce planning should be based on the benchmark of each clinical FTE medical oncologist seeing a maximum of 180 to 220 new patients per year. (This figure may need to be adjusted where the oncologist has insufficient support from junior medical or other staff, or has extensive regional clinic commitments). The Ministry of Health draft Service Specification for Medical Oncology also supports an average of 180-220 new patients per medical oncologist with local variations according to the level of other support services and geographical considerations.

Of note is that while cancer cases are increasing in New Zealand at a rate of 4-5% per annum, medical oncology treatments are growing at the rate of 9%[12]. This is believed to be due to an increase in the use of adjuvant chemotherapy, increase in the combination of radiation therapy and chemotherapy and availability of more effective treatments. Given the geographical spread of the Midland region and the lack of general physicians with an interest in oncology at any of the out-reach sites, the ratio of 180 new patients has been used in the recommendations included below.

It should be noted that predicting the number of new patients is made more difficult due to the current contracting arrangement where medical and radiation oncology FSA's are both coded to M50.02. The assumption used in the predicted numbers includes information based on the current situation, that approximately 75% referrals result in an FSA for either medical or radiation oncology and that 44% FSA's are for medical oncology and 56% are radiation oncology. A number of patients are referred to both specialties. It is likely that this will underestimate the workforce requirements as assumptions are based on referral data between 2001 and 2004 when it is likely that the number of referrals was lower than would normally be expected due to well-recognised workforce constraints, and a number of patients will have been treated in the private sector.

The AMWAC Report for The Specialist Medical and Haematological Oncology Workforce in Australia[11] has recommended that there should be 1.6 FTE medical and haematological oncologists per 100,000 population nationally in Australia. In 2001, there were 0.9 FTE medical oncologists and 0.4 FTE haematological oncologists (1:122,134).

Data from Victoria, Australia indicates that on average 42% patients with cancer received chemotherapy[13]. Comparative data from other Australian states is not available. Ontario, Canada recommendations are that planning should be based on providing chemotherapy to 50% of incident cancer cases[14]. In comparison with radiation therapy, which is a relatively stable service, the development, and recommendations for the use of chemotherapeutic agents, changes rapidly.

An indication of Medical Oncologist requirements for the Regional Cancer Centre is provided in Tablets 9 and 10. AMWAC recommendations based on 1-1.1 FTE per 100,000 population would indicate a need for 6.3 – 7 FTE Medical Oncologists for 2004 and increasing as indicated. The New Zealand recommendations are more difficult to use for planning, as the number of cases need

to be known. Using current referral and FSA numbers and the cancers cases predicted in Table 10, an indication of the Medical Oncologist requirements is made for both the current Regional Cancer Centre population and the numbers that may be required should any change be made to include other Midland DHB populations. It should be noted that no out of region numbers have been included in these predictions. The numbers are small and not significant at this time, however should this situation change these will need to be taken into consideration.

Table 9. Medical Oncologist requirements based on AMWAC recommendations

	BoP	Lakes	Waikato	RCC	RCC including Tairawhiti	RCC including Taranaki	Midland Total
2001 Population	183,400	99,400	328,600	611,400	656,900	717,300	764,800
1FTE / 100,000	1.8	1.0	3.3	**6.1**	6.6	7.2	7.6
1.1FTE / 100,000	2.0	1.1	3.6	**6.7**	7.2	7.9	8.4
2006 Population	201,800	102,200	340,000	644,000	689,000	748,200	786,400
1FTE / 100,000	2.0	1.0	3.4	**6.4**	6.9	7.5	7.9
1.1FTE / 100,000	2.2	1.1	3.7	**7.1**	7.6	8.2	8.7
2011 Population	214,500	104,300	347,000	665,800	710,100	767,500	806,800
1FTE / 100,000	2.1	1.0	3.5	**6.7**	7.1	7.7	8.1
1.1FTE / 100,000	2.4	1.1	3.8	**7.3**	7.8	8.4	8.9

* RCC - Regional Cancer Centre

Table 10. Predicted Medical Oncologist Requirements based on one per 180 new patients.

		Referral Rate	BoP	Lakes	Waikato	RCC Total	RCC Inc Tairawhiti	RCC inc Taranaki	Midland DHB Total
2001 Predicted Cancer Cases			902	405	1397	2704	2879	3191	3367
Number Referrals	Medical Oncology	35%	316	142	489	946	1008	1117	1178
	Radiation Oncology	35%	316	142	489	946	1008	1117	1178
Referrals that result in an FSA		75%	237	106	367	710	756	838	884
Medical Oncologists Recommended @ 1 per 180 new cases			1.3	0.6	2.0	**3.9**	4.2	4.7	4.9

2006 Predicted Cancer Cases			1099	518	1613	3229	3425	3793	3988
Number Referrals	Medical Oncology	44.0%	484	228	710	1421	1507	1669	1755
	Radiation Oncology	40.0%	440	207	645	1292	1370	1517	1595
Predicted Medical Oncology FSA's		75.0%	363	171	532	1066	1130	1252	1316
Medical Oncologists Recommended @ 1 per 180 new cases			2.0	0.9	3.0	**5.9**	6.3	7.0	7.3

2011 Predicted Cancer Cases			1295	555	1821	3631	3814	4138	4321
Number Referrals	Medical Oncology	50%	647	278	911	1836	1927	2089	2170
	Radiation Oncology	50%	647	278	911	1836	1927	2089	2170
Predicted Medical Oncology FSA's		75%	486	209	683	1377	1445	1567	1628
Medical Oncologists Recommended @ 1 per 180 new cases			2.7	1.1	3.8	**7.6**	7.9	8.7	9.0

Recommendation

That Medical Oncologist requirement planning for the Regional Cancer Centre should be based on one per 180 new patients and an expectation that the referral to oncology will be at 44% of cancer cases in 2006 and 50% by 2011. This indicates a need for 5.9 FTE Medical Oncologists in 2006 increasing to 7.6 by 2011. It must also be recognised that Medical Oncologists tend to be full-time employees as there is no private oncology service in the Midland region.

The option by 2006 for two Medical Oncologists to be based in the Bay of Plenty and one based in the Lakes region is noted.

Radiation Oncology

The New Zealand National Service Specification for Radiation Oncology[15] provides the following definition – radiation oncology services provide radiation treatment for patients. These are mainly, but not exclusively, patients with malignant tumours. Radiation services include external beam radiation treatment using megavoltage or kilovoltage machines and brachytherapy using sealed and unsealed radiation isotope sources. Other supportive care and ancillary treatments may be provided during radiation treatment including chemotherapy. Most treatments can be provided as an outpatient in the radiation oncology department.

The delivery of radiation services is to provide:

- Radical treatment for cure or long-term control of cancer and improve cancer free survival;
- Palliative treatment for control of symptoms caused by cancer to improve quality of life;
- Treatments that are delivered by methods to ensure maximum safety and minimise the risk of complications.

Radiation oncology procedures include[12]:

- Computerised treatment planning and simulation of external radiation treatment;
- Delivery of a defined radiation dose to a specific tissue volume with the intent of killing tumour cells while minimising irradiation of surrounding healthy tissue;
- Brachytherapy using sealed radioactive sources, which places the radiation source near or in the tumour;
- Brachytherapy using unsealed radioactive sources eg, I^{131} and P^{32}. Radioactive material is administered in a liquid form that delivers a therapeutic dose to the target tissue by means of preferential absorption of the radioactive isotope by chemical targeting.

CURRENT SITUATION

Radiation therapy requires both workforce and equipment in order to provide appropriate services to the population. Waikato currently employs:

- Radiation Oncologists - 5 FTE - 1 vacancy
- Medical Physicist - 4 FTE - 2 vacancies
- Radiotherapists - 22.9 FTE- 1 vacancy

All radiation therapy is provided from the Cancer Centre in Hamilton, although outpatient clinics are provided in the outreach centres of Thames, Tauranga, Whakatane, and Rotorua.

Currently there are three Linear Accelerators at the Regional Cancer Centre based at Health Waikato. One of the machines (a single machine unit (SMU)) is now over 15 years old) is due for

replacement or upgrading. A fourth linear accelerator is expected to be in place in 2005, at which time the current SMU is to be decommissioned for upgrading.

The only High Dose Brachytherapy unit (HDR) in New Zealand is also based at the Regional Cancer Centre. Capital and Coast DHB are considering the purchase of an HDR brachytherapy unit as a part of their new regional hospital development. Other cancer centres in New Zealand use LDR brachytherapy, which is more limited in its application.

HDR brachytherapy use at the Regional Cancer Centre is likely to increase with the recent training of a radiation oncologist in this technique and the increasing reports in the literature of the options and advantages of this therapy, either alone or in combination with external beam radiation therapy[16].

HUMAN RESOURCES

New Zealand has recommended that each radiation oncologist will manage 250 treatment courses per year[12]. This is in line with recommendations in Australia and the United Kingdom, however Canada recommends 190 treatment courses per radiation oncologist. The Non-Surgical Cancer Treatment Working Party does acknowledge that 250 may underestimate the real requirement, as it does not fully allow for evolving work practices, changing complexity of the specialty and the considerable work-related stresses.

In addition the working party has recommended an average of 8 radiation therapists per linear accelerator where a standard eight hours of service is provided by each machine daily. This excludes management or tutor positions. The national guideline for medical physicists is 2 physicists per linear accelerator.

Table 11. Predicted Radiation Therapy Staffing Requirements

		Treatment Courses	Radiation Oncologists	Radiation Therapists	Med Physicists
RCC Total	2001	1281	5.1	23.2	5.8
	2006	1748	7.0	31.7	7.9
	2011	2484	9.9	45.0	11.3
RCC Including Tairawhiti	2001	1364	5.5	24.7	6.2
	2006	1854	7.4	33.6	8.4
	2011	2608	10.4	47.3	11.8
RCC including Taranaki	2001	1511	6.0	27.4	6.8
	2006	2053	8.2	37.2	9.3
	2011	2827	11.3	51.3	12.8
Midland DHB Total	2001	1594	6.4	28.9	7.2
	2006	2159	8.6	39.1	9.8
	2011	2951	11.8	53.5	13.4

RCC = Regional Cancer Centre

These volumes are based on the following assumptions:

- Linear accelerator numbers as identified in Table 13
- 2001 - 35% cancer cases having access to radiation therapy treatment
- 2006 – 40% cancer cases having access to radiation therapy treatment
- 2011 – 50% cancer cases having access to radiation therapy treatment
- One radiation oncologist per 250 treatment courses

- Eight radiation therapists per linear accelerator – based a 40-hour week and working on a single machine
- Two medical physicists per linear accelerator – based on a 40-hour week.

EQUIPMENT

The equipment required in a radiation oncology centre is:

- Simulator unit – an x-ray machine used to delineate the area to be treated;
- Planning computer that calculates radiation dose distributions for individual patients;
- A linear accelerator – a high-energy x-ray treatment machine (megavoltage);
- A kilovoltage machine – a low dose x-ray treatment unit.

Optional equipment includes:

- Low dose brachytherapy unit (LDR);
- High dose brachytherapy unit (HDR);
- Stereotactic radiosurgery system.

The United Kingdom recommendation is that all linear accelerator machines should have multi-leaf collimators (MLC) and portal imaging and be replaced every 10 years[17]. The Australian recommendation is that no services should be undertaken on linear accelerators over 20 years of age from the end of 2002 and that linear accelerators are replaced before they reach 12 years of age from the end of 2004 and thereafter[18].

It is important to ensure appropriate planning for new radiation therapy equipment as the time taken to build bunkers and install, acceptance test and commission equipment is significant. The UK estimate from 9 – 14 weeks for a linear accelerator dependent on type and ancillary equipment[17].

Planning for linear accelerators (LA) in New Zealand should be based on the following:

- 7500 attendances per LA per year[ROAC];
- Retreatments – 25% = 1875 treatments per LA[12];
- 1% non-notifiable conditions treated = 75 per LA[a];
- New patients – av 17 attendances per patient = 326 new patients per LA;
- Expect 50% cancer patients to have access to radiation therapy by 2011[12, 15, 19 20].

Table 12 identifies the number of Linear Accelerators needed to provide radiation therapy services to the populations within the Midland DHB region. The intervention rate for radiation therapy in NZ is about 36-39% currently, with similar rates across the country (as per Graham Stevens, Otago DHB). This is consistent with the current position of other countries such as Australia and the United Kingdom. It is estimated that in New Zealand 45 - 55 percent of patients who have cancer would benefit from access to radiation therapy[12]. This is consistent with the World Health Organisation recommendation[19].

Currently all linear accelerators are situated at the Regional Cancer Centre in Hamilton. While the fourth linear accelerator will be installed in 2005, there is need to plan for a fifth machine to be installed in 2007 - 08. Assuming there is a relatively linear increase in cancer cases and a move to 50% cases having access to radiation therapy then this machine would be fully utilised in 2009. There is an option that this machine could be based in Tauranga with the radiation therapy need identified in the Bay of Plenty. Not all types of radiation therapy would expected to be delivered at a

[a] Non-notifiable conditions are believed to be 11% of radiotherapy treatments in Victoria, Australia. This figure includes treatment of non-malignant conditions including skin cancers. The Waikato radiation oncologists believe 1% is an appropriate figure to use in planning for linear accelerators, as these are frequently short treatments. The current low level of these treatments undertaken may be a reflection of the perceived difficulty of access to radiotherapy.

satellite service as more complicated, specialised, simulation and planning services would continue to be delivered from the main centre.

If a linear accelerator were based in Tauranga, there would not be a need for a simulator or planning computer on site, as this service would be provided from Waikato. This would also impact on the staffing requirements for the outreach service. It is estimated that one medical physicist and three – four radiation therapists would be required on site. Waikato staff has indicated that staffing an outreach service in Tauranga would not be difficult, as the increase in training throughput will ensure there will be adequate trained staff in New Zealand within the required timeframe. The service would be run as a satellite service from Waikato with full back up for machines and staff provided from or at the Regional Cancer Centre.

Table 12. Predicted Linear Accelerator Requirements for the Regional Cancer Centre

	BoP	Lakes	Waikato	WCC Total	WCC Inc Tairawhiti	WCC inc Taranaki	Midland DHB Total
Cancers Predicted **2001**	902	405	1397	2704	2879	3190	3366
35% Rxt	316	142	489	946	1008	1117	1178
LA required	1.0	0.4	1.5	2.9	3.1	3.4	3.6
Cancers Predicted **2006**	1099	518	1613	3229	3425	3793	3988
40% Rxt	440	207	645	1292	1370	1517	1595
LA required	1.4	0.6	2.0	**4.0**	4.2	4.7	4.9
Cancers Predicted **2011**	1295	555	1821	3671	3854	4178	4361
50% Rxt	648	278	911	1836	1927	2089	2181
LA required	2.0	**0.9**	**2.8**	**5.6**	**5.9**	**6.4**	**6.7**

There is no absolute requirement for a radiation oncologist to be on site during treatment; however, there is some debate about this need from the Waikato radiation oncologists consulted. Currently a radiation oncologist is not on site at all times at the Waikato Centre during radiation therapy treatments but they are and would continue to be available by phone at all times. Should a linear accelerator be situated in Tauranga there would be a requirement for additional follow-up clinics on-site in Tauranga, as patients are reviewed weekly while undergoing radiation therapy treatment.

It should be noted that in August 2000 Australia placed a five-year moratorium on single linear accelerator facilities in rural areas, pending the outcome of the National Radiotherapy Single Machine Unit (SMU) Trial of three outreach sites from Peter MacCallum Cancer Institute is known. The main reason for the moratorium appears to be that in the past SMU's have been established without apparent due consideration of staffing or support service needs. The outcome of this moratorium is expected in 2005-06. Note: For the purposes of the Moratorium, all of Australia is considered rural except major urban centres with a population of more than 100,000. The result should be considered in the decision of where the fifth linear accelerator is placed.

Recommendation

That planning for linear accelerators should be based on 50% of cancer cases having access to radiation therapy. Planning for a fifth linear accelerator should be undertaken to allow installation for the 2007-08 year. That consideration should be made for this machine to be based in Tauranga as a satellite service managed from the Regional Cancer Centre – depending on the outcome of the Australian National Radiotherapy Single Machine Unit (SMU) Trial.

That a review of radiation oncology staffing be undertaking based on the proposed FTE levels for 2006 of 7 radiation oncologists, 32 radiation therapists, and 8 medical physicists.

Surgery

It is generally accepted that approximately 80% of patients who develop cancer will require surgery[21]

Some breast, colorectal and skin cancer surgery is undertaken at Tauranga, Whakatane, Rotorua, Thames, and Waikato Hospitals. Most other cancer surgery, including head and neck, lung, and plastic surgery is provided at Waikato Hospital. Access to breast reconstruction surgery has been raised as a concern by surgeons.

Concern in relation to the ability of Waikato to provide gynaecology cancer surgery has been raised following the retirement of a surgeon in December 2002. Patients are currently referred to Auckland Hospital but issues in relation to delays and communication have been raised. Discussion with the Head of Department at Health Waikato has indicated the following: gynaecology cancer became a new specialty in 1998; the more complicated surgery is provided from Auckland Hospital while some of the lower level surgery is undertaken at Health Waikato; the national approach is that gynaecology cancer surgery is undertaken by three DHBs – Auckland, Wellington, and Christchurch. Currently the Auckland surgeons are too busy to travel to any outreach site. A regional approach and plan for gynaecology cancer surgery may benefit the service by identifying the issues and concerns.

As in most countries, cancer surgery in New Zealand has developed as a component of a general surgical service, without formal links to other cancer treatment services. It is now well recognised that the relationship between surgeons and other members of the cancer service team is critical and this has begun to develop more formally with a number of multi-service meetings (MSM) taking place within the region.

Waikato Hospital holds MSM for most services (head and neck, colorectal, breast, lung etc). Staff involved include: surgeons, registrars, house surgeons, radiologists, pathologists and both medical and radiation oncology. Nursing and allied health staff may attend all meetings but have indicated that the number of meetings and time available restrict their attendance.

Thames Hospital surgeons are not currently involved in MSM, although the newest surgeon has an interest in breast surgery and is to undertake this work at Thames and will then participate in the breast MSM.

Tauranga Hospital holds radiology meetings at which surgeons, radiologists, and pathologists attend. Oncologists do not attend these meetings.

Whakatane Hospital does not hold MDMs on site, however the two breast surgeons attend the breast MSM held in Rotorua each fortnight.

Rotorua Hospital holds two MSM's, the fortnightly breast meetings, and the oncologists meet with the surgeons, pathologist, and radiologists on alternate Fridays.

Meetings with the surgeons and surgical business managers at Waikato, Bay of Plenty, and Lakes DHBs identified the following issues:

- That all service teams should be represented at multi-service meetings– diagnostics (radiology and pathology) surgical, medical and radiation oncology.
- The need for coordination of the meetings including: time, place, patient list for review diagnostic data etc.
- The need for better information systems and clerical support to enable data collection to provide clinical monitoring of performance.

Further information regarding the development of the regional multidisciplinary approach is included in the Service Coordination section.

Support Services

Nursing

Waikato Hospital has experienced oncology and haematology registered nurses who provide services to oncology and haematology inpatients and outpatients. The haematology and oncology nurses who work in the outpatient clinics also provide chemotherapy to patients on a rostered basis. There is a haematology and an oncology clinical nurse specialist attached to the Cancer Centre.

Oncology nursing services are provided at Tauranga, Whakatane, Rotorua, and Thames Hospitals in the outpatient setting, delivering chemotherapy, and support to patients, and in the community through District Nursing. Chemotherapy is administered in Taupo by the nurses from Rotorua. Some chemotherapy is also administered at Taumaranui Hospital from time to time. If admitted to Bay of Plenty or Lakes DHB hospitals, oncology and haematology patients are admitted and cared for by General Physicians on General Medical wards (for non-surgical admissions).

All staff in the outreach centres are employed locally and have no formal links with the cancer centre. All staff consulted indicated the very positive relationship they have with the visiting clinical staff and the ease with which they are able to contact them and discuss any concerns. Policies and procedures are Regional Cancer Centre based and outreach staff are invited to attend study days held at Waikato. Concerns have been expressed about the risks that the chemotherapy nurses face due to the lack of local supports systems and formal protocols with the Regional Cancer Centre. Oncology and haematology Clinical Nurse Specialists are employed at the Regional Cancer Centre but have little contact with the staff outside of the Regional Cancer Centre

CHEMOTHERAPY

It is difficult to find workforce recommendations for chemotherapy nurses. The ratio of one nurse to three to four patients per shift is perceived as an appropriate rate by nursing staff in the Waikato and Tauranga centres.

Table 13. Predicted Number of Chemotherapy Nursing Staff required per facility

	Bay of Plenty DHB		Lakes DHB		Waikato DHB	
	Tauranga Hospital	**Whakatane Hospital**	**Rotorua Hospital**	**Taupo Hospital**	**Waikato Hospital**	**Thames Hospital**
2006	5.4	1.6	2.3	1.1	8.8	1.8
2011	8.6	2.4	3.2	1.5	13.2	2.8

These volumes are based on the following assumptions:

- Chemotherapy volumes as predicted in Table 20;
- One registered nurse: 3.5 patients;
- 260 days per year,
- 0.19 FTE leave allowance.

An indication of the number of chemotherapy chairs required in a treatment unit has been calculated for the Australian State of Victoria[13]. They have assumed that chairs are available five days per week, 52 weeks per year, giving 260 treatment days. Median treatment duration of 124 minutes indicates the feasibility of using each chair for at least two and possibly three treatments per day. With 85% occupancy, this would enable between 442 and 663 treatments per chair per

year to be carried out. The chairs in most centres are also used for blood transfusions or other treatments, which will affect the estimate, but allowing 4 – 6 hours in an eight-hour working day provides a considerable margin for variability. However, if the chairs are used to administer a significant number of 'other' treatments then it is likely that the higher of the range will be required.

Table 14. Predicted number of Chemotherapy Chairs required per facility

	Bay of Plenty DHB		Lakes DHB		Waikato DHB	
	Tauranga Hospital	Whakatane Hospital	Rotorua Hospital	Taupo Hospital	Waikato Hospital	Thames Hospital
2006	6-9	2-3	3-4	1-2	10-15	2-3
2011	10-15	3-4	4-5	2-3	15-23	3-5

These volumes are based on the following assumptions:

- Chemotherapy volumes as predicted in Table 20;
- 442-663 treatments per chair per year (based on 5 days per week, 52 weeks per year, median 124 minutes per treatment and 85% occupancy).

Recommendation

Each DHB should review the number of Chemotherapy Nurses required in the future based on the predictions included in the plan. The likely number of chemotherapy chairs has also been predicted.

It is recommended that consideration be given to the appointment of a Regional Oncology Liaison Nurse. That the prime responsibility of this position be to facilitate the coordination of outreach oncology services within the Midland Regional Cancer Service, including: regular contact with chemotherapy nursing staff, maintenance of regional cancer service protocols and procedures, and involvement with the professional development and education of outreach oncology nursing staff.

Radiology

Radiology services in each DHB are currently providing appropriate services to meet the needs of oncology patients, as the majority of radiology needs are part of a planned treatment process, however this is impacting on other workload as the numbers increase.

Nuclear Medicine is provided from the centre at Health Waikato. Nuclear Medicine services are those where the patient gets an intravenous injection of a minute trace of radioactive material, which attaches to a certain type of molecule. The type of radioactive tracer and the type of molecule vary, depending on which part of the body is to be examined. Scans are obtained with a gamma camera, which unlike some other radiology devices does not itself emit radiation

A new technology that is used to provide improve diagnostic technique for some cancer patients is Positronic Emission Tomography (PET) scanning. PET is considered particularly effective in identifying whether cancer is present or not, if it has spread, if it is responding to treatment, and if a patient is cancer free after treatment.

The international literature indicates that better imaging with PET scanning has altered treatment options for a number of patients. The United Kingdom has recommended[22] that each cancer network should have access to a dedicated PET facility attached to a radiotracer production facility. This is to enable the full range of PET tracers to be available on at least one site within the network.

Health Waikato has approval to purchase a gamma camera that is PET compatible. However the business case for the PET isotope maker has yet to be developed and may be some time away. It is understood that the Auckland DHB are also reviewing options in relation to a PET scanner. Computerised tomography (CT) and magnetic resonance imaging (MRI) equipment may be linked to radiation therapy treatment planning systems. In the future PET linkages are also likely.

Laboratory

Discussions with the Clinical Support Services Manager at Health Waikato and the Bay of Plenty MedLab Acting Manager identified the main issue for laboratory services as the rapidly increasing workload in relation to cancers. Other concerns include:

- Which DHB is responsible for the diagnostics provided at work-up? Clarification of this issue is required and it is essential that the specialist and the service understand the outcome.
- Transfusion requirements for haematology and oncology patients are becoming more complex as patients survive longer and have more blood transfusions. This has led to patients with multiple antibodies and the need to find compatible blood from across New Zealand. The current NZ Blood Service computer system makes this a time consuming process.
- An operational issue to be noted is that laboratory request forms should indicate where a patient is post transplant or receiving GCSF or GMCSF.

Pharmacy

During the consultation for this paper all DHB's commented on the cost of chemotherapeutic agents and the inadequacy of the current payment. It is anticipated that two factors that may influence the cost of pharmaceuticals in the near future.

1. Currently Baxter Pharmaceuticals has a monopoly on the preparation and supply of prepared injectable chemotherapeutic agents to DHB's in the Midland region, with the exception of Tairawhiti who purchase chemotherapy from Hawkes Bay Hospital. It is understood that a second company is planning to enter this market and this is likely to have a competitive effect on pricing.
2. PHARMAC is to undertake the purchasing of all hospital pharmaceuticals (including chemotherapeutic agents) from July 2005. Based on PHARMAC's history of achieving competitive prices within the market it is anticipated that this result in better pricing structures for the DHBs.

However, the increasing use of chemotherapy and the development of new agents (including oral preparations) will inevitably mean an increasing cost of chemotherapy for all DHBs.

The MoH document 'Improving Non-Surgical Cancer Treatment Services in New Zealand'[12] made a number of recommendations in relation to pharmacy services. The Pharmaceutical Society of New Zealand has provided a response to these recommendations and this letter is attached as Appendix 3. In the main this letter indicates that a number of the recommendations made have been addressed to enable better access to pharmaceutical services for oncology. At this time, there is still a shortage of suitably trained clinical oncology pharmacists.

Other Support Services

Allied Health and psychosocial services for cancer patients are managed at an individual DHB rather than a regional level, and as such are not included in this plan. Services required at a DHB level include dieticians, physiotherapists (including lymphoedema management), social workers, psychologists, palliative care, and spiritual care. In addition, primary care and community services provide general practice, community nursing, palliative, and other such services that are critical components of cancer patient care.

The perceived lack of a full palliative care service in the Bay of Plenty and Lakes regions has been identified as a concern to the Oncologists. Anecdotally, it is believed that patients from these regions are seen for longer in the Oncology service, than those from Waikato who are discharged to the Palliative Care service at an earlier time. As the DHBs undertaken initiatives in relation to Palliative Care, it is imperative that the appropriate stakeholders, including surgeons and oncologists, are informed of the changes.

Transport and accommodation supports for patients and their family and whanau are an essential component of any regional service. If the place of service delivery changes e.g. if radiation therapy is provided at Tauranga Hospital, it will be important to ensure that support services, such as these are available. Transport options should also be considered for patients while clinics are held away from the patients closest facility. This situation is likely to continue until there is a full complement of clinicians.

Contracting and Funding

DHB Agreements

The Waikato Regional Cancer Centre provides oncology services to three of the Midland District Health Boards – Waikato, Bay of Plenty, and Lakes. Taranaki and Tairawhiti currently purchase the majority of services through Mid-Central DHB.

Contract volumes as provided by each of the Regional Cancer Centre DHB's for haematology and oncology services are identified in Tables 9 and 10 below.

Table 15. Actual contract volumes for Haematology and Oncology Services by DHB for the 2003 and 2004 fiscal years.

2003		Waikato	BoP	Lakes	BSA*	Total	Change 2003-04 %
M30001 Haematology - Inpatient Services	Caseweight	1178.54	9.44	0		**1187.98**	
M30002 Haematology - 1st attendance	Attendance	502	2	35		**539**	
M30003 Haematology - Subsequent attendance	Attendance	3181	1064	358		**4603**	
M30004 Haematology - Chemotherapy	Attendance	44	0	0		**44**	
M50001 Oncology - Inpatient Services	Caseweight	1038.41	1.30	0.00		**1039.71**	
M50002 Oncology - 1st attendance	Attendance	1616	48	4	74	**1742**	
M50003 Oncology - Subsequent attendance	Attendance	7028	2033	774	271	**10106**	
M50004 Oncology - Chemotherapy	Attendance	5972	3752	1391	162	**11115**	
M50005 Oncology - Radiotherapy	Attendance	18117	0	0	1102	**20038**	
2004							
M30001 Haematology - Inpatient Services	Caseweight	1075	10	0		**1085**	-8.7%
M30002 Haematology - 1st attendance	Attendance	428	4	39		**471**	-12.6%
M30003 Haematology - Subsequent attendance	Attendance	2755	1084	395		**4234**	-8.0%
M30004 Haematology - Chemotherapy	Attendance	230	0	0		**230**	422%
M50001 Oncology - Inpatient Services	Caseweight	1225	3	0		**1228.59**	18.2%
M50002 Oncology - 1st attendance	Attendance	1692	64	7	58	**1821**	4.5%
M50003 Oncology - Subsequent attendance	Attendance	7634	2022	779	308	**10743**	6.3%
M50004 Oncology - Chemotherapy	Attendance	6386	3528	1668	57	**11582**	4.2%
M50005 Oncology - Radiotherapy	Attendance	18736	0	0.00	1351	**20087**	0.24%

* Breast Screen Aoteoroa

NB: The apparent large increase in haematology chemotherapy is presumed to be due to a coding split between haematology and oncology chemotherapy. The overall increase of chemotherapy volumes is 6%.

During the collation of this data, issues relating to coding were identified at Lakes and Waikato DHBs. These issues have been corrected and should not recur.

Table 16. Volumes by facility by contract and actual for the 2003 and 2004 fiscal years

Table 14a

Waikato	**Waikato**		**Thames**		**Te Kuiti**		**Tokoroa**		**Taumaranui**		**Total**		
2003	Contract	Actual	Contract	Actual	Contract	Actual	Contract	Actual	Contract	Actual	**Contract**	**Actual**	
M30001 Haematology - Inpatient Services	1095	1179	0	0	0	0	0	0	0	0	**1095**	**1179**	
M30002 Haematology - 1st attendance	550	472	48	30	0	0	0	0	0	0	**598**	**502**	
M30003 Haematology - Subsequent attendance	2861	2986	200	195	0	0	0	0	0	0	**3061**	**3181**	
M30004 Haematology - Chemotherapy	0	44	0	0	0	0	0	0	0	0	**0**	**44**	
M50001 Oncology - Inpatient Services	1147	1033	0	0	0	0	0	0	0	0	**1147**	**1033**	
M50002 Oncology - 1st attendance	1100	1619	10	2	0	0	0	0	0	0	**1110**	**1616**	
M50003 Oncology - Subsequent attendance	8500	6845	230	183	0	0	15	0	0	0	**8745**	**7028**	
M50004 Oncology - Chemotherapy	4276	5476	300	414	0	0	0	0	0	82	**4576**	**5972**	
M50005 Oncology - Radiotherapy	25000	18117	0	0	0	0	0	0	0	0	**25000**	**18117**	
													Extrapolated to 30Jun04
2004		as at Apr-04											
M30001 Haematology - Inpatient Services	1095	896	0	0	0	0	0	0	0	0	**1095**	**896**	**1075**
M30002 Haematology - 1st attendance	550	351	48	6	0	0	0	0	0	0	**598**	**357**	**428**
M30003 Haematology - Subsequent attendance	2861	2212	200	84	0	0	0	0	0	0	**3061**	**2296**	**2755**
M30004 Haematology - Chemotherapy	0	83	0	109	0	0	0	0	0	0	**0**	**192**	**230**
M50001 Oncology - Inpatient Services	1147	1021	0	0	0	0	0	0	0	0	**1147**	**1021**	**1225**
M50002 Oncology - 1st attendance	1100	1410	0	0	0	0	0	0	0	0	**1100**	**1410**	**1692**
M50003 Oncology - Subsequent attendance	8500	6369	10	2	0	0	15	0	0	0	**8525**	**6362**	**7634**
M50004 Oncology - Chemotherapy	6000	5139	230	137	0	0	0	0	0	46	**6230**	**5322**	**6386**
M50005 Oncology - Radiotherapy	22100	15232	300	381	0	0	0	0	0	0	**22400**	**15613**	**18736**

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Table 14b

Bay of Plenty	**Tauranga**		**Whakatane**		**Total**		
2003	Contract	Actual	Contract	Actual	Contract	Actual	
M30001 Haematology - Inpatient Services	0	6.36	0	3.08	0	**9.44**	
M30002 Haematology - 1st attendance	0	2	0	0	0	**2**	
M30003 Haematology - Subsequent attendance	835	1064	0	0	835	**1064**	
M30004 Haematology - Chemotherapy	0	0	0	0	0	**0**	
M50001 Oncology - Inpatient Services	0	1.30	0	0	0	**1.30**	
M50002 Oncology - 1st attendance	270	48	0	0	270	**48**	
M50003 Oncology - Subsequent attendance	2128	2033	0	0	2128	**2033**	
M50004 Oncology - Chemotherapy	2422	2926	839	826	3261	**3752**	
M50005 Oncology - Radiotherapy	0	0	0	0	0	**0**	
							Extrapolated to 30Jun04
2004		as at Apr-04					
M30001 Haematology - Inpatient Services	0	8.53	0	0	0	**8.53**	**10**
M30002 Haematology - 1st attendance	0	3	0	0	0	**3**	**4**
M30003 Haematology - Subsequent attendance	835	902	0	1	835	**903**	**1084**
M30004 Haematology - Chemotherapy	0	0	0	0	0	**0**	**0**
M50001 Oncology - Inpatient Services	0	2.83	0	0	0	**2.83**	**3**
M50002 Oncology - 1st attendance	270	53	0	0	270	**53**	**64**
M50003 Oncology - Subsequent attendance	2128	1685	0	0	2128	**1685**	**2022**
M50004 Oncology - Chemotherapy	2422	2330	839	610	3261	**2940**	**3528**
M50005 Oncology - Radiotherapy	0	0	0	0	0	**0**	**0**
NB: All Haematology chemotherapy is coded to PUC M50004							

Table 14c

Lakes	**Rotorua**		**Taupo**		**Total**		
2003	Contract	Actual	Contract	Actual	**Contract**	**Actual**	
M30001 Haematology - Inpatient Services	0	0	0	0	**0**	**0**	
M30002 Haematology - 1st attendance	45	35	0	0	**45**	**35**	
M30003 Haematology - Subsequent attendance	323	358	0	0	**323**	**358**	
M30004 Haematology - Chemotherapy	0	0	0	0	**0**	**0**	
M50001 Oncology - Inpatient Services	0	0	0	0	**0**	**0**	
M50002 Oncology - 1st attendance	204	4	0	0	**204**	**4**	
M50003 Oncology - Subsequent attendance	806	774	0	0	**806**	**774**	
M50004 Oncology - Chemotherapy	1500	1157	0	234	**1500**	**1391**	
M50005 Oncology - Radiotherapy	0	0	0	0	**0**	**0**	
							Extrapolated to 30Jun04
2004		As at Mar-04					
M30001 Haematology - Inpatient Services	0	0	0	0	**0**	**0**	**0**
M30002 Haematology - 1st attendance	45	29	0	0	**45**	**29**	**39**
M30003 Haematology - Subsequent attendance	323	290	0	0	**323**	**296**	**395**
M30004 Haematology - Chemotherapy	0	0	0	0	**0**	**0**	**0**
M50001 Oncology - Inpatient Services	0	0	0	0	**0**	**0**	**0**
M50002 Oncology - 1st attendance	168	5	0	0	**168**	**5**	**7**
M50003 Oncology - Subsequent attendance	610	584	0	0	**610**	**584**	**779**
M50004 Oncology - Chemotherapy	1500	1027	0	224	**1500**	**1251**	**1668**
M50005 Oncology - Radiotherapy	0	0		0	**0**	**0**	**0**

Predicted DHB Contract Volumes Required

Oncology is provided primarily on an ambulatory basis and the prediction for contract volumes concentrate on outpatient clinics and chemotherapy volumes. While no predictions have been made for inpatient volumes it is important to recognise the growth in cancers will have an impact on the use of inpatient beds.

Outpatient Clinics

Table 17. First Specialist Assessment: Subsequent Attendance ratios - 2004 contract

DHB	Facility	Haematology		Oncology	
		Contract	Actual	Contract	Actual
Bay of Plenty	Tauranga	No FSA's contracted	1: 300	1: 7.9	1: 32
	Whakatane	No clinics contracted	-	No clinics contracted	-
Lakes	Rotorua	1: 7.2	1: 10	1: 3.6	1: 117
	Taupo	No clinics contracted	-	No clinics contracted	-
Waikato	Waikato	1: 5.2	1: 6.3	1: 7.7	1: 4.5
	Thames	1: 4.2	1: 14	1: 24	1: 69
RCC		**1: 6.8**	**1: 9**	**1: 7.1**	**1: 5.9**
Recommended Levels			**1:6[a]**		**1: 6 [b]**

[a] British Society for Haematology recommendations
[b] No benchmarks or recommended levels available – based on actuals for 2003 & 2004.

The ratio for oncology of 1: 6 FSA: F/ups based on actuals is currently weighted towards radiation oncology, as most patients see the specialist during each week of treatment. Best practice would suggest that the medical oncologists should review patients during (if required) and at the end of chemotherapy cycle. Patients treated in the outreach centres are not seen by an oncologist during their treatment cycle, while those treated at Health Waikato generally are. It is accepted that without the recommended number of medical oncologists it is unlikely that patients treated in the outreach clinics will be seen at the end of each chemotherapy cycle on a routine basis.

The following outpatient clinic volumes are based on the need for the population serviced by the facility – not necessarily, where the clinics should be held. Ideally, clinics should be held as close to the patient's home as possible but this must be balanced against travel time impacting on the workforce resource available. Currently few FSA's are provided outside of Waikato Hospital.

Predicting haematology clinic needs is complex as this specialty covers both malignant and transfusion services.

Table 18. Predicted Haematology Outpatient Clinic Contract Volumes Required for 2006 and 2011

	Bay of Plenty DHB		Lakes DHB		Waikato DHB		RCC
	Tauranga Hospital	**Whakatane Hospital**	**Rotorua Hospital**	**Taupo Hospital**	**Waikato Hospital**	**Thames Hospital**	**Total**
2006							
M30002 Haematology FSA	159	54	73	36	311	47	681
M30003 Haematology F/up	957	323	440	214	1867	282	4084
2011							
M30002 Haematology FSA	185	59	83	40	346	52	765
M30003 Haematology F/up	1109	355	495	242	2078	310	4588

Haematology clinic volumes are calculated using the following assumptions:

- Total FSA contract volumes for 2004 as baseline. Contract levels were not met in 2003 or 2004 at this level but large number of patients are currently waiting greater than six months for an FSA;
- DHB share based on population percent;
- FSA: F/up ratio of 1:6 for Haematology;
- Growth factor based on percent increase in over 45-year old population (more reflective of workload than total population).

Table 19. Predicted Oncology Outpatient Clinic Contract Volumes Required for 2006 and 2011

	Bay of Plenty DHB		Lakes DHB		Waikato DHB		
2006	**Tauranga Hospital**	**Whakatane Hospital**	**Rotorua Hospital**	**Taupo Hospital**	**Waikato Hospital**	**Thames**	**RCC**
Medical Oncology FSA	377	106	151	75	578	132	1419
Medical Oncology F/Ups	2263	638	907	447	3466	792	8514
Radiation Oncology FSA	343	97	137	68	525	120	1290
Radiation Oncology F/Ups	2400	677	962	474	3676	840	9029
2011							
Medical Oncology FSA	513	135	177	81	738	172	1816
Medical Oncology F/Up	3077	808	1060	485	4430	1033	10893
Radiation Oncology FSA	513	135	177	81	738	172	1816
Radiation Oncology F/Up	3590	943	1237	566	5169	1205	12709

Oncology volumes are based on the following assumptions:

- 44% of all cancer cases will be referred to medical oncology in 2006 (4.5% annual increase over cancer rate increase);
- 50% of all cancer cases will be referred to medical oncology in 2011 (4.5% annual increase until 50% referral rate reached);
- 40% of all cancer cases will be referred to radiation oncology in 2006
- 50% of all cancer cases will be referred to radiation oncology in 2011;
- FSA: F/up ratio of 1:6 for Medical Oncology;
- FSA: F/up ratio of 1:7 for Radiation Oncology.

Chemotherapy volumes

Predictions for chemotherapy volumes are difficult to make due to the variability in actual volumes by agreement and facility, as shown in Table 18, and the unknown affect of resource constraints on volumes delivered. Given that there are currently less patients than would be expected referred to Medical Oncology, and the 9% growth in medical oncology treatments, the expectation is the current volumes are significantly lower than may be expected in the next few years.

Table 20. Actual Chemotherapy volumes by DHB & BSA agreements and facility 2003 & 2004

Chemotherapy PUC	Bay of Plenty DHB			Lakes DHB			Waikato DHB				
2003	**Tauranga**	**Whakatane**	**BSA BoP**	**Rotorua**	**Taupo**	**BSA Lakes**	**Taumaranui**	**Thames**	**Waikato**	**BSA Waikato**	**Totals**
M30004 Haematology	0	0	NA	0	0	NA	0	0	44	NA	**44**
M50004 Oncology	2926	826	9	1157	234	8	82	414	5476	145	**11132**
Total	**2926**	**826**	**9**	**1157**	**234**	**8**	**82**	**414**	**5520**	**145**	**11176**
2004											
M30004 Haematology	0	0	NA	0	0	NA	0	131	100	NA	**230**
M50004 Oncology	2796	732	4	1369	299	5	55	164	6167	48	**11639**
Total	**2796**	**732**	**4**	**1369**	**299**	**5**	**55**	**295**	**6266**	**48**	**11870**
% change 2003-2004	-4.4%	-11.4%	-60.0%	18.4%	27.6%	-33.3%	-32.7%	-28.7%	13.5%	-66.9%	6.2%

Table 21. Predicted Chemotherapy Volumes 2006 & 2011

	Bay of Plenty DHB		Lakes DHB		Waikato DHB		
	Tauranga Hospital	**Whakatane Hospital**	**Rotorua Hospital**	**Taupo Hospital**	**Waikato Hospital**	**Thames**	**RCC**
2006							
M300004 Haematology Chemotherapy	415	122	173	84	674	140	1609
M500004 Oncology Chemotherapy	3736	1098	1559	759	6064	1260	14,482
Total Chemotherapy Volumes	4151	1220	1732	844	6738	1400	16,091
2011							
M300004 Haematology Chemotherapy	660	181	241	112	1009	213	2417
M500004 Oncology Chemotherapy	5940	1630	2172	1008	9085	1921	21,756
Total Chemotherapy Volumes	6600	1812	2413	1120	10,095	2135	24,173

These volumes are based on the following assumptions:

- Current ratio of 5.2 chemotherapy attendances per FSA;
- FSA rates as predicted in Tables 16 & 17;
- 4% per annum growth in chemotherapy treatments above FSA growth;
- A ratio of 10% haematology to 90% oncology chemotherapy volumes.

Recommendation

Provider arm contracts should utilise the available haematology, oncology and radiation therapy Purchase Units to enable monitoring, and ease of planning for services.

The Ministry of Health / DHBNZ should consider the development of separate purchase units for radiation oncology and medical oncology, inpatient DRGs and outpatient clinics. These are currently incorporated into a single Oncology purchase framework.

DHBs should negotiate with Waikato DHB the appropriate changes to contract volumes to ensure appropriate access to service is available. This should include the site of delivery for FSA and subsequent appointment clinics, acknowledging that not all clinics will be delivered at Rotorua, Tauranga, Thames, and Whakatane until there is a full complement of staff for the discipline.

Breast Screen Aoteoroa

Breast Screen Aoteoroa (BSA) contracts to provide mammography screening to women 50 to 64 years and funds the treatment costs for those women diagnosed with a malignancy. This includes surgical and oncology inpatient and outpatient visits and treatments. The Ministry of Health has indicated an intention to extend the eligibility for accessing the BSA programme to women aged between 45-50 years and 65-69 years. Women aged 65-69 years will be eligible from 1 July 2004 however; at the time of writing this paper it is not known when women between 45-69 years would be eligible.

The table below identifies the Oncology Services provided under the Breast Screen Midland agreement for Waikato, Lakes, and Bay of Plenty DHBs as identified by each DHB. The accuracy of this information has been questioned and bought to the attention of each DHB.

Table 22. Breast Screening Aoteoroa Oncology Actual Volumes by DHB

	2003		Waikato	BoP	Lakes	Total
M50.01	Oncology IP	Caseweight	0	0	0	**0**
M50.02	Oncology OP First	Each Attendance	70	2	0	**72**
M50.03	Oncology OP Follow up	Each Attendance	250	17	0	**267**
M50.04	Oncology Chemotherapy	Each Attendance	145	9	0	**154**
M50.05	Oncology Radiotherapy	Each Attendance	1102	0	0	**1102**
	2004		**Waikato**	**BoP**	**Lakes**	**Total**
M50.01	Oncology IP	Caseweight	0	0	0	**0**
M50.02	Oncology OP First	Each Attendance	56	1	1	**58**
M50.03	Oncology OP Follow up	Each Attendance	295	12	1	**308**
M50.04	Oncology Chemotherapy	Each Attendance	48	4	5	**57**
M50.05	Oncology Radiotherapy	Each Attendance	1351	0	0	**1351**

Recommendation

A recommendation is made that Breast Screen Midland should provide each DHB with a list of the NHI's of each women receiving treatment through the BSA agreement in order that DHB's can undertake a regular audit to ensure that accurate information is maintained and appropriate funding streams are accessed for treatment provided.

The proposed BSA changes are that women aged 45-49 years, some time in the future, and 65-69 years, from 1 July 2004m will be offered two yearly mammography screening. It is likely that some women in these age brackets will currently be receiving treatment through the DHB provider agreements, although it is anticipated that there is likely to be an increase in overall numbers, at least following the first screen, and that tumours may be identified earlier. An indication of the increase in volumes BSA expects are predicted from utilising papers provided by BS Midland and discussions with Ian Campbell, Chair Breast Screen Midland. These are provided in Table 23.

Table 23.	Women aged 45-49 years	Screening Volume @ 40% per annum	Referred for assessment (7% screened women)	Incidence @ 0.5% screened women @ first screen	Incidence @ 2.5% screened women at subsequent screen	Women aged 65-69 years	Screening Volume @ 32.5% per annum (two-yearly screen)	Referred for assessment (7% screened women)	Incidence @ 0.7% screened women @ first screen	Incidence @ 0.45% screened women at subsequent screen	Total Additional BSA Volumes for Women aged 45-49 and 65-69 Years				
Bay of Plenty											Population	Screening	Assessment	Treatment - first screen	Treatment - subsequent screens
2005	7370	2948	206	15	7	4510	1466	103	10	7	11880	4414	309	25	14
2006	7640	3056	214	15	8	4800	1560	109	11	7	12440	4616	323	26	15
2007	7860	3144	220	16	8	4950	1609	113	11	7	12810	4753	333	27	15
2008	8050	3220	225	16	8	4960	1612	113	11	7	13010	4832	338	27	15
2009	8110	3244	227	16	8	5140	1671	117	12	8	13250	4915	344	28	16
Lakes															
2005	3720	1488	104	7	4	1870	608	43	4	3	5590	2096	147	12	6
2006	3850	1540	108	8	4	1980	644	45	5	3	5830	2184	153	12	7
2007	3990	1596	112	8	4	2120	689	48	5	3	6110	2285	160	13	7
2008	4040	1616	113	8	4	2170	705	49	5	3	6210	2321	162	13	7
2009	4140	1656	116	8	4	2220	722	51	5	3	6360	2378	166	13	7
Waikato															
2005	12210	4884	342	24	12	6210	2018	141	14	9	18420	6902	483	39	21
2006	12490	4996	350	25	12	6570	2135	149	15	10	19060	7131	499	40	22
2007	12790	5116	358	26	13	6820	2217	155	16	10	19610	7333	513	41	23
2008	13640	5456	382	27	14	6920	2249	157	16	10	20560	7705	539	43	24
2009	13010	5204	364	26	13	7110	2311	162	16	10	20120	7515	526	42	23
Breast Screen Midland															
2005	23300	9320	652	47	23	12590	4092	286	29	18	35890	13412	939	75	42
2006	23980	9592	671	48	24	13350	4339	304	30	20	37330	13931	975	78	44
2007	24640	9856	690	49	25	13890	4514	316	32	20	38530	14370	1006	81	45
2008	25730	10292	720	51	26	14050	4566	320	32	21	39780	14858	1040	83	46
2009	25260	10104	707	51	25	14470	4703	329	33	21	39730	14807	1036	83	46
Tairawhiti															
2005	1640	656	46	3	2	790	257	18	2	1	2430	913	64	5	3
2006	1710	684	48	3	2	810	263	18	2	1	2520	947	66	5	3
2007	1790	716	50	4	2	840	273	19	2	1	2630	989	69	5	3
2008	1820	728	51	4	2	860	280	20	2	1	2680	1008	71	6	3
2009	1770	708	50	4	2	860	280	20	2	1	2630	988	69	5	3
Taranaki															
2005	4070	1628	114	8	4	2210	718	50	5	3	6280	2346	164	13	7
2006	4190	1676	117	8	4	2310	751	53	5	3	6500	2427	170	14	8
2007	4180	1672	117	8	4	2350	764	53	5	3	6530	2436	171	14	8
2008	4220	1688	118	8	4	2380	774	54	5	3	6600	2462	172	14	8
2009	4130	1652	116	8	4	2450	796	56	6	4	6580	2448	171	14	8

The assumptions used for these predictions are:
45-49 years

- 80% eligible women screened every two years
- 7% screened women referred for assessment
- 0.5% screened women have a cancer identified at the first screen
- 0.25% will have a cancer identified at a subsequent screen

64-69 years

- 65% eligible women screened every two years
- 7% screened women referred for assessment per annum
- 0.4%-screened women have a cancer identified at the first screen.
- 0.25% will have a cancer identified at a subsequent screen

Table 24. Predicted additional Breast Cancer Volumes due to BSA age extension

	Actual 2003		Actual 2004		2005 predicted BSA volumes		Predicted volumes BSA	
Age Group	**45-49**	**65-69**	**45-49**	**65-69**	**45-49**	**65-69**	**45-49**	**65-69**
					First Screen		**Subsequent screen**	
BoP	7	7	9	4	15	10	7	7
Additional Volumes					6	5		
Lakes	10	20	10	5	7	4	4	3
Additional Volumes					0	0		
Waikato	15	16	15	13	24	14	12	9
Additional Volumes					9	0		

The actual volumes in Table 24 have been provided by the respective DHBs. The reason for large variation in the Lakes volumes between 2003 and 2004 contract years is unknown. It would appear the greatest additional volumes are in the 45-49 year age group. The date at which these women will have access to free breast screening through BSA is not yet know. Due to relatively small numbers and the variations seen above actual additional volumes are difficult to predict accurately.

Service Co-ordination

Cancer service networking and coordination of services improves the integration, coordination, and continuum of care for patients across service settings and geographical areas. There are two main components to service coordination – one from the patient perspective to enable support across the continuum of care and the second from the treatment perspective to enable an integrated multidisciplinary approach to care with appropriate quality of service delivery across the cancer service.

Patient Focus

Care Coordination

A patient centred approach to care should aim to:

- Ensure cancer patients and their carers have access to the level of information and support they require to assist them through their cancer journey;
- Ensure that cancer patients receive care that is coordinated throughout the continuum of care;
- Minimise the physical and psychosocial impact of cancer on patients;
- Provide care that is tailored to meet specific physical, cultural, and psychosocial issues nominated by individual cancer patients and their carers through a process of routine assessment.

To support this approach, Care Coordinator's are employed in many cancer centres around the world, to work as a member of the cancer multidisciplinary team. The NSW Clinical Service Framework for Optimising Cancer Care[23] defines a Care Coordinator as: 'a nominated professional who facilitates patient-centred and integrated cancer care, and continuity of care across the continuum of care. The care coordinator may be a treating clinician or general practitioner in standard cases or a specialised coordinator in more complex cases. The care coordinator liaises with and coordinates service providers, provides patient and carer education and acts as a point of contact for all. Care coordinators' roles may be filled by specialist cancer nurses or other health professionals.'

Care coordinators facilitate the delivery of culturally appropriate services through linkages with Māori providers. This, together with primary prevention methods and effective screening and early detection specifically aimed at Māori, will help to address the higher mortality rates from cancer for Māori. Prevention, screening and early detection have not been addressed in this plan which focuses on treatment.

NSW has recommended that there should be one care coordinator position available for every 100 cancer patients recognised as needing specialised coordination of care who are treated in the Area Health Service. The responsibilities of the care coordinator could include:

- Coordinating the scheduling of procedures;
- Guiding the patient to information and services;
- Participating in multidisciplinary team meetings and communicating outcomes to the patient's general practitioner and community services as appropriate;
- Coordinating the implementation of the patient care plan including provision of information and referral to appropriate support services;
- Monitoring the implementation of care against the patient care plan.

- Developing linkages with community and primary care services, including Māori and ethnic support services.

Table 25. Predicted Number of Care Coordinators required per DHB

	Bay of Plenty	Lakes	Waikato	Tairawhiti	Taranaki
2006	5	2	7	1	2
2011	6	2.5	8	1	2

Assumptions used in predicting the number of care coordinators:

- Care coordinators will be appointed to patients receiving two or more treatment modalities;
- One care coordinator will support approximately 100 cancer patients per anum;
- The majority of patients referred to oncology services will also receive one other treatment modality.

During the consultation for this service plan, it became obvious that a number of staff in each DHB provide components of a care coordination role. Many of these are informal roles provided by staff working in different areas of service delivery, including nurses working in surgical services, breast care nurses, social workers, chemotherapy nurses etc. While many dedicated staff provide support to patients, there is no support that covers the continuum of care across all aspects of cancer services.

Care coordination roles may be DHB specific or service specific, they form an important coordination and communication role for any regional service. For the purpose of this plan it is recommended that care coordinators should be appointed to provide support to patients who have two or more modalities of care e.g. surgery and radiation therapy and/or chemotherapy. These patients will, in the majority of cases be travelling to receive their treatment and be crossing treatment services.

Recommendation

Care coordination is needed to ensure patients are supported through the treatment systems. This is variable across the region and the tumour groups. It is recommended that a review of current care coordination be undertake across the DHBs and options identified for improving links with community services and provider arm services (e.g. surgery, radiation therapy, medical oncology).

That care coordinators should be appointed to each patient receiving two or more treatment modalities. DHB's should consider appointing the number of care coordinators as per the predicted numbers in this plan. This will enable a patient focus across the continuum of care and improve efficiencies for services.

High-Risk Assessment Services

Traditionally the access to high-risk assessment services for cancers has been the Northern Regional Genetic Service at Auckland Hospital. This is a comprehensive genetic department aimed at consultation for people with or at risk of genetic disorders. Access to this service for Midland patients has been limited for a number of years due to funding constraints.

The medical oncologist employed at the Regional Cancer Centre from June is an experienced genetic oncologist. This provides an opportunity to investigate options for improving access to high-risk assessment services for patients with genetic predispositions to cancer.

Recommendation

The opportunity to investigate options for improving access to high-risk assessment services for patients with genetic predispositions to cancer should be undertaken with the appointment of the genetic oncologist.

Integrated Care

Integrated Multidisciplinary Care

A major report into cancer services in England and Wales published in 1995[24] (the Calman/Hine report) recommended changes in cancer service provision to increase multidisciplinary consultation and management. The UK revised Manual of Cancer Services Standards[25] provides the following objectives for a generic specialist multi-service disciplinary team (MDT):

- To ensure that designated specialists work effectively together in teams such that decision regarding all aspects of diagnosis, treatment and care of individual patients and decisions regarding the team's operational policies are multidisciplinary decisions.
- To ensure that care is given according to recognised guidelines (including guidelines for onward referrals) with appropriate information being collected to inform clinical decision making and to support clinical governance / audit.
- To ensure that mechanisms are in place to support entry of eligible patients to clinical trials, subject to patients giving fully informed consent.

The Commission for Health Improvement in England & Wales [26] commented that there is evidence that being cared for by a multidisciplinary team may improve outcomes and that although there is no research evidence on their cost-effectiveness, it has been suggested that multidisciplinary teams might result in savings by reducing the length of hospital stays or the need for readmission. A study of breast MDT meetings[27] established that MDT working is positively related to a range of measures of effectiveness, including quality of care. Also emphasised is the importance of distinction between management and administration – which needs a clear team lead, and clinical decision making - which is most effective in MDT meetings with a shared leadership style. The findings also indicate that working in teams may be beneficial to the mental health of members.

Multidisciplinary care relates to the team, communication, the full therapeutic range, standard of care and involvement of the patient. The term integrated multidisciplinary care (IMDC) is used to emphasis integration of the services provided, with the patient as the point of focus being essential. IMDC is based on the fact that, many people living with cancer require input from more that one treatment modality to optimise treatment and care. A team agrees on the diagnosis and staging of the disease and the best treatment option for the patient – considering the patient's preferences.

In an ideal world, both public and private providers of cancer care would participate in MDT or multi-service meetings (MSMs) as they are known by at Health Waikato. The current infrastructure is not conducive to enabling private clinicians to participate, even though the merits are understood.

MSMs are in place at Health Waikato for most tumour groups. However, a multidisciplinary team approach to care is not formalised in all services (e.g. urology) and across all DHBs. Further information on the current MSMs is included in the Clinical Services, Surgery section of this plan. Oncologists and surgeons at Waikato and the outreach facilities recommend that MSMs, leading to IMDC should be a priority.

The most favoured option of MSM is for staff in the outreach centres to link with the MSMs at Waikato. This improves linkages across the service and provides positive learning opportunities. The most effective mechanism for these MSMs to occur is utilising telemedicine links. Telemedicine provides the potential to improve access to high quality care irrespective of distance.

The minimum core group for a multi-service team approach would include the medical specialists that may be related to the diagnosis and treatment of a particular cancer. This group will generally include the disciplines of surgery, medical and radiation oncology, radiology, nursing, palliative care, and pathology[28]. A broader approach would include psychosocial, pharmacy, allied health, care coordinators, general practitioner, and the patient.

While ideally all new cancer cases should be presented to a MSM, it is recognised that this may not be practical. Where there is high volume, low complexity cases the MSM should agree a management protocol. It is essential to ensure that these patients have access to the same information and support services as those patients actually presented.

Co-ordinators to facilitate the collation of cases and staff for these meetings are essential for an efficient approach. MSM coordinator key tasks would include:

- Facilitating and coordinating the MSM meetings, including record attendance, definition of roles and responsibilities, procedure development;
- Obtaining lists of cases to be discussed and coordinating radiology imaging, case notes, histology etc;
- Record discussion, diagnosis, decision and treatment plan and ensure these are added to the patient notes;
- Collect and record data;
- Book and/or track appointments
- Ensure coordination and communication between the team and the related teams in the outreach facilities and communities – potentially through the care coordinator.

Remuneration for attendance and involvement in MSM meetings will need to be considered by DHB's, in particular for staff paid on a sessional basis.

The NHS Cancer Services Collaborative Improvement Programme has developed a Multidisciplinary Team Guide[29], which provides information on the development of effective MSMs.

The only service at Health Waikato that currently employs a cancer coordinator is respiratory medicine where a Lung Cancer Coordinator has recently been appointed. The primary focus of this position is developing efficiencies in systems and process rather than patient care. This coordinator has a role in coordinating the lung cancer MSM meetings. The other MSMs are managed by the surgeons and their administrative support. This has been sighted by the individuals as inefficient and there are no current MSM standards or procedures in place.

A review of the need from each DHB is required to determine the options for MSM coordination from Waikato with appropriate support from staff in each facility, or alternative options based at individual facilities – at least in the interim until telemedicine links are available.

Recommendation

Telemedicine links to the outreach sites – currently Tauranga, Whakatane, Rotorua and Thames are essential to facilitate integrated multidisciplinary care and the option for this technology to be installed at all sites should be undertaken. Telemedicine is even more critical in times of resource constraint and should be viewed as a priority.

Multidisciplinary coordinators are required for effective and efficient meetings. A review of the need of each DHB is required to determine options for the current situation (without full telemedicine links) and for the future when coordination from Waikato will be required for each tumour group, with appropriate support from staff in each facility.

Leadership

The outreach facilities currently provide cancer services without any involvement in planning and with little oncology service leadership. Options for improving this include:

- The Midland Region Cancer Service review recommended the establishment of a Regional Cancer Control Group. It is recommended that this group should be established to provide learning opportunities and identification of issues in relation to the implementation of the New Zealand Cancer Strategy for the region.
- Many of the major issues is relation to Cancer Services are dealt with at a national level, with a number of representatives, from Health Waikato, on the national working parties. It is recommended that 'ad hoc' Regional Cancer Treatment Working Parties should be established when the Midland DHBs do not feel the national working parties are meeting the needs of the region or there is a need to implement a national recommendation locally.
- Strategic planning –there is currently no 'owner' of Cancer Services' at Lakes or Bay of Plenty DHBs other than the DHB planning staff and medical and surgical business managers for service delivery. To enable the ongoing input of the DHBs to planning of cancer services it is recommended that the Chief Medical Advisors should consider this issue and make recommendations to the Chief Executives
- Clinical leadership of cancer services across the region is essential. A director or coordinator of cancer services should have responsibility for the development of cancer services across the continuum in accordance with good practice. The responsibilities of this Clinician would include:
    - The overall co-ordination and development of cancer services for the Regional Cancer Centre, including outreach sites.
    - Ensure tumour specific MSMs are established and there is an IMDC approach to service delivery; work with relevant stakeholders to develop and implement quality improvement programmes.
    - Collaboration with relevant stakeholders, including the Regional Cancer Control Group, to support and advice on implementation of the New Zealand Cancer Strategy;
    - Participate in clinical governance activities, which are of relevance to cancer services.
- Medical and nursing services, both chemotherapy and district nursing in the outreach centres, lack formal leadership and development opportunities in relation to oncology. Although Bay of Plenty DHB is looking to employ a Medical Oncologist, it is likely that this will take some time. It is recommended that Bay of Plenty and Lakes DHBs should consider the appointment of a Clinical Nurse Specialist or a Nurse Practitioner to provide a leadership role for cancer services. This role would link with the Waikato Centre through the oncology Liaison Nurse and with the Care Coordinators and MSM Coordinators to ensure effective delivery of cancer nursing, role for cancer services in each of the DHBs.

Recommendation

That a Regional Cancer Control Group should be established to provide learning opportunities and identification of issues in relation to the implementation of the New Zealand Cancer Strategy for the region.

That 'ad hoc' Regional Cancer Treatment Working Parties should be established when the Midland DHBs do not feel the national working parties are meeting the needs of the region or there is a need to implement a national recommendation locally.

To enable the ongoing input of the DHBs to planning of cancer services it is recommended that the Chief Medical Advisors should consider this issue and make recommendations to the Chief Executives.

Clinical leadership of cancer services across the region is essential. A director or coordinator of cancer services should have responsibility for the development of cancer services across the continuum in accordance with good practice.

Bay of Plenty and Lakes DHBs should consider the appointment of a Clinical Nurse Specialist or a Nurse Practitioner to provide a leadership role for cancer services. This role would link with the Waikato Centre through the Oncology liaison nurse and with the Care Coordinators and MSM coordinators to ensure an oversight role in for Cancer Services in each of the DHBs.

Role Designation

The establishment of cancer services has occurred over time on a relatively ad hoc basis. The recommendations here are to strengthen the development of the accepted 'hub and spoke' model of for cancer services delivery for the Regional Cancer Centre and the regions DHBs. As the need for staff to be based in the outreach centres grows, this model also provides for conjoint staff appointments, continuing education, research, and practice databases.

In determining options for the delivery of a regional service, DHB's should consider the following:

- When employing solo specialists, their needs in relation to reasonable hours of work, the ability to take time out, timely access to peers with whom they can have supportive consultations, ability to undertake research; the ability to participate in professional activities such as conferences and continuing medical education;
- Ensuring staff employed within a regional service recognise the need to provide as much care as possible at an appropriate facility as close to the patients home as is feasible;
- When DHBs are planning for outreach clinics due consideration should be given to a comprehensive approach whereby consultative clinics, such as medical oncology and radiation oncology, are provided conjointly, ideally from the same centre;
- Options for travel where travelling time is significant (e.g. >2 hours in each direction) should include flying, and where a number of staff are travelling to the same centre, the option of charter flights should be considered.
- Regular specialist outreach services should include appropriate transport, and reimbursement for travelling time and accommodation;
- The ability for specialist staff to undertake appropriate quality (including CME) and audit activities during the normal working week;
- The ability for recommended waiting times to be met when a proportion of the working day is spent travelling;
- A minimum of one clinic to be held per month to ensure new patients may be seen in an appropriate time frame;
- Clinic throughput should match the patient numbers entering the waiting list each month;
- Where travelling time is significant (e.g. >2 hours in each direction) consideration should be made for an overnight stay with clinics held on two consecutive days.
- Time should be available during the visit for the specialist to meet with other appropriate staff providing services at the outreach centre e.g. medical oncologists should meet with chemotherapy nursing staff and surgeons.

Options for surgical services are not discussed but it should be noted that quality issues, including the development of standards of care, in relation to cancer surgical services are the focus in a number of countries including the United Kingdom, Canada, and Australia.

In England and Wales the development of cancer centres and cancer units as part of a local network has been established to ensure the same quality standards occur and the right patient is assessed and treated in the right place by the right specialist MDT[30]. Three classifications of cancer units for sites outside of the main centre are proposed. The Australian State of Victoria has recommended five levels of cancer services[12] with Level 5 as the main cancer centre.

The following levels and support services have been developed based on a review of the England & Wales and the Victorian classifications, together with NSW Role Designation recommendations[31]: and have been developed with the needs of the Midland DHBs and the current level service provision at each facility considered. Where support service levels are indicated, these are as per the NSW Health Department (1992) Guide to the Role Delineation of Health Services and detailed in Appendix Four.

LEVEL ONE CANCER SERVICES

E.g. Taupo Hospital

- Capable of providing chemotherapy using pre-ordered materials. Dose adjustment would not be possible. A nurse trained in the administration of chemotherapeutic agents would be on site;
- No surgical oncology services would be available;
- No radiation oncology services would be available;
- Access to a Care Coordinator as per agreed policy;
- Patients should have access to rehabilitation services, but they would not necessarily be provided on site;
- Patients should have access to palliative care services, but they would not necessarily be provided on site;
- A registered medical practitioner would be on call but not necessarily on site;
- Level 1 service would be linked with higher-level services to meet other requirements in the continuum of cancer care.

LEVEL TWO CANCER SERVICES

E.g. Thames Hospital, Whakatane Hospital, Rotorua Hospital

As for Level 1 service with the addition of:

- Some surgical oncology services would be capable of carrying out: e.g. breast surgery, colon surgery;
- Surgical and diagnostic team involvement in multidisciplinary team meetings;
- Oncology clinics available on-site;
- Service supported by a general physician, MOSS or nurse practitioner with an interest in oncology;
- Pathology services would be available on site;
- Level 4 X-ray and CT scanning would be available on site;
- Level 4 anaesthetics, ICU and CCU;
- Level 5 pharmacy;
- Care Coordinator's available on-site for appropriate patients;

- Rehabilitation services would be available on site;
- Access to psychosocial support services;
- Access to palliative care services.

LEVEL THREE CANCER SERVICES

E.g. – potentially Tauranga Hospital in the future

As for Level 2 services with the addition of:

- On-site radiation therapy services would be available, linked to a Level 4 service;
- Access to simulation and computerised planning, not necessarily on-site;
- On-site oncology specialist and / or clinical haematologist;
- Level 5 pathology, x-ray and ICU:
- On-site palliative care services:
- May have pain clinics.

LEVEL FOUR CANCER SERVICES

E.g. Waikato – Regional Cancer Centre

As for Level 3 services with the addition of:

- Specialist surgical oncology services would be available in some or all of: neurosurgery, gynaecological surgery, head and neck surgery, upper gastro-intestinal tract surgery, thoracic surgery, paediatric surgery;
- Integrated multidisciplinary team care would be available;
- Specialist radiation oncology services would be available in some or all of the following areas: paediatric radiation oncology; radiosurgery; brachytherapy; including multiple linear accelerators with a fully integrated computer assisted, planning and treatment system with system(s) for verifying precision, planning and treatment modalities. Full safety, mechanical and biomechanical support facilities;
- Reference pathology services would be available on site;
- MRI would be available on site, PET may be available;
- Clinical Nurse Specialists or Nurse Practitioners are available;
- Level 5 anaesthetics
- Level 6 pathology, pharmacy, nuclear medicine, , ICU and operating suite services
- A very small number of Level 5 cancer facilities would be capable of carrying out allogeneic bone marrow transplants, either from donors related to the recipient patients, or from matched unrelated donors.

Recommendation

To strengthen the Hub and Spoke approach to services it is recommended that DHB's should also consider the options identified in relation to the site of service delivery and that the Role Designation approach to Cancer Services as identified be adopted.

Systems

Data

A number of data issues were identified during consultation and preparation of this plan.

- The lack of systems to collect clinical data to enable an understanding of staging, treatment, survival and recurrence rates across treatment modalities;
- The need to ensure timely and accurate data entry into systems
- The capacity to analyse information collected.
- The lack of systems to manage contract information across the District Health Boards to better enable the Waikato Cancer Service to manage and plan future needs.

Recommendation

Data systems – currently there is no system to collate or contract data across the DHBs or clinical data within or across services or DHBs. There is also no ability to monitor performance or recurrence rates across treatment modalities. The DHBs should ensure participation in the national working party on cancer information management to ensure the needs of the Regional Cancer Centre are addressed.

Clinical Trials

There is involvement with clinical trials through the Regional Cancer Centre. Limited clinical resource has restricted the number of clinical trials and the opportunities for patients living outside of Hamilton to participate. Many trials require patients to be seen on a more regular basis than has been feasible in the outreach sites with the number of clinicians available.

Research is a critical component of cancer services and is seen as an integral component of the oncologist and haematologist roles. Research has also demonstrated that patients enrolled in clinical trials tend to do better than those who don't, and there are often financial benefits to DHBs.

Recommendation

Access to clinical trials for all cancer patients should be improved, through adequate clinicians and support staff. There is currently little access to patients who live outside of the main centre. Clinical trials have recognised benefits for patients and financial benefit for DHBs.

International Precedents In Best Practice

Many countries in the world have identified cancer as a major cause of morbidity and mortality and have developed strategies to help manage all aspects of health care that relate to incidence and treatment of cancers. The themes for improving the service in each country are similar and can be summarised as:

- Patient focus through the continuum of care
- Integrated care through a multidisciplinary approach
- Resource - workforce & equipment

A brief outline of the planning priorities in different countries is provided here.

United Kingdom

The NHS Cancer Plan[32] was published in 2000 providing a national strategy to prevent, diagnose and treat cancer to reform the way cancer services are delivered; to standardise care and improve patient experience; to coordinate research, and to invest in equipment and the cancer workforce.

In April 2001, the UK established the NHS Modernisation Agency, which is designed to support the NHS and its partner organisations in the task of modernising services and improving experiences and outcomes for patients. To date, the Agency has focussed on four areas: improving access, increasing local support, raising standards of care, and capturing and sharing knowledge widely.

A number of guides have been established to assist leaders in determining options to improving services. These are available on the agency website[33].

The NHS Modernisation Agency, the Cancer Networks, and the National Cancer Programme have formed a Cancer Services Collaborative Improvement Partnership (CSC'IP"). The goal of the CSC'IP" is to improve the experience and outcomes for patients with suspected or diagnosed cancer, through service improvement at a local level using the collaborative methodology.

The CSC'IP' aims to:

- Provide certainty and choice for patients
- Pre-plan and pre-schedule care at times to suit patients
- Reduce unnecessary delays and restrictions on access
- Improve patient and carer experience
- Ensure that the patient receives the best care, in the best place, by the best person/team

The main targets are to:

- Reduce the time from initial GP referral (for suspected cancer) to first definitive treatment to 62 days,
- Increase the number of "booked" appointments to improve patient certainty and choice, and
- Increase the number of patients who are cared for by a full cancer services team (Multi-Disciplinary Team).

The CSC'IP" website[34] is an excellent resource on how the CSC'IP" is working towards its goal and provides practical examples and tools for change management processes, treatment guides and policies and procedures. The service improvement resource guides include, specific tumour groups, radiation therapy, chemotherapy, multidisciplinary team resource, and patient and carer experience

Scotland

In 2001, the Scottish Executive Health Department published Cancer Scenarios: An Aid to Planning Cancer Services in Scotland in the Next Decade.[35]. This document looks at specific tumour groups with data on the current situation and the future developments. The trends and developments are identified in the following summary.

Scotland has dedicated and well trained staff in its health service working hard to deliver high quality care to cancer patients. Over the past decades, the developments in the science of oncology have outstripped the capacity of the NHS to respond. If we are entering a period of financial growth with an opportunity to expand our services, it is essential to change the mechanism for planning that expansion. A sound future for cancer services requires:

- More active management of services

The modern management of cancer requires the collaboration of professionals from many different disciplines. No longer is it satisfactory to assume that a competent surgeon working alone constitutes a satisfactory arrangement for treating cancer. Multi-modality care is essential. Whether the cancer is common or rare, clinicians must work collaboratively, across institutional boundaries, to make appropriate expertise available to all patients in Scotland.

To facilitate better collaboration between clinicians who work in different settings, the concept of managed cancer networks has been developed. These networks, if supported appropriately, have the potential to reduce mortality and improve quality of service to patients in a number of areas.

Examples of service improvement sighted include:

- Reshaping of services for patients with head and neck cancer through the establishment of rapid access clinics working through clearly defined guidelines and patient pathways that might improve survival by up to 30% by 2010.
- Colorectal cancer mortality might be reduced by 10% in the coming 10 years through the establishment of a critical mass of specialist surgeons dealing with the disease and the better training of clinicians working in a better-organised environment.
- An estimate is made that the 5-year survival of patients might triple if the lung cancer service was organised and adequately resourced, including streamlining investigation of patients to reduce delays and establishing referral protocols to ensure access to multi-disciplinary teams.
- The importance of recognising laboratory specialists as integral members of the team is underlined in the discussion on lymphoma. Expertise in molecular pathology will become increasingly important, as more is understood about the genetics of the condition.
- The importance of active management of clinical systems is emphasised throughout this document and must become a feature of cancer services in the coming years. For each major cancer, clinicians and managers should begin to examine opportunities for reorganising referral, investigation, and treatment pathways to ensure that delays to care delivery are minimised. Opportunities to involve specialists must be taken.

- Consideration of centralisation of services for some cancers

Regional centres are advocated for the management of ovarian cancer, bladder and kidney cancer, pancreatic cancer, colorectal cancer and head and neck cancer.

Some of these cancers are relatively uncommon and the case for more centralisation is relatively easily made based on better patient survival. Others, however, are very common and centralisation of services could only occur at the cost of significant reduction in access for patients in remoter areas. It might be feasible to agree protocols for investigation that would allow patients to be assessed locally and referred to one or two centres for specialist surgery. If such arrangements are to be pursued, they should proceed on the basis of audit data, which demonstrates the enhanced effectiveness of specialist services. There is no point in making access for patients more

difficult unless it can be shown that they are being asked to travel to centres that will offer them real clinical benefit.

- Investment in new equipment

Investment in health care requires new resource and an efficient system in place to target it to necessary developments, leading to an expectation that significant advances can be made in the service infrastructure.

Probably the most pressing and expensive investment identified is for radiation therapy equipment. A need has been identified to expand the number of linear accelerators, planning equipment and brachytherapy machines over the next decade. There are other equipment needs, which have been identified. If patients with sinister symptoms are to be investigated promptly, it is likely that expansion of radiology and endoscopy facilities will be necessary.

- Investment in and better planning for training new staff

The increasing intensity with which cancer is treated has greatly added to the workload of most clinicians involved in treating cancers. In addition, the importance of a new range of disciplines in improving patient care has been appreciated over the past few years. Nurse specialists have proven themselves indispensable with patients and clinicians. Other disciplines such as clinical psychology have a contribution to make yet they are not well represented in Scotland's cancer services. Improving cancer care requires an approach to manpower planning that identifies need and is linked to the training system so that the relevant numbers of students can be taken into training.

If Scotland is to have a properly staffed cancer service, an integrated approach to training is essential. As part of the service redesign process, it will be possible to identify deficiencies in staffing and skill mix. A mechanism by which this information is collated and discussed with the various agencies involved in training is surely achievable.

Australia

A report entitled Optimising Cancer Care in Australia[36] was published in 2002. This report identifies the strong conviction held by consumers and cancer care providers that Australian cancer services can be, and must be, improved substantially. The indication is that survival, quality of life and the 'cancer journey' would greatly improve if everyone received optimum treatment. Outlined in the report are some of the key reforms required and these are summarised in the three broad areas consulted upon below

- Models of cancer care

Traditional versus integrated multidisciplinary care (IMDC). The traditional model of care is one where the general practitioner refers a patient to a specialist (usually a surgeon) who conducts the `primary intervention, usually removal of a tumour. Patients may then see other cancer specialists sequentially for opinions before (but more often after) the primary intervention. This traditional model is criticised for its dependence on the primary specialist reaching a view that further referral is necessary. There is a perceived risk of sub optimal therapy unless there is a formalised way of accessing multidisciplinary care.

Multidisciplinary care (MDC) related to the team, communication, the full therapeutic range, standard of care and involvement of the patient. The term integrated multidisciplinary care (IMDC)is used here to emphasis that integration of the services provided, with the patient as the point of focus is essential; care can involve several disciplines, but if it is not integrated it is not optimal.

IMDC is based on the fact that many people living with cancer require input from more that one discipline to optimise treatment and care. A team agrees on the diagnosis and staging of the disease and the best treatment option for the patient – taking the patient's preferences into account.

Complexity of an intervention, volume of procedures and outcome. There is increasing evidence that outcome of cancer care, particularly for difficult primary surgery, is linked to volume of interventions undertaken. Models of cancer care need to consider how to achieve the best possible outcomes through concentration of services where the evidence demands it, while maintaining access locally where this can be done without unacceptable impact on quality. It is important to be able to measure the impact of complexity, volume and outcome, so that we are clear about what needs to be done centrally and what can be done just as well locally, and under what arrangements, for example, with links to a specialist cancer centre.

- Improving the quality of cancer care

Six major initiatives to assess mechanisms to improve quality in cancer care are underway in Australia. It is noted that three of these relate to breast cancer, of the remaining three, two are generic quality programmes rather than cancer specific.

Empowering the cancer service user (consumer) is also important to improving quality. The GP's ability to help and advise is strengthened when consumers have access to information.

A similar mechanism to the US Commission of Cancer's voluntary accreditation system has the potential to make a substantial difference in Australia and would be attractive to those institutions that wish to claim to be an 'Accredited Cancer Centre'.

Improving quality through information and research. There are many gaps in knowledge of the cancer care process – how advanced the disease is at diagnosis, how many people are treated, their quality of life etc. Funding for this type of applied research is limited but it is needed to inform cancer planners and managers about what is going on and ensure that services are meeting the needs and are cost effective. Health services research, clinical trial research and psychosocial research are three key areas that are critical to the provision of high-quality cancer care.

- Resource issues in cancer care

Workforce issues. The cancer care workforce has shortages in almost every category. The shortages are most acute outside capital cities. There must be a major effort to address the cancer care workforce requirements if the current shortages are not to become completely unmanageable.

GP's also need development, as cancer is increasingly treated in a community setting. They have a pivotal role as providers of information and support. At present this role is not always fulfilled, in part due to structural barriers in the system of general practice. As well as skills development, there needs to be greater opportunity for GP's to practice in ways that offer consumers and GP's a better treatment environment, for example, more time and greater information.

Communication is widely recognised as problematic and formal communications training is recommended for all those routinely involved in cancer care. The training should also cover cultural issues.

Access issues. A number of key access issues affect the quality of cancer care. Access to radiation therapy is the subject of a separate review[37]. Drugs, travel issues, social and psychosocial factors and access to palliative care are all identified as access issues requiring attention.

Other Cancer Planning in Australia

At least two states in Australia have developed plans, which have different frameworks but still identify and attempt to address the same issues as those identified in Optimising Cancer Care in Australia. The state level publications include:

- A Cancer Services Framework for Victoria and future directions for the Peter MacCallum Cancer Institute[13],
- A Clinical Service Framework for Optimising Cancer Care in NSW[35]

The National Cancer Control Initiative in Australia (NCCI) has undertaken a number of surveys and projects. These are identified on the referenced website[38].

Canada

Canada has produced a number of reports that form the Canadian Strategy for Cancer Control, including the Treatment Working Group Final Report[39]. This report focuses on treatment issues related to surgical oncology, radiation therapy, systemic therapy, integrated case management, clinical trials, clinical practice guidelines, and complementary and alternative health care. A brief outline of the issues and recommendations for each services in included here.

Surgical oncology main issues relate to infrastructure that has evolved within the general acute health sector and lacks formally defined relationships with other cancer disciplines. Radiation oncology issues relate to treatment capacity and utilisation within a centralised human and technical resource. Systemic oncology (medical oncology) issues relate to currency and quality of treatment within a distributed human resource-intensive system. All three disciplines face increasing cancer incidence and prevalence in an environment of limited human resource availability and fiscal restraint.

Along side, these issues are issues in relation to system planning and a lack of intervention specific guidelines that cross or aspects of care. Clinical trials involvement is limited and variable. The content and timeliness of provision of information between care providers and patients is variable.

Measures of disease-related outcomes and quality of life have established that patients with cancer are most optimally managed within systems of care that are inter-disciplinary, integrated across the continuum of care, meet defined standards of performance and quality, and relate processes of care to continuous monitoring of outcomes.

- Recommendation – Priority 1

That a National Council be established to coordinate common, discipline-specific activities/projects across Canadian provinces. These activities would include:

Surgical oncology: clinical practice guideline and intervention-specific guideline development; process and outcome measures for surgical oncology procedures and practice.

Radiation oncology: needs-based population planning templates for radiation services; clinical practice guideline and intervention-specific guideline development; measures of capacity, process and utilization of radiation services; standards for equipment utility and obsolescence; new technology assessment and introduction; referral centres for high technology, limited application procedures.

Systemic therapy: establishment of an electronic, web-based National Cancer Information Network; systemic therapy guidelines and policies development; web access to chemotherapy protocols, patient management tools, decision aids, and patient, professional and public education documents; linkage to clinical trials protocol inventory(ies); establishment of confidential, electronic network for accredited health care providers to access provincial guidelines and new drug resource analyses which are under development and not yet approved for implementation; development of funding models for the resource impact of new drug programs.

- Recommendation – Priority 2

That clinical trials research be expanded, with a target of a doubling of the current activity by 2002/03 through:

The creation of a National Clinical Trials Bureau with the mandate to promote access to clinical trials inventories and information; to simplify and expedite trials development, approval and activation; to facilitate and promote the interface with legislative and regulatory agencies; and to reconcile and "stream-line" central and local trials activation processes and procedures, including standardized operating procedures. The National Bureau would establish the research and

development agenda integral to the design, conduct, interpretation, adoption and dissemination of clinical trials results.

Establishment of a Joint Liaison Committee between industry (Rx and D) and a National Clinical Trials Bureau to address issues inherent in "market place" and academic endeavours, and position Canada as an attractive country in which to perform high quality, efficient and effective clinical trials research.

The development of a human resources strategy to develop, recruit and enhance the career development of clinical research associates. This issue should involve the collaboration of industry and the academic/health services sector.

- Recommendation – Priority 3

That care provided to patients with cancer should meet and comply continuously with defined standards of integrated care. These standards include: linkage to a provincial cancer registry; commitment of health records resources to minimal data set abstraction and registration; best practice according to provincial/national guidelines; conduct of interdisciplinary patient management conferences/tumour boards; compliance with defined standards for surveillance and outcome reporting; participation in local/provincial networks overseeing standards for symptom control, palliative and end-of-life management.

- Recommendation – Priority 4

That the principles and practices of "patient focused care" be a standard for organisations involved in the care of patients. Inherent within this standard would be: the development of care networks between cancer centres and community care providers identifying roles and responsibilities in treatment and follow-up of cancer patients; the optimization of communication between care providers through utilization of electronic records; the development of navigation aids/navigators to guide patients through the cancer care system; patient access to internet sites for dissemination of information, eg educational materials, guidelines, protocols, clinical trials, CAM, etc. respect for patients' right to pursue complementary and alternative health care, and where pursued in conjunction with conventional care, to ensure cooperative management between patient and practitioners around principles of safety, information and knowledge, accurate records and evaluation.

- Recommendation – Priority 5

That the initiatives of the Human Resource Working Group relating to manpower recruitment and retention across cancer control disciplines be strongly endorsed. For the creation of working environments consistent with recommendations of the Treatment Working Group, special attention will need to be given to:

Surgical oncology: practice plan arrangements necessary to establish surgical oncologists within interdisciplinary teams with defined roles, commitment and responsibilities related to cancer control;

Radiation oncology: the establishment of Chairs in Clinical Radiation Research to reorient the focus of the discipline from that of "clinical service only" to one of opportunity for significant clinical and translational research potential across biological, practice and process, technology and health systems applications. Such appointments would establish academic affiliations, and provide career path support, mentorship and role modeling consistent with an academic discipline;

All clinical disciplines – support for the development of Chairs in Clinical Oncology and academic infrastructures and relationships to provide for the expertise and curriculum development necessary to address health manpower professional expansion in the context of increasing incidence and prevalence of cancer and the increasing role of clinical and translational research as a basis for determination of evidence-based care.

Future Directions

Surgery, chemotherapy, and radiation are the primary therapies used in treating cancer. But cancer treatment is constantly evolving. Examples of other treatments that are or may someday be available include:

- Angiogenesis inhibitors. To grow, cancer relies on the formation of new blood vessels from healthy, surrounding tissue — a process called angiogenesis. By inhibiting a new supply of blood to a tumour, angiogenesis inhibitors starve tumours of their ability to grow. In February 2004, the Food and Drug Administration approved the first angiogenesis inhibitor for use in people with advanced (metastatic) colorectal cancer. Called bevacizumab (Avastin®), people who took it in combination with chemotherapy lived an average of 4.7 months longer than people who had chemotherapy only. Bevacizumab continues to be studied in colon and other forms of cancer.
- Bone marrow and peripheral blood stem cell transplantation. In these procedures, bone marrow, or stem cells that have been destroyed by chemotherapy, radiation therapy or both are replaced with new marrow or cells. Transplants are from donated bone marrow (allogeneic transplant) or cells or from the person's own marrow or cells (autologous transplant), which have been collected and stored prior to chemotherapy or radiation therapy.
- Gene therapy. All tumours grow because normal genetic controls go awry, changing healthy cells into cancerous cells. Sometimes, genes that help suppress cancer formation also can fail to work properly. Researchers are studying gene therapy as a means of replacing defective genes and encouraging the growth of healthy ones. In addition, in theory it should be possible to create molecular diagnostic tolls that can predict the response of all human tumours to single agents or combination chemotherapy. An example of gene therapy currently used in New Zealand in trastuzumab (Herceptin®), used against breast cancers where there is excess of a specific receptor.
- Immunotherapy. Typically used as an adjuvant therapy, the goal of immunotherapy is to enhance the body's natural immune reaction toward cancer cells. For example, it may involve the use of cancer vaccines, certain types of antibodies (monoclonal antibodies) or biologic agents (lymphokines) normally produced by cells related to the immune system.
- Oral chemotherapy. Many novel cytotoxic drugs are emerging that can be taken by mouth. Capecitabine (Xeloda®) is a pro-drug for the established i.v. cytotoxic drug 5-Fluorouracil (5-FU) and is an example of this type of oral drug, currently available in New Zealand. The shift from i.v. to oral treatment will have funding implications as the drug costs will usually be higher, but other costs lower than with i.v. treatment. There are many benefits for patients in receiving home-based oral treatment rather than i.v. treatment in hospital.
- Photodynamic therapy. This therapy involves injecting light-sensitive chemicals into your body. Once absorbed, a laser light is used to activate the chemicals, which then destroy cancer cells. One type of photodynamic therapy is approved for the treatment of oesophageal cancer. Researchers are studying its usefulness in the treatment of other cancers.
- Targeted radiation therapy. Improved computer imaging techniques and robotic technology have improved the ability to implant radioactive seeds directly into cancer cells – brachytherapy. This technique allows more convenient, less painful, and less toxic radiation therapy to well-defined tumours.

Appendices

1. Acknowledgements
2. Purchase Units
3. Pharmaceutical Society of New Zealand response
4. New South Wales Department of Health (1992) Role Delineation of Health Services

Appendix One: Acknowledgements

I would like to acknowledge the following people who were consulted during the development of this plan. In particular, I would like to recognise the support and assistance from Dr Jeremy Long, Clinical Director Oncology Services and Neil McKelvie, Service Manager, Haematology / Oncology, Waikato DHB.

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Roy	Buchanan	Radiologist	Bay of Plenty DHB
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Appendix Two – Purchase Units

Purchase unit Code *v8*	Purchase Unit Description	Purchase Unit Definition	Unit of Measure
M30001	Haematology - Inpatient Services (DRGs) (including bone marrow transplants)	See Section 4 for a generic DRG purchase unit definition and health specialty mapping table. Includes bone marrow transplants. (AN-DRG 006, VIC-DRGs 11 and 12).	Cost weighted discharges
M30002	Haematology - 1st attendance	See Section 4 for a generic 1st specialist assessment definition. First attendance to haematologist or medical officer at registrar level or above or nurse practitioner for specialist assessment. Excludes patients with haemophilia.	Attendances
M30003	Haematology - Subsequent attendance	See Section 4 for a generic subsequent specialist assessment definition. Follow-up attendances to haematologist or medical officer at registrar level or above or nurse practitioner. Excludes patients with haemophilia and phoresis.	Attendances
M30004	Haematology - Chemotherapy	An attendance where the purpose of the attendance is to receive prescribed chemotherapy treatment. The specialist may or may not be in attendance. Includes all pharmaceuticals administered during the attendance. Includes day case treatment, including procedures – That the Admission date is the same as the Discharge date AND That either of the first two diagnosis codes fall in the range: ICD10 Chem/Radio, either of the first two diagnosis in the range: (Z510, Z511, Z512).	Attendances
M50001	Oncology - Inpatient Services (DRGs)	See Section 4 for a generic DRG purchase unit definition and health specialty mapping table.	Cost weighted discharges
M50002	Oncology - 1st attendance	See Section 4 for a generic 1st specialist assessment definition. First attendance to oncologist or medical officer at registrar level or above or nurse practitioner for specialist assessment. Excludes BSA-75	Attendances
M50003	Oncology - Subsequent attendance	See Section 4 for a generic subsequent specialist assessment definition. Follow-up attendances to oncologist or medical officer at registrar level or above or nurse practitioner. Excludes chemotherapy and radiotherapy. Excludes BSA-80.	Attendances
M50004	Oncology - Chemotherapy	An attendance where the purpose of the attendance is to receive prescribed chemotherapy treatment. The specialist may or may not be in attendance. Includes all pharmaceuticals administered during the attendance. Includes day case treatment (see DRG exclusions). Excludes urology chemotherapy which is purchased as S70.04. Excludes BSA-70.	Attendances
M50005	Oncology - Radiotherapy	An attendance where the purpose of the attendance is to plan for or to receive prescribed radiotherapy treatment. The specialist may or may not be in attendance. Includes all planning and simulation, radioactive isotope implants or treatments, and radiation. Excludes BSA-65.	Attendances

Purchase unit Code *v8*	Purchase Unit Description	Purchase Unit Definition		Unit of Measure
M50009	Blood transfusions & Oncology	Blood transfusions performed as an outpatient or elective day case in general medicine, including procedures - That the Admission and Discharge dates are the same AND That the event is non-acute (i.e. Admission Type not in "AC","ZC") AND That the primary diagnosis OR the first three procedure codes fall in the range: ICD10 Blood, primary diagnosis in the range (Z513) OR {primary procedure in the range (9206000, 1370601, 1370602, 1370603) AND second procedure in the range (9206000, 1370601, 1370602, 1370603, blank) AND third procedure blank}. Excludes blood transfusions performed as part of an inpatient.		Attendances
M80001	Palliative Care - Inpatient Services (DRGs)	See Section 4 for a generic DRG purchase unit definition and health specialty mapping table.		Cost weighted discharges
M80004	Palliative Care - Outpatient Services	See Section 4 for a generic specialist assessment definition. First attendance to palliative care medicine specialist or medical officer at registrar level or above or nurse practitioner for specialist assessment.		Attendances
M80005	Palliative Care - Community Services	Programme of community-based care for people assessed as requiring specialist palliative care.		Service
S70004	Urology - Chemotherapy	An attendance where the purpose of the attendance is to receive prescribed chemotherapy treatment. The specialist may or may not be in attendance. Includes all pharmaceuticals administered during the attendance. Includes day case treatment, including procedures – That the Admission date is the same as the Discharge date AND That either of the first two diagnosis codes fall in the range: ICD10 Chem/Radio, either of the first two diagnosis in the range: (Z510, Z511, Z512).		Attendances
HS0030	Breast Op proc 1st	Health Waikato	Provision of "one stop shop" concept – access to all relevant health professionals, diagnostics and a clear treatment plan. This evolved out of a Waikato pilot breast screening programme	Attendances
HS0031	Breast Op follow-up	Health Waikato	Provision of "one stop shop" concept – access to all relevant health professionals, diagnostics and a clear treatment plan. This evolved out of a Waikato pilot breast screening programme	Attendances
BSA-55	Breast Screening Treatment-General Surgery-First Specialist Assessment (Outpatient 1st attendance)	Funding provided for the first attendance to general surgeon or medical officer at registrar level or above for specialist assessment for the national breast screening programme.		Attendance
BSA-60	Breast Screening Treatment-General Surgery-Follow up (Outpatient subsequent attendances)	Funding provided for the follow up attendance to general surgeon or medical officer at registrar level or above for the national breast screening programme.		Attendance

Purchase unit Code *v8*	Purchase Unit Description	Purchase Unit Definition	Unit of Measure
BSA-65	Breast Screening Treatment-Oncology - Radiotherapy	An attendance where the purpose of the attendance is to plan for or to receive prescribed radiotherapy treatment for a national breast screening patient. The specialist may or may not be in attendance. Includes all planning and simulation and radioactive isotope implants or treatments, and radiation.	Attendances

Appendix Three – Pharmaceutical Society of NZ Response

Jan Barber
Midland Regional Service Planner
Private Bag 12024
Tauranga

4/5/04

Dear Jan,

Re: "Improving Non-Surgical Cancer Treatment Service in NZ" recommendations

I have researched each of the recommendations and my findings are set out below.

1. *The proposed changes to the Medicines Regulations are supported, to allow recognition of pharmacy technician training and to extend their role in the preparation of chemotherapy.*

The 2002 amendment to the Medicines Regulations permitted pharmacy technicians to compound (mix) medicines, but only under the direct personal supervision of a pharmacist (regulation 63 - amended). A pharmacy technician is now defined in regulation 2 as a person who has a National Certificate in Pharmacy (Technician); or an overseas qualification recognised by the Council of the Pharmaceutical Society of New Zealand as equivalent to the National Certificate in Pharmacy (Technician).

Pharmacy technicians may engage in sterile dispensing *only* if they have either:

- gained the National Certificate in Pharmacy (Technician) with the elective Unit Standard – Sterile Dispensing *or*
- are enrolled and training towards Unit Standard – Sterile Dispensing *or*
- have successfully completed Unit Standard – Sterile Dispensing and are enrolled in the remaining unit standards to complete the qualification.

Auckland University of Technology (AUT) technician training includes a module on aseptic compounding/dispensing and the trainees have their assessment in the aseptic suite at Auckland Hospital Pharmacy.

At Auckland Hospital they also conduct extra on-site training for the technicians who go on to work in their oncology area – most of them have already completed the aseptic training module. The other major teaching hospitals in New Zealand, and some provincial hospitals, also have training programmes specifically for their pharmacists and technicians.

2. *The Pharmaceutical Society of NZ should be approached to establish procedures to evaluate and recognise overseas pharmacy technician qualifications.*

Following the 2002 amendment to the Medicines Regulations, the Council of the Society does now recognise certain UK pharmacy technician qualifications (BTEC and NVQ). Provided the UK technicians complete two legislation modules, they are permitted to work in New Zealand as a Pharmacy Technician. They are not required to be assessed for competence in aseptic compounding as a record of prior learning (RPL) is given for this. Individual applications from UK technicians are assessed for conformity with the regulations by the Pharmacy Industry Training Organisation (PITO).

3. *Support is given to the establishment of training positions, funded by the Clinical Training Agency, for pharmacists within units to develop skills in aseptic/chemotherapy compounding.*

The recommendations in the document "Improving Non-Surgical Cancer Treatment Service in NZ" were based on a need for oncology pharmacists and technicians which is not as critical now as it was in 2001 when the document was printed. This is because gaps in the recruitment of hospital pharmacy staff are being adequately filled by UK pharmacists and technicians, and the hospital sector retains expertise in this area.

The CTA has in the past funded CPC training, but does not do so at present. Some CTA funding is currently provided for the Pre-registration Programme.

The Pharmaceutical Society is aware that funding for the Pre-registration Programme and for clinical training for pharmacists is especially needed and should be a priority for the Clinical Training Agency's resources.

The Society has recently approached the Clinical Training Agency to gauge their current position on the recommendations for training pharmacists in aseptic and chemotherapy compounding skills, and they have responded with the following questions:

- Is the (proposed) training programme significantly different from the programme that the CTA partly funds?
- Can you estimate the workforce requirement for pharmacists with skills in aseptic/chemotherapy compounding?
- Are there students expressing an interest in this field?
- Has there been much interest from employers for pharmacists with skills in aseptic/chemotherapy compounding?

We have referred the Clinical Training Agency to Bruce Hastie, who is president of the NZHPA, and Claire Paget-Hay, Manager of PITO. These organisations are in a position to answer the above questions. In PITO's case, assessment is going to be introduced for technicians through their Record of Prior Learning programme this year, using hospital pharmacists, who are the experts in this area.

4. *There should be an investigation of the feasibility of establishing a University of Otago training course in aseptic compounding for both pharmacists and technicians.*

It should be noted that when the recommendations in the document "Improving Non-Surgical Cancer Treatment Service in NZ" were made, the Auckland University School of Pharmacy was not underway. B.Pharm students at the Auckland school undertake intensive aseptic training in a purpose-built pharmacy lab, and learn both theory and practical application in this domain.

Since 2003, the teaching of practical aseptic compounding skills to the B Pharm under-graduates at Otago has been reduced. There is some aseptic teaching occurring as part of the Oncology and Parenteral nutrition quality use of medicines module. The Dean cited lack of demand in the workforce and high costs of facilities as factors behind the decision to reduce this part of the curriculum. The B.Pharm students at Otago are taught the knowledge base of formulation, but there is limited training in the manual skills and processes for aseptic preparations.

Professor Ian Tucker, Dean of the Otago School of Pharmacy, has not been approached by the MOH or any other agency to investigate the feasibility of a course such as that recommended in the document.

The staff at the Otago School of Pharmacy think it would be appropriate to have a postgraduate certificate in aseptic/chemo compounding, and have some of the skills necessary to mount such a programme, provided it could be done collaboratively with practice sites particularly Dunedin Hospital. However, the Pharmaceutical Society does not necessarily support this view, as this is not a priority area for training and Dunedin hospital does not have the expertise that it once had.

In summary, both pharmacists and technicians receive a foundational training in aseptic compounding as part of their qualifications. Standard 7 of the Competence Standards for Pharmacists is an aseptic option, but this is not a higher-level competency, and does not need to be, as any further training needs to be workplace specific. The Pharmaceutical Society's understanding is that no further training in aseptic or chemotherapy compounding is required apart from that which is already provided. Aseptic compounding is a small and specialised area and most of the work is carried out by commercial companies. Pharmacists and technicians who work in aseptic oncology area in hospitals receive work-place based training specific to their site.

I hope this information will be of assistance in your planning.

Yours sincerely,
Jan Clare

Liaison Pharmacist
Pharmaceutical Society of New Zealand
PO Box 11 640, Wellington

From: Bruce Hastie (CMDHB) [mailto:BruceH@middlemore.co.nz]
Sent: Tuesday, 11 May 2004 11:15
To: Jan Clare
Subject: RE: Improving Non-Surgical Cancer Treatment Service in NZ recommendations

Hi Jan
There are currently no programs to train Pharmacists in aseptic dispensing or cytotoxic compounding. The undergraduate program at Auckland University include some aseptic dispensing and this is the only training currently available. For DHBs that provide an aseptic or cytotoxic compounding service then all training is provided by the Pharmacy Service at these hospitals.

However if funds from CTA could be made available, then we believe that a short course on the key elements on aseptic & cytotoxic compounding would be useful, both to train staff in these techniques, and also to help those working in Clinical Pharmacy roles so they can provide advice on these products (especially in preparation of TPNs & oncology & haematology clinical pharmacy).

I estimate that a short course offering training for 10 pharmacists per annum would be very useful. This course could be extended to cover Community Pharmacists preparing products such as syringes for Graseby pumps.

Currently there is demand for Pharmacists with skills in aseptic dispensing, especially from DHBs offering regional cancer services, and as above increasing numbers of community pharmacies offer preparation of sterile products such as syringes for Graseby pumps.

I hope this helps the PSNZ in enabling funding to be released from CTA to enable such a course to be established.

Regards

Bruce Hastie
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Appendix Four - NSW Department of Health (1992) Role Delineation of Health Services

Role delineation requirements for an Anaesthetic service by level of clinical complexity (NSW Health Department, 1992)

Level 1: - analgesia/sedation available by medical officer
- QA activities
- interpreters as stipulated in circular 87/163
- Level 1 pathology, pharmacy and CCU

Level 2: - as for Level 1 plus general anaesthetics on good risk patients given by accredited medical practitioner (anaesthetics)
- may have specialist anaesthetist appointed for consultation
- Level 1 pathology, pharmacy and CCU
- Level 2 x-ray and ICU

Level 3: - as for Level 2 plus specialist anaesthetist appointed for consultation and to provide service for moderate risk patients
- specific operating room anaesthetic staff support available
- formal QA program
- Level 2 pharmacy
- Level 3 pathology, x-ray, ICU, CCU and operating suite services

Level 4: - as for Level 3 plus specialist anaesthetist on 24 hour roster for good, moderate and bad risk patients
- nominated specialist director of anaesthetic staff
- medical officers on site 24 hours
- Level 3 nuclear medicine, CCU and operating suite services
- Level 4 pathology, pharmacy, x-ray and ICU

Level 5: - as for Level 4 plus specialist anaesthetist staff on site during the day
- anaesthetic registrar on site 24 hours or available within 10 minutes
- may have teaching and research role
- Level 3 operating suite services
- Level 4 pathology, pharmacy, nuclear medicine, ICU and CCU
- Level 5 x-ray

Level 6: - as for Level 5, with subspecialists
- research and teaching of graduates and undergraduates
- 24 hour on site anaesthetic registrar
- has teaching and research role
- Level 5 pathology, pharmacy, x-ray, nuclear medicine, ICU and CCU
- Level 6 operating suite services

Role delineation requirements for a Nuclear Medicine service by level of clinical complexity (NSW Health Department, 1992)

Level 3: - Access to a Level 4 nuclear medicine facility
- QA activities
- interpreters as per circular 87/163

Level 4: - on-site facility which includes at least gamma camera and computer based quantitation
- Has nuclear medicine physician appointed with trained technicians; may have scientific officer; registered nurse support where necessary
- formal quality assurance program
- Level 3 pathology, pharmacy, anaesthetics, ICU and CCU services
- Level 4 diagnostic radiology service, are required on site

Level 5: - as Level 4 plus more than one gamma camera including at least one SPECT camera able to perform more demanding studies related to specialised diagnoses and special groups, eg., children.
- more than one nuclear medicine physician
- medical registrar
- has scientific officers and physicist; ultrasound may be available; 24 hour on call service
- adequate >hot laboratory =facilities for radioisotope treatment of thyrotoxicosis
- Level 4 services for pathology, pharmacy, anaesthetics, ICU and CCU are required on site

Level 6: - as Level 5 plus routinely undertakes research projects
- has registered nurse
- may have positron emission tomography
- may have bone densitometer and neutron activation analysis
- access to MRI
- holding tanks for radioactive waste disposal
- may have radiopharmacist
- radiation safety officer
- Level 5 pathology, pharmacy, diagnostic radiology, anaesthetics, ICU and CCU

Role delineation requirements for a Pharmacy service by level of clinical complexity (NSW Health Department, 1992)

Level 1: - drugs supplied on individual prescription from retail pharmacy, or drugs from a networked Regional or Area public hospital
- no pharmacist employed but regular visits from pharmacists associated with provision of the service
- visiting pharmacist may participate in Drug and Therapeutics Committee or equivalent
- QA activities

Level 2: - as Level 1 plus pharmacist employed on part-time or sessional basis
- coordination of drug distribution from community pharmacy or Area source
- limited clinical service
- may provide patient and staff education
- may participate in ward meetings or rounds
- has an established and regularly updated pharmacopoeia

Level 3: - as Level 2 with at least one pharmacist employed full time
- may also have support staff
- pharmacy-controlled drug distribution to in-patients
- clinical service includes drug information, drug monitoring, utilisation review, adverse drug reaction reporting
- has limited participation in ward meetings and rounds and provides patient and staff education programs
- may have limited manufacturing services
- formal QA program
- may be involved in domiciliary/community care
- may provide outpatient service

Level 4: - as Level 3 plus more than one permanent full time pharmacist plus support staff
- pharmacist on-call for emergency advice
- director of pharmacy involved in Drug (or Pharmacy and Therapeutics) Committee
- non-sterile manufacturing service with facilities provided to Standards Association of Australia (SAA) requirements
- may have sterile manufacture which follows Good Manufacturing Practice (GMP) standards
- may provide pre-registration training

Level 5: - as Level 4 plus provides regular drug information service and bulletins
- participation in ward rounds or meetings
- must have outpatient service
- has staff development and training program for pharmacy staff
- sterile manufacturing and IV admixture service including cytoxic drugs if clinical unit present in hospital
- facilities to standards of SAA
- code of GMP standards followed
- may supply to other Area hospitals
- clinical trial support for research activities in hospital

Level 6: - as Level 5 plus extensive involvement in research, clinical trials, clinical review
- provides pre- and post-graduate pharmacy training
- has pharmacist on call 24 hours

Role delineation requirements for an Operating Suite service by level of clinical complexity (NSW Health Department, 1992)

Level 2: - operating room equipped for minor diagnostic and therapeutic surgical procedures
- anaesthetic induction undertaken within area
- recovery area for post surgical procedures combined with general ward
- QA activities
- interpreters as per circular 87/163

Level 3: - as Level 2 plus equipped for intermediate surgical procedures
- more than one operating room
- separate recovery area with registered nurse for every 3 recovery patients
- a minimum of 3 nurses (in addition to surgeon =s assistant, where applicable) per operating team
- has nurse unit manager
- formal QA program

Level 4: - as Level 3 plus equipped for major procedures
- usually more than two operating rooms
- may have day surgery operating room and special endoscopy area
- separate recovery area with full time staff
- 24 hour availability
- has nursing unit manager and experienced registered nurses

Level 6: - as Level 4 plus operating rooms equipped for major diagnostic and treatment procedures
- specialist units and teaching role
- staffing on site or available within 20 minutes
- access to clinical nurse consultant is desirable

Role delineation requirements for a Diagnostic Radiology service by level of clinical complexity (NSW Health Department, 1992)

Level 1: - visiting/mobile service and limited x-ray of extremities, chest, abdomen
- QA activities
- interpreters as stipulated
Level 2: - as for Level 1 plus access to designated room with bucky table
- has film processing capacity
Level 3: - as for Level 2 plus on site designated room with bucky table
- access to fluoroscopy facility
- has mobile condenser discharge (CD) for perioperative use
- radiographer in attendance who has regular access to radiologist consultation
- simple ultrasound capacity for foetal monitoring
- formal QA program
Level 4: - as for level 3 with facilities for general x-ray, fluoroscopy, in addition to mobile CD for wards, operating suite and emergency department (where present)
- has automatic film processing capacity
- has mobile image intensifier in theatre and/or CCU or ICU
- has staff radiographer on call 24 hours
- has specialist radiologist appointed
- may have ultrasound and/or CT scanner
- registered nurse as required
- Level 3 anaesthetics, ICU, CCU and operating suite services are required on site
Level 5: - as for Level 4 plus established department
- full ultrasound service available
- has radiologist in charge
- may have radiology registrar
- has registered nurse
- 24 hour on site service for urgent x-rays
- CT scanner on site or locally available
- Level 3 pharmacy
- Level 4 pathology, anaesthetics, ICU and operating suite services are required on site
Level 6: - as for Level 5 + special rooms for cardiac investigation and digital angiography, neuro-radiology etc.
- CT scan and full ultrasound service, appropriately staffed, available 24 hours
- may have MRI, digital angiography or cardiac catheter laboratory
- had radiology registrar
- performs invasive procedures
- Level 4 pharmacy
- Level 5 pathology, ICU and CCU
- Level 6 operating suite services are required on site

Role delineation requirements for a Pathology service by level of clinical complexity (NSW Health Department, 1992)

Level 1: - no on site pathology service
- blood and specimen collecting service, 24 hours per day, seven days per week
- collection of specimens controlled by, and responsibility of, a NATA accredited laboratory
- QA activities
Level 2: - as Level 1 plus crossed matched blood available within one hour and blood storage facilities on site
Level 3: - as Level 2.
- a range of urgent test readily available, including haemoglobin, blood gas analysis, Na, K
- formalised quality assurance program in accordance with NATA and RCPA requirements
- keeps infection control records and monitors them
Level 4: - as Level 3 plus basic pathology service on site
- has formalised department of pathology with medical director
- performs range of service as in 3 plus defined range of routine tests for a single hospital or group of hospitals
- has blood bank with on-site cross matching
- cytology and frozen sections are available on campus
- locally managed, but with formal link to large laboratory
- 24 hour on-call service
Level 5: - as Level 4 plus large pathology department providing 24 hour on site service
- has full-time medical director and more than one pathologist
- may provide services for other hospitals (Group Laboratory)
- divided into common subsections, e.g. biochemistry, haematology etc.; each subsection has trained technicians in charge
- may have pathology registrar
- may have teaching and research role
- full involvement in infection control

Level 6: - as Level 5
- all or most pathology subsections represented, each with medical director in charge
- may provide State referral service
- has teaching and research role
- has pathology registrar
- immunology and virology may be available on campus

Role delineation requirements for a Coronary Care Unit service by level of clinical complexity (NSW Health Department, 1992)

Level 0: - no planned service
- can provide cardiopulmonary resuscitation
Level 1: - capable of providing basic life support prior to referral to a more sophisticated unit
- basic resuscitation equipment available
- QA activities
- interpreters as per circular 87/163
- Level 1 pathology, pharmacy, x-ray and anaesthetics
Level 3: - intensive care with bedside monitoring of coronary care patients
- has 24 hour access to medical officer rostered for emergencies on site or within 10 minutes
- registered nursing equivalent to 6 hours/patient/day (1:4) desirable, or according to dependency of patient
- has nursing unit manager
- formal QA program
- Level 2 pharmacy and operating suite services
- Level 3 pathology, x-ray, anaesthetics and ICU
Level 4: - as Level 3 plus designated coronary care area with clearly defined admission and discharge policy and patient care review
- nominated specialist director
- day time medical officer(s); experienced medical officer(s) on call after hours
- has cardiologist or general physician on call 24 hours
- registered nursing equivalent to 8 hours/patient/day (1:3) desirable or according to dependency of patient
- has experienced registered nurses
- has bedside and central monitoring
- Level 3 pharmacy, nuclear medicine and operating suite services
- Level 4 pathology, x-ray, anaesthetics and ICU
Level 5: - as Level 4 plus rostered cardiologist director
- cardiologist/general physicians on call 24 hours
- medical officer(s) on site 24 hours
- has medical registrar on call 24 hours
- invasive monitoring available
- isolation facilities available
- formal audit and review procedures
- registered nursing equivalent to approximately 12 hours/patient/day (1:2) desirable, or according to dependency of patient
- access to clinical nurse consultant is desirable
- Level 4 operating suite services
- Level 5 pathology, pharmacy, x-ray, nuclear medicine, anaesthetics and ICU
Level 6: - as Level 5 plus specialist cardiologists with procedural expertise available on site or available within 10 minutes on 24 hour basis
- capable of all forms of cardiac assessment, monitoring and therapy including bypass support
- access to cardiac surgery
- registered nursing equivalent to 16 hours/patient/day (1:1.3) desirable, or according to dependency of patient
- has cardiology registrar
- medical registrar on site 24 hours
- Level 5 pathology, pharmacy and nuclear medicine
- Level 6 x-ray, anaesthetics, ICU and operating suite services

Requirements for an Adult Intensive Care Unit service by level of clinical complexity (Australian Council of Healthcare Standards, Intensive Care Unit Guidelines, 1996)

Level 1:

Nature of facility

- Must be a separate and self-contained facility in the hospital capable of providing basic multi-system life support usually for less than a 24 hour period.

Care Process

- Must be capable of providing mechanical ventilation and simple invasive cardiovascular monitoring for a period of at least several hours. These types of service are illustrative of care provided in a Level 1 adult intensive care unit but are not exhaustive of the possibilities.

Nature of staff

- The Medical Director must be recognised by the Specialist Recognition Advisory Committee (SRAC) in relevant State/Territory as a specialist or as a consultant physician and have experience in intensive care.
- In addition to the medical Director, the unit must have at least one registered medical practitioner who is available to the unit at all times.
- The nurse in charge of the unit must have a post registration qualification in intensive care or in the clinical specialty of the unit.
- All nursing staff of the unit responsible for direct patient care must be registered nurses, as defined by the Australian Nursing Council.
- The majority of nursing staff must have a post registration qualification in intensive care or in the clinical specialty of the unit.
- There must be a minimum of one to one nursing for ventilated patients or for otherwise critically ill patients. There must be a minimum of two registered nurses present in the unit at all times when there is a patient present in the unit. This does not imply that all patients require one to one nursing.
- There must be demonstrated active medical and nursing education programs in the unit that are relevant to the specialised facilities of the unit.
- The unit must have 24 hour access to pharmacy, pathology, operating theatres, basic imaging services and appropriate access to physiotherapy and other allied health services.

Quality Activities

- There must be unit based quality activities.

Level 2:

Nature of Facility

- Must be a separate and self-contained facility in the hospital capable of providing complex, multi-system life support.

Care process

- Must be capable of providing mechanical ventilation, extracorporeal renal support systems and invasive cardiovascular monitoring for a period of at least several days. These types of service are illustrative of the nature of care provided in a Level 2 service but are not exhaustive of the possibilities.

Nature of staff

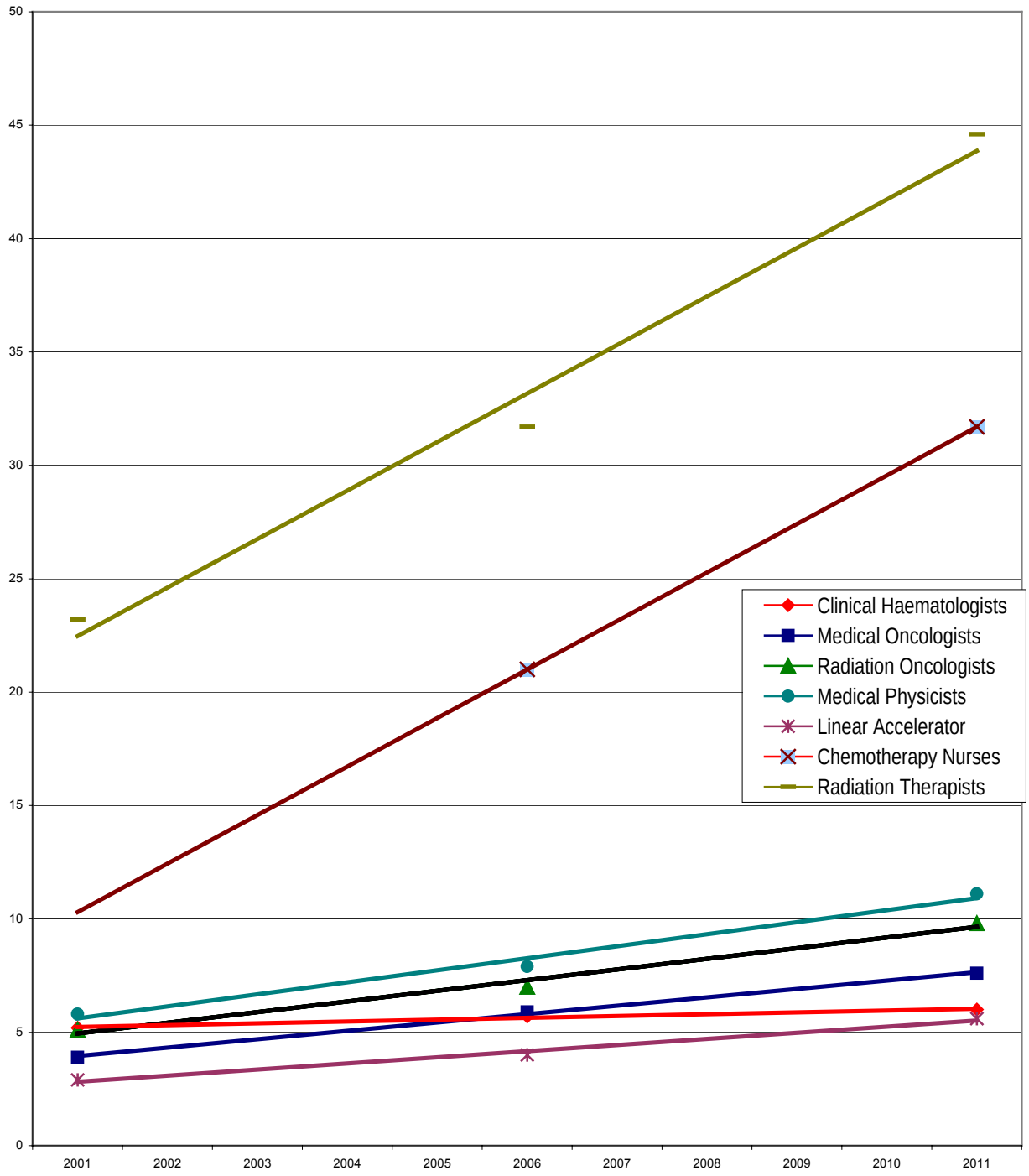
- The Medical Director must be recognised by the SRAC in the relevant State/Territory as a consultant physician or as a specialist either in intensive care medicine or in a specialty appropriate to the nature of the work of the unit (anaesthesia or medicine). The Medical Director must have substantial training and experience in intensive care.
- The unit must have at least one other specialist who is recognised by the SRAC in the relevant State/Territory as a specialist or as a consultant physician and who has appropriate experience in intensive care.
- During normal working hours the unit must have at least one specialist substantially present in the unit. At all other times there must be a specialist (who may be the Medical Director) who is able to proceed immediately to the unit.
- All patients admitted to the unit must be referred for management to the attending intensive care specialist.
- In addition to the attending specialist(s), the unit must have at least one registered medical practitioner who is in the hospital, primarily rostered to the unit and immediately available to the unit at all other times.
- The nurse in charge of the unit must have a post registration qualification in intensive care or in the clinical specialty of the unit.
- All nursing staff of the unit responsible for direct patient care must be registered nurses, as defined by the Australian Nursing Council.
- The majority of nursing staff must have a post registration qualification in intensive care or in the clinical specialty of the unit.
- There must be a minimum of one to two nursing for ventilated patients or for otherwise critically ill patients. There must be the capability of providing greater than one to one nursing for selected patients. Some patients may require less than one to one nursing.
- There must be a minimum of two registered nurses present in the unit at all times when there is a patient present in the unit.
- There must be demonstrated active medical and nursing education programs in the unit that are relevant to the specialised facilities of the unit.

- The unit must have a designated member of nursing staff responsible for nursing education who has a qualification in intensive care or in the specialty of the unit.- The unit must have 24 hour access to pharmacy, pathology, operating theatres, basic imaging services and
appropriate access to physiotherapy and other allied health services.
Quality activities
- There must be unit based quality activities.
Level 3:
Nature of Facility
- Must be a separate and self-contained facility in the hospital capable of providing complex, multi-system life support for an indefinite period. It must be a tertiary referral centre for intensive care patients and have extensive back-up laboratory and clinical service facilities to support this tertiary referral role.
Care Process
- Capable of providing mechanical ventilation, extra-corporeal renal support services and invasive cardiovascular monitoring for an indefinite period. These types of service are illustrative of the nature of care provided in a Level 3 service but are not exhaustive of the possibilities.
Nature of Staff
- The Medical Director must be recognised by the SRAC in the relevant State/Territory as a specialist in intensive care or as a consultant physician in intensive care. The Medical Director must have a clinical practice predominantly in intensive care medicine.
- A majority of the specialists in the unit must be recognised by the SRAC in the relevant State/Territory as specialists in intensive care or as consultant physicians in intensive care.
- During normal working hours, there must be at least one specialist (who may be the Medical Director) who is predominantly present in the unit and exclusively rostered to it. At all other times, there must be a specialist (who may be the Medical Director) who is able to proceed immediately to the unit and is exclusively rostered to the unit (or to more than one unit in the same building).
- All patients admitted to the unit must be referred for management to the attending intensive care specialist.
- - In addition to the attending specialist, the unit must have at least one registered medical practitioner who is in the hospital predominantly present in the unit and exclusively rostered to the unit at all times.
- The nurse in charge of the unit must have a post registration qualification in intensive care or in the clinical specialty of the unit.
- All nursing staff of the unit responsible for direct patient care must be registered nurses, as defined by the Australian Nursing Council.
- The majority of nursing staff must have post registration qualification in intensive care or in the clinical specialty of the unit.
- There must be a minimum of one to one nursing for ventilated patients or for otherwise critically ill patients. There must be the capability of providing greater than one to one nursing for selected patients. Some patients may require less than one to one nursing.
- There must be a minimum of two registered nurses present in the unit at all times when there is a patient present in the unit.
- There must be demonstrated active medical and nursing education programs in the unit that are relevant to the specialised facilities of the unit.
- The unit must have a designated member of the nursing staff responsible for nursing education who has a qualification in intensive care or in the specialty of the unit.
- Designated physiotherapy services must be available to the unit.
- The unit must have 24 hour access to pharmacy, pathology, operating theatres, tertiary level imaging services and appropriate access to physiotherapy and other allied health services.
Quality activities
- There must be unit based quality activities.
Other characteristics considered highly desirable
- It is envisaged that in the future, it will be essential that all attending specialists have formal postgraduate qualifications in intensive care recognised by the SRAC in the relevant State/Territory.
- A minimum of one nurse per shift with post registration qualifications in intensive care for every three patients.-
- An active research program-
- A designated social worker; pastoral care; interpreters; dieticians; biomedical engineering services available

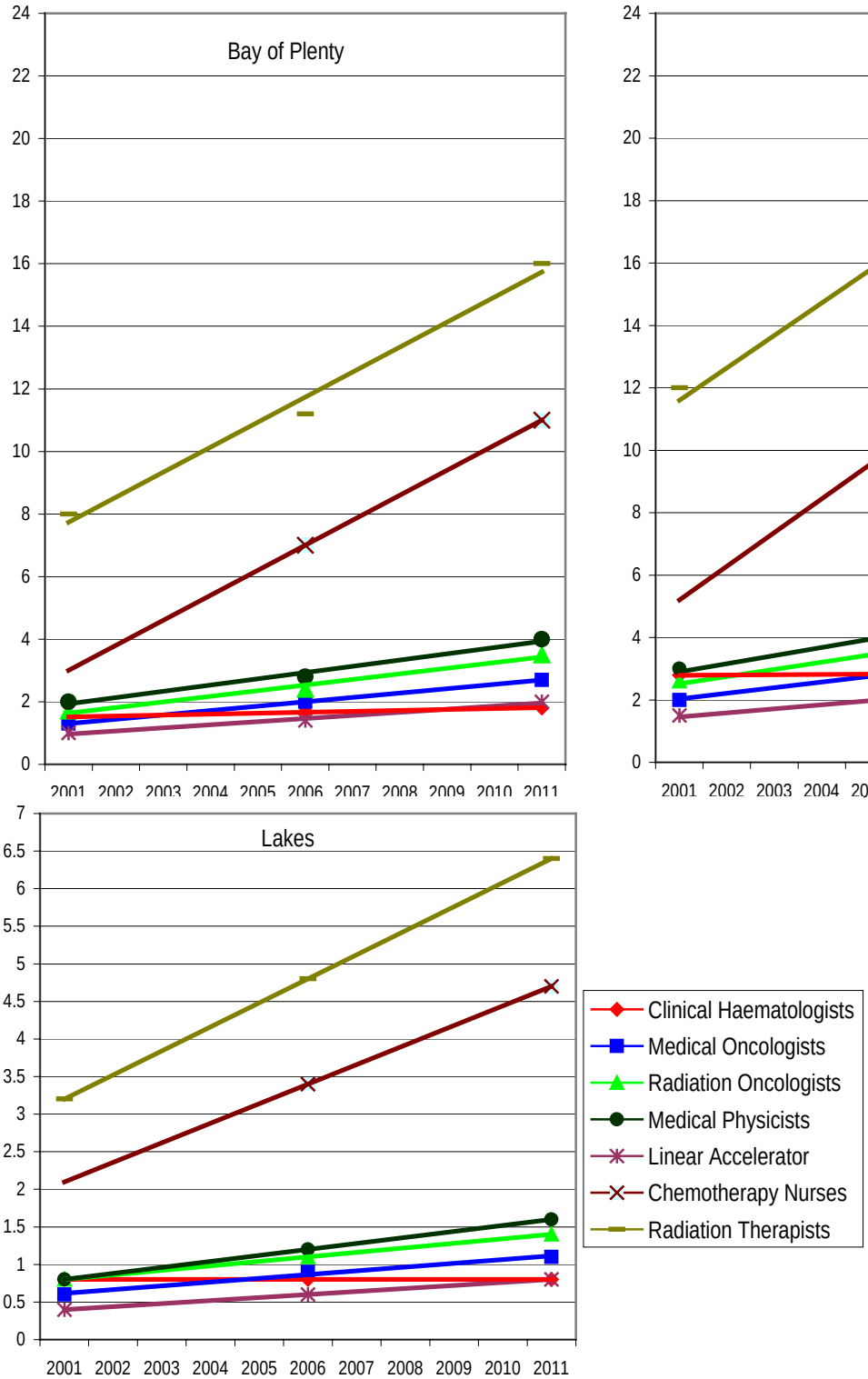
Source: NSW Health Department (1992) Guide to the Role Delineation of Health Services.

Appendix Five: Regional Cancer Centre Resource Requirements

Figure 10. Predicted Regional Cancer Centre (Bay of Plenty, Lakes and Waikato DHBs) Resource Requirements.



The graphs below show the resources required to provide services to the DHB population not necessarily, where the resource should reside.



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