Improving Non-Surgical Cancer Treatment Services in New Zealand
Foreword

Cancer Services are a key priority of the New Zealand Health Strategy. The stated objective is to reduce the incidence and impact of cancer. A Cancer Control Strategy is currently being developed and will incorporate the cancer treatment issues described in *Improving Non-Surgical Cancer Treatment Services in New Zealand*.

*Improving Non-Surgical Cancer Treatment Services in New Zealand* draws from an intensive review of New Zealand cancer treatment services carried out by three specialist working parties: Radiation Oncology, Medical Oncology, and Haematology. It also follows and reports on the development of the New Zealand Palliative Care Strategy. As well as summarising the findings and recommendations of the working parties, it outlines the Ministry’s response to these issues.

This report is confined to non-surgical cancer treatment services and does not include surgical nor paediatric oncology services. The Health Funding Authority has already reviewed paediatric oncology and the Ministry of Health intends to review surgical cancer services with the Royal Australasian College of Surgeons. Cancer surgery must be integral to any multidisciplinary approach to cancer treatment.

The working parties have identified the key issues related to service delivery that need to be addressed in order to achieve the primary goal of equity of access for all New Zealanders requiring cancer treatment.

The working parties have recognised that to provide high quality, equitable and sustained cancer treatment for patients throughout New Zealand, services need to be appropriately distributed and co-ordinated.

They have recommended that New Zealand should maintain six regional cancer centres responsible for provision of non-surgical cancer care in the main centres and in designated secondary care hospitals where there is no specialist cancer unit. The regional cancer centres should also be actively involved in co-ordinating care with the primary and secondary services that provide for other aspects of cancer management.

A fully developed national strategic plan will define the service requirements for equipment and the workforce to enable informed decision-making about these future requirements. Implementation will require co-operation among the Minister of Health, Ministry of Health, District Health Boards, New Zealand Immigration Service and other agencies involved with workforce training.

The Ministry of Health supports the recommendations of the working parties and has encouraged the formation of a single New Zealand Cancer Treatment Working Party from the various working parties. This group will work in partnership with the Ministry of Health, District Health Boards and District Health Boards New Zealand to develop strategies that will address the issues described in this report.
I would like to thank all those who have worked extremely hard to develop a national framework for cancer treatment services.

Colin Feek  
Chief Medical Advisor
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Executive Summary

Cancer is a priority of the New Zealand Health Strategy. A Cancer Control Strategy is being developed that will cover the range of services from education, prevention, detection, treatment, and rehabilitation to palliative care. Quality of life issues are key considerations across these services. The New Zealand Cancer Treatment Working Party will develop treatment strategies that will be integrated with the Cancer Control Strategy.

Six regional oncology centres in New Zealand provide medical oncology, radiation oncology and haematology services (for malignant and non-malignant conditions). Although radiation treatment is only offered in the regional centres, some haematology and chemotherapy services are offered in secondary hospitals.

In reviews of cancer treatment, three specialist working parties have recognised that to provide high quality, equitable and sustained cancer treatment for patients throughout New Zealand, services need to be appropriately distributed and co-ordinated.

These working parties have highlighted that New Zealand should maintain six regional cancer centres responsible for provision of non-surgical cancer care in the main centres and in designated secondary care hospitals where there is no specialist cancer unit. The regional cancer centres should also be actively involved in co-ordinating care with the primary, secondary services and palliative care services that provide for other aspects of cancer management.

It is essential that cancer treatment services be structured to ensure that cancer treatment is equitably provided to all cancer patients. This means that patients, regardless of where they live in New Zealand, can expect to have access to a specialist oncologist for assessment, and to all appropriate treatments that are available through the major oncology units.

To allow full equity of access there must also be strong links and co-ordination among all cancer treatment services across the primary, secondary and tertiary spectrums.

The working parties’ reports have laid the basis for the development of a five-year national strategic plan that identifies the requirements for reliable, equitable and clinically acceptable access to cancer treatment services. To support this plan, it will be necessary to address the identified issues related to current and future access to new drugs and technologies, and staffing and training requirements. Nationally consistent clinical definitions and access and prioritisation criteria will also be developed.

In co-ordination with palliative care services, there is a need for attention to the New Zealand Palliative Care Strategy. Released by the Minister of Health on 14 February 2001, this strategy establishes a systematic and informed approach to the provision and funding of palliative care services. A summary of this strategy is included in this document (see Section 4).
The New Zealand Cancer Treatment Working Party is currently preparing a joint work programme with the Ministry of Health and District Health Boards New Zealand (DHBNZ). The New Zealand Cancer Treatment Working Party will be the co-ordinating body of the overall project.

Most of the data in this report has been drawn straight from the working documents. However, information relating to staffing levels has been updated immediately prior to publication. This is a working document and will be updated regularly.

Agreed Key Principles for a National Cancer Treatment Service

- There should be six major regional oncology centres responsible for provision of non-surgical cancer treatment services throughout New Zealand.
- The non-surgical cancer services should encompass medical oncology, radiation oncology and haematology.
- Every New Zealander who has non-surgical treatment for cancer should receive assessment and supervision of their care from an appropriately qualified cancer specialist (radiation oncologist, medical oncologist or haematologist).
- Cancer treatment should be provided as close to the patient’s home as practicable.
- Clinical alliances should be developed among major oncology centres to enhance effective co-ordination of service delivery, particularly for highly specialised cancer treatments.
- In regard to funding for non-surgical cancer services, the appropriate regional oncology centre should be paid at a national price with adjustment for regional cost factors where necessary.
- Regional oncology centres should be responsible for ensuring national equitable access to cancer treatment services, ensuring a balance between centralisation for expertise and decentralisation for local access.
- Regional oncology centres should be responsible for the employment and deployment of oncology specialists from the regional centre to specified oncology clinics and treatment services based in secondary or primary care facilities.
- Regional oncology centres should co-ordinate with palliative care services and take note of the New Zealand Palliative Care Strategy.

It should be noted that the NZCTWP is bringing together recommendations of the three groups and leading the development of a wider cancer treatment strategy. Its purpose is to seek solutions and improve the delivery and effectiveness of cancer treatment services.

There is a key linkage between this work and the Cancer Control Strategy.
1 New Zealand Medical Oncology Services

1.1 Key issues

Key issues in medical oncology services in New Zealand are:

- an inequality of access to specialist cancer services
- a serious national inequality of access to certain key chemotherapy treatments, which is worsening as effective new drugs have become available internationally over the past decade
- the absence of a process for evaluating and introducing new cancer drugs, treatments and technologies within the public health system
- the absence of useful core clinical data from which to assess current national service provision or future needs
- serious concerns about the current and future availability of key clinical staffing groups
- the low priority accorded to clinical cancer research, which is an integral part of quality cancer care and staff retention
- the lack of a national process for the strategic management of cancer issues.

1.2 Overview

Medical oncology services contribute to the following population health objective of the New Zealand Health Strategy:

\textit{to reduce the incidence and impact of cancer.}

On present statistics, one in three New Zealanders will develop cancer in their lifetime. Overall cancer incidence rose by almost 21 percent in the five years between 1991 and 1995. The New Zealand cancer mortality rate of 142.8 per 100,000 population ranked 20th highest out of 22 OECD countries.

Population growth and rising cancer incidence dictate an increasing demand for cancer therapies. Given the inherent tendency of all cancers to metastasise, chemotherapy will remain a major component of cancer treatment. Major advances in the cure of cancer are likely to come from improvements in systemic treatment.
1.2.1 Definition and scope of medical oncology

Medical oncology is the branch of cancer medicine that assesses patients with cancer and manages their care, particularly by the use of systemic therapies such as cytotoxic chemotherapy, hormonal therapies and immunotherapy. The potential also exists for the future use of gene therapy. Commonly treated cancers include breast, large bowel, ovary, certain lung cancers, testicular cancers, Hodgkin’s disease and non-Hodgkin’s lymphomas.

Medical oncology activities include:

- assessment of patients, including prognosis, likely benefit from and tolerance of treatment
- management of patients with progressive cancer
- prescription, preparation and administration of chemotherapy
- management of side effects and toxicity of treatment (including nausea and vomiting and the risk of serious or life-threatening infection).

Chemotherapy is often used along with other forms of cancer treatment such as radiation therapy or surgery. Medical oncology services therefore require close linkages with radiation oncology, diagnostic services (including high quality imaging and pathology services), surgical and medical subspecialties, and palliative care services.

1.2.2 Role and effectiveness of chemotherapy

The development of anti-cancer chemotherapy as an effective treatment is relatively recent. Since the first chemotherapy drugs were introduced around 40 years ago, there are now about 60 separate chemotherapy agents. In addition, some cancers respond to hormonal manipulation, particularly cancers of the breast, prostate, uterus and ovary. Recently there has been renewed interest in immunological means of controlling cancers, such as tumour-specific monoclonal antibodies, anti-tumour vaccines, and other biological response modifiers.

The development of metastatic (secondary) disease is a feature of cancers that cannot be managed by localised treatment, such as surgery or radiotherapy. Therefore systemic treatment such as chemotherapy is a very important part of the current management of cancer. It is also integral to the development of better strategies to deal with the disease.

Chemotherapy and other systemic treatments may be used:

- in the treatment of advanced (generally secondary) cancer
- in adjuvant treatment, ie, as a therapy additional to primary treatment (usually surgery)
- in combination with radiotherapy.
1.2.3 Growth in medical oncology

There is a lack of good data about the growth in demand for medical oncology services in New Zealand. This shortage stems from a lack of standardised clinical definitions relating to medical oncology activities, variable application of purchase units, inconsistent quality of data collection within the cancer centres, and variability in contracting for services leading to fragmentation of responsibility for data collection.

From the data gathered over nine years from the Auckland centre, indications are that medical oncology activities, as measured by new patients seen and chemotherapy treatments given, are increasing at over 9 percent annually. Available data from the other centres also indicate variable yet consistent growth.

This growth in medical oncology activities has been caused by a combination of the following factors.

• The indications for therapy have increased, such as through:
  – an increased use of adjuvant chemotherapy, eg, for breast and colon cancer
  – an increased use of combined chemotherapy and radiotherapy, eg, for cervical, and head and neck cancers
  – the development of effective treatments for cancers that were previously poorly responsive to chemotherapy, eg, secondary colorectal cancer and potentially non-small cell lung cancer.

• Many common malignancies are being managed with multiple courses of therapy as more effective palliative regimens are developed.

• The number of patients who can be treated has expanded through improved supportive care, which allows treatment of patients previously thought unsuitable (eg, because of age), and through the development of treatments with fewer side effects.

• The incidence of cancer is rising.

• The expectations of well-informed patients are rising.

As these factors are likely to continue to apply, it is predicted there will be an ongoing growth in the need for medical oncology services.

1.3 Service issues

1.3.1 Geographic access to medical oncology services

Overall, the current arrangement of the six regional cancer centres continues to provide a good balance between ensuring reasonable geographic access to treatment and having a sufficient population base for a critical mass to support each unit. To improve patient access, all six units provide regional clinics in hospitals outside of their home base (see Appendix 1D at the end of this section).
Formal relationships allow for visiting medical oncologists from each centre to provide appropriate supervision of chemotherapy prescribing and administration. However, there are no visiting medical oncology services to the Nelson and Marlborough regions. The lack of services to these regions is unsatisfactory, as all patients requiring cancer chemotherapy should have access to specialist medical oncology services to allow appropriate assessment and monitoring of care. All hospitals in which chemotherapy is administered should have formal processes in place to allow oversight of that service by a specialist medical oncologist. It is considered that medical oncology services should be provided as part of an integrated cancer service.

**Recommendations – geographic access**

1. All patients requiring cancer chemotherapy should have access to specialist medical oncology services to allow appropriate assessment and monitoring of care.

2. All hospitals in which chemotherapy is administered must have formal processes in place to allow oversight of that service by a specialist medical oncologist as part of an integrated cancer service.

3. There should be increased co-operation between the regional cancer centres and other District Health Boards at both clinical and administrative levels to ensure optimal clinical service integration.

### 1.3.2 Access to oncology drug treatments

**Inequities in access**

There are now serious inequities in access to oncology drugs in New Zealand's public health system, although clinicians are remarkably uniform in regard to the indications for their use. The inequities have arisen since a number of relatively expensive cytotoxic drugs have become available over the past decade. Although these drugs are registered in New Zealand, because of their cost, cancer units have found it difficult to introduce them into clinical practice within their contracted funding. New Zealand oncologists believe that this issue has not been sufficiently addressed during contract negotiations of the Health Funding Authority (HFA) and Hospital and Health Services (HHSs) over successive years.

The cancer centres have utilised different mechanisms to deal with the availability of and consequent patient demand for these new treatments. Some centres have made available all new pharmaceuticals that are considered to be indicated. Some have introduced a selection of them. Some have used ‘special circumstances’ provisions. In some cases, access has only been possible through clinical trials funded by the pharmaceutical companies.
The results of these various approaches are that:

- significant numbers of patients are denied effective therapy
- public and patients lose confidence in our publicly funded oncology services
- it is not possible to compare New Zealand outcomes with overseas benchmarks
- medical expertise in the use of newer drugs and technologies is reduced
- morale within our oncology units is lowered, thus increasing problems of staff recruitment and retention.

### Addressing the inequities

The inequities in access to cytotoxic drugs highlight the need for:

- national agreement on treatment indications to direct the use of these drugs towards patients who will most benefit
- funding mechanisms that support nationally consistent access to cancer drugs
- a process for the assessment of new drugs or technologies, in order to facilitate the national availability of those that merit funding.

The Medical Oncology Working Party has developed agreed indications for the use of those newer cancer drugs that it considers should be available in the New Zealand public health system.

Those drugs considered essential for modern oncology practice should be funded by a drug-inclusive contract, renegotiated on a regular basis. Furthermore, there should be an ongoing process to reassess new drugs/technologies and indications for their use, as they become available.

### Recommendations – access to oncology drug treatments

4. (a) Those cancer drugs that now have an established place in oncology practice (as listed in Appendix 1A at the end of this section) should be consistently available in all cancer treatment centres.

   (b) The Ministry should accept the indications for the use of the newer cancer drugs (as listed in Appendix 1B at the end of this section).

5. There should be an urgent review of the current funding arrangements for chemotherapy to incorporate those established therapies identified in Recommendation 4, and create a process that is sustainable in the long term. The revised arrangements may include nationally co-ordinated planning.

6. A transparent process of evaluating and introducing new drugs/technologies should be immediately established.
1.3.3 Staffing

Significant issues relating to training, recruitment and retention apply to all key professional groups who are necessary for the provision of medical oncology services. These groups are:

- oncology pharmacist and pharmacy technicians (high priority)
- oncology nurses
- medical oncologists.

Oncology pharmacist and pharmacy technicians

Pharmacy services are an integral component of a medical oncology service. Pharmacists and pharmacy technicians provide chemotherapy reconstitution, specialist oncology pharmaceutical advice and support for clinical trials. The following concerns are significant to the future viability of this service.

Availability of staff

There are significant difficulties in recruiting to hospitals both suitably qualified pharmacists and pharmacy technicians within New Zealand, especially those who are able to prepare chemotherapy. Hospitals may have difficulty retaining staff in the face of alternative work in commercial units or clinical pharmacy duties.

Limited training

Pharmacists receive a limited amount of training in aseptic skills and theory in the fourth year of their university degree. They require significant on-the-job training to become competent in these skills. The number of available sites in which to train further limits their opportunity to develop skills.

Legislative barriers

- Legislation restricts pharmacy technicians to ‘count and pour’ activities under the direct supervision of a pharmacist. Since 1997 the Open Polytechnic of New Zealand has offered a training course on aseptic compounding. However, pharmacy technicians cannot use these skills in the workplace until pending legislation is passed. Technicians trained before 1997 are required to take the new course before they are allowed to prepare chemotherapy.
- Legislation does not recognise the qualifications of overseas technicians, who often have extensive training. Proposed amendments to the Medicines Regulations, if passed, will facilitate this recognition.
- Legislation for hospitals requires that anyone who compounds aseptically must hold a relevant pharmacy qualification. However, staff of commercial units do not need to be pharmacists or pharmacy technicians to do the same job, provided they meet standards of good manufacturing practice and Ministry of Health requirements for documentation and training.
- Hospitals are licensed to provide only dispensing for individual patients and production of small-volume batches, whereas commercial units may be licensed to provide bulk manufacture. Costs are high for hospitals to achieve the commercial licensing standards necessary for bulk production.

**Potential monopoly**

There is potential for a monopoly if all chemotherapy centres purchase the majority of their chemotherapy requirements from a single commercial unit. Approximately 50 percent of preparation is now undertaken by a single commercial supplier.

**Transportation constraints**

As fewer hospital pharmacies are able to provide on-site compounding services, more chemotherapy requires transport to outlying centres for administration. However, the availability of suitable transport and product expiry times can reduce the timeliness of delivery.

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**Recommendations – oncology pharmacists and pharmacy technicians**

7. 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.

8. The Pharmaceutical Society of New Zealand should be approached to establish procedures to evaluate and recognise overseas pharmacy technician qualifications.

9. 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.

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

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**Oncology nursing**

The oncology/chemotherapy nurse is an expert practitioner and resource person for patients and their families. Oncology nurses need expertise in the administration of cytotoxic chemotherapy, the management of symptoms and side effects of treatments, the management of symptoms of advanced cancer, and the provision of counselling and psychological support. Specific issues are identified as follows.
Recruitment and retention

The following problems adversely affect recruitment and retention:

- inadequate numbers of students in general nursing training programmes
- attrition of staff to overseas positions, and fewer nurses returning to New Zealand after they gain overseas postgraduate qualifications
- lack of career opportunities within New Zealand and lack of a recognised ‘formal’ postgraduate oncology qualification in New Zealand
- a salary differential between New Zealand and other countries
- differences of access within New Zealand to ongoing education, eg, for intravenous training and chemotherapy certification
- lack of support to attend professional forums and undertake nursing research
- burn-out.

Peripheral and rural centres

Nurses who work away from the regional cancer centres report experiences of stress from:

- geographic isolation
- inadequate resources to allow key information to be disseminated from the regional cancer centre
- expectations placed on them that are beyond their scope of practice
- insufficient opportunity for on-the-job training, including reduced experience with certain specific treatments and limited contact with visiting oncologists
- insufficient numbers of experienced nurses to provide cover for annual leave and professional development.

Recommendations – oncology nurses

11. The New Zealand Nurses Organisation should be approached regarding a nationally standardised programme to ensure that all chemotherapy-certified nurses have a common, minimum knowledge base. Appropriate personnel should also review and update this certification regularly.

12. Support systems should be formalised at both managerial and nursing levels between regional cancer centres and peripheral centres to both encourage and maintain best practice.

13. Adequate resources should be provided to enable ongoing research into nursing practice.

14. The profile of nursing as a profession should be raised by providing competitive salaries and attractive working conditions, thereby increasing job satisfaction.
Medical oncologists

Medical oncology as a speciality in New Zealand has developed entirely over the last 20 years. In 2000 there were 20 medical oncologists (17.9 FTE) in New Zealand, equating to an increase of approximately one specialist position per year since the speciality began. The following specific issues are identified.

Retention

New Zealand is training sufficient numbers of medical oncologists to meet its requirements. However, while New Zealand is producing approximately 1.6 FTE new specialists per year, one out of every two or three does not return to New Zealand after training overseas. The continued loss of New Zealand trainees to overseas positions could be of future concern. For example, following the United Kingdom National Health Service’s plans to create 1000 new cancer consultant posts by 2006 (BMJ 2000, 321, 850), it is likely that skilled and experienced New Zealand oncologists will become a target for their recruitment efforts.

Keeping pace with growth

As a benchmark, it is recommended that an oncologist sees 180 to 220 new patients each year. To maintain safe practice, it will be necessary for staffing numbers related directly and indirectly to cancer patient management to keep pace with current and future growth.

Recommendations – medical oncologists

15. The ongoing recruitment and retention of medical oncologists should continue to be monitored.

16. 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.)

1.4 Contracting and planning

The current purchasing environment has produced the following issues for medical oncology services.

Inconsistent approach to contracting

Different contracting models exist within the six regions. For example, the Auckland cancer centre holds a centralised contract for all services in its region, including Northland. On the other hand, Waikato holds the contract for only the Waikato and Coromandel regions, while subcontracting with Lakeland and Pacific Coast Health to provide medical oncology services in those regions. Palmerston North and Dunedin operate under a mixture of these contracting models.
The ‘centralised’ contracting model has the advantages of consistency regarding access to drugs and data collection. The disadvantages are financial risks for the larger centres and loss of control of specialist care for the smaller centres. The disadvantages of the ‘decentralised’ model are that it may promote increased inequity of access to treatments, and difficulty in service planning and co-ordination at a regional level.

**Pricing anomalies**

Inequity is created through the variations in the tertiary adjuster to the purchase price for medical oncology services throughout New Zealand. The current inpatient cost weight model does not reflect oncology practice in New Zealand.

**Contract inflexibility**

The present fixed price/volume contracting method is inflexible. It has prevented the introduction of appropriate new treatments and innovative means of service provision, eg, the substitution of oral for intravenous therapy.

**Poor data**

There is significant regional variation in database systems and recording of clinical data, including contract volumes.

**Volumes purchased**

Volumes purchased do not reflect current activity or align with current practice. Many treatments and procedures undertaken as part of the standard care of a cancer patient are not included in current purchase definitions. The Medical Oncology Working Party has developed additional purchase definitions, which expand those now available and more accurately describe the components of necessary care (see Appendix 1C at the end of this section).

**Lack of minimum service quality standards**

There are no minimum service quality standards for prescribing and administering chemotherapy, or for the management of cancer patients.

**Lack of nationally co-ordinated strategic planning**

The current contracting environment, because it involves individual providers, has not facilitated nationally co-ordinated strategic planning for cancer services. The working party is of the view that many of the key issues facing oncology services would be best addressed as part of a nationally co-ordinated cancer control programme.
Recommendations – contracting and planning

17. A national data set relating to medical oncology activities should be defined, using data collected by all hospitals administering chemotherapy and collated by the regional cancer centres.

18. The purchase unit definitions outlined in Appendix 1C, at the end of this section, should be adopted nationally.

19. Minimum service quality standards for prescribing and administering chemotherapy and management of patients throughout the course of chemotherapy should be developed.

20. Current methods of contracting for service provision should be reviewed, and alternative contracting models allowing for greater flexibility of service provision considered.

21. There should be ongoing and co-ordinated strategic planning for all cancer treatment services. A National Cancer Services Treatment Working Party should be established as part of a national cancer control strategy.

1.5 Research

Quality medical oncology service provision relies on a close interface with a wide range of research, including epidemiological, preclinical, clinical, translational and outcomes research.

Preclinical and epidemiological cancer research in New Zealand are better established than clinical research and translational research (ie, research linking clinical and preclinical activities). Outcomes research is another evolving research area, where methods are developed for evaluating population outcomes from clinical practices which are, in turn, developed from clinical research. Clinical research is therefore a key link in the continuum from translational research to outcomes research. These areas of research have the potential to add value to preclinical interventions, and develop clinical research outcomes more applicable to the health care priorities of this country.

Strengths of cancer research

Cancer research strengths are found in:

- specific preclinical research groups
- specific cancer epidemiology research groups
- the resource of medical oncologists, who generally have a high level of clinical research training and experience gained overseas.
Weaknesses of cancer research

Cancer research in New Zealand is characterised by the following weaknesses:

- a low rate of research funding relative to gross domestic product
- a reliance on the pharmaceutical industry to fund research activity and a decline in such research in New Zealand
- the low priority that HHSs/District Health Boards accord to clinical research
- the lack of infrastructure within current District Health Boards to facilitate clinical research
- the strong emphasis on cost-confined service provision, which limits the time that medical oncologists can give to research
- a limited knowledge base in outcomes research
- limited translational research conducted in New Zealand on New Zealand inventions
- the development of evidence-based practice based on overseas research that is not always applicable to New Zealand.

Recommendations – research

22. Cancer research should be recognised as a fundamental component for improvement of cancer care. An infrastructure should be developed to support it.

23. District Health Boards should address, with the Health Research Council and other potential funding bodies, mechanisms to facilitate clinical research, in conjunction with service provision.

24. A National Clinical Cancer Trials Centre should be developed to provide infrastructure to investigators and enable improved relevance of research to New Zealand’s health and its economy through biotechnology development. Additionally, such a centre would maintain international linkages with similar organisations, ensuring where relevant that trials will be designed with consideration given to New Zealand’s requirements.

25. The research ethics committee process should be better resourced to enable responsiveness to evolving cultural, biotechnology and process issues. A national oversight committee would facilitate regulatory aspects of international research collaborations.

26. Nationally compatible databases should be developed in the six regional cancer centres with linkages to the New Zealand Cancer Registry.

27. An advisory group on translational research should be established.

28. An advisory group on outcomes research should be established.

29. Cancer research should be incorporated as a fundamental component of any national cancer control programme.
Appendix 1A: Drugs with an established place in current oncology practice in New Zealand

This list includes only those anti-cancer drugs that are (or should be) provided by oncology units within the drug-inclusive contract. Some oral cytotoxic and endocrine therapies are funded via the pharmaceutical schedule; these are excluded from this list as it is assumed they will continue to be available via the schedule. Antiemetics, analgesics and other supportive medicines are not included.

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<td>Etopophos</td>
<td>Thioguanine</td>
</tr>
<tr>
<td>Etoposide</td>
<td>Thiotepa</td>
</tr>
<tr>
<td>Filgrastim</td>
<td>Trastuzumab*</td>
</tr>
<tr>
<td>Fludarabine</td>
<td>Vinblastine</td>
</tr>
<tr>
<td>Folinic acid</td>
<td>Vincristine</td>
</tr>
<tr>
<td>Gemcitabine*</td>
<td>Vinbesine</td>
</tr>
<tr>
<td>Idarubicin</td>
<td>Vinorelbine*</td>
</tr>
</tbody>
</table>

* Access is currently variable.
Appendix 1B: Current indications for the use of the newer essential cytotoxics

**Taxanes [Paclitaxel (Taxol) and Docetaxel (Taxotere)]**

1. Initial chemotherapy in ovarian, fallopian tube or primary peritoneal cancer.
2. Subsequent chemotherapy in ovarian, fallopian tube or primary peritoneal cancer in patients not previously treated with taxanes.
3. Metastatic breast cancer:
   - post-anthracycline relapse
   - anthracyclines contra-indicated.
4. Lung cancer:
   - non-small cell: advanced disease or part of combined chemo-radiotherapy
   - small cell: as second line therapy.

**Irinotecan (Camptosar)**

1. Metastatic colorectal cancer:
   - initial chemotherapy in combination
   - post fluoropyrimidine relapse as single agent.

**Capecitabine (Xeloda)**

1. Metastatic colorectal cancer.
2. Metastatic breast cancer:
   - post anthracycline and taxane relapse
   - unsuitable for anthracycline/taxane therapy, eg, poor venous access, geographical isolation, intolerant of therapy.
3. Substitute for single agent fluoropyrimidine when poor venous access/needle phobia exists.

**Gemcitabine (Gemzar)**

2. Advanced pancreatic cancer.
3. Ovarian, fallopian tube or primary peritoneal cancer:
   - post taxane therapy
   - initial therapy when taxane contraindicated.
Vinorelbine (Navelbine)
1. Metastatic breast cancer:
   • post anthracycline/taxane therapy
   • unsuitable for anthracycline/taxane therapy.
2. Advanced lung (NSCLC) cancer.

Oxaliplatin (Eloxatin)
1. Metastatic colo-rectal cancer:
   • post fluoropyrimidine and irinotecan failure
   • post fluoropyrimidine failure and unsuitable for irinotecan.

Rituximab (Mabthera)
1. Transplant related NHL:
   • initial therapy.
2. Low grade NHL:
   • post anthracycline failure
   • post standard chemotherapy failure and unsuitable for anthracycline treatment.

Trastuzumab (Herceptin)
1. Metastatic breast cancer:
   • patients with tumour expressing HER2 ≥ 2+.

Interferon
1. Carcinoid tumour.
2. Metastatic malignant melanoma.

Pamidronate (Aredia)
*1. Malignant hypercalcaemia.
2. Metastatic breast cancer:
   • predominant lytic bone metastases.
3. Myeloma:
   • with lytic bone metastases.
*4. Pain: For pain control due to lytic bone metastases in addition to standard care (analgesics ± radiotherapy).

* Already funded via Pharmac for patients in hospice for this indication.
Appendix 1C: Recommended purchase unit definitions

First assessment
A patient is seen for the first time for a particular neoplasm/condition by a medical oncologist.

Subsequent assessment
Any subsequent visit to a medical oncologist, which is not a first assessment. It includes:
- follow-up
- reassessment for a new event associated with the same neoplasm/condition
- assessment for chemotherapy or other treatment.

Chemotherapy attendance
Any attendance, which includes the parenteral administration of an anti-cancer ‘substance’. This will include conventional cytotoxic agents, monoclonal antibodies, anti-cancer vaccines and hormonal injections such as Formestane.

This substance will be injected by intravenous, intramuscular, subcutaneous, intrathecal or intrapleural route.

This definition excludes the administration of oral anti-cancer medicines (except capecitabine, which is included here) and hormonal substances.

Note: As other oral anti-cancer medicines enter clinical practice, their specific funding will need to be considered.

Treatment attendance
Any attendance where the patient is subject to intervention, excluding the administration of substances listed above. Examples of treatment attendances are:
- other blood products (eg, platelets, cryoprecipitate, Factor VIII, iron infusions)
- blood transfusions
- intravenous fluids
- parenteral antibiotics
- assessment of unwell patient
- pamidronate infusion
- vaccinations (not anti-cancer vaccines)
• paracentesis
• accessing and/or flushing venous devices
• bone marrow aspirate/trephine
• diagnostic lumbar puncture.

If treatments are given in addition to chemotherapy then the attendance will be recorded as a chemotherapy one. If the treatment attendance lasts longer than 3 hours, then it shall be recorded as a day case.

**Nurse only attendances**

Attendances where the patient sees a nurse but no treatment or chemotherapy is administered. Examples of nurse only attendances are:

• conveying treatment information, eg, chemotherapy education
• sample blood tests (not accessing a venous device)
• dressing wounds.

Currently most oncology regions are not receiving funding under specific purchase units for treatment attendances or nurse only attendances. Some centres have a purchase unit for blood transfusions and non-medical clinic visits. The funding mechanism is inconsistent and does not reflect actual activity. It is proposed that future funding models include purchase volumes for these three types of attendance, with national clarity and consistency.
## Appendix 1D: Statistical profile of medical oncology services in New Zealand

### Table 1.1: Distribution of medical oncology services

<table>
<thead>
<tr>
<th>Unit</th>
<th>Population¹,²</th>
<th>Clinics</th>
<th>Chemotherapy/administration (reconstitution)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland</td>
<td>1,319,900</td>
<td>Whangarei, North Shore, Greenlane</td>
<td>Auckland (A, C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Whangarei (C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Greenlane (B)</td>
</tr>
<tr>
<td>Hamilton</td>
<td>607,600</td>
<td>Tauranga, Whakatane, Taupo, Rotorua, Thames, Tokoroa</td>
<td>Hamilton (C)*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tauranga (C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rotorua (A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Whakatane (C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Taupo (C)</td>
</tr>
<tr>
<td>Palmerston North</td>
<td>547,200</td>
<td>Gisborne, Hastings, New Plymouth, Hawera, Wanganui, Masterton, Levin</td>
<td>Palmerston North (A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hastings (A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Gisborne (B)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>New Plymouth (C)</td>
</tr>
<tr>
<td>Wellington³</td>
<td>531,400</td>
<td>Hutt, Kenepuru</td>
<td>Wellington (A, C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hutt (B)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Blenheim (C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Nelson (C)</td>
</tr>
<tr>
<td>Christchurch</td>
<td>522,500</td>
<td>Timaru, Greymouth</td>
<td>Christchurch (A, C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Timaru (A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ashburton (B)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Greymouth (B, C)</td>
</tr>
<tr>
<td>Dunedin</td>
<td>281,400</td>
<td>Clyde, Invercargill</td>
<td>Dunedin (A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Invercargill (B)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Balclutha (B)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clyde (B)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Oamaru (B)</td>
</tr>
</tbody>
</table>

**Key**  
A = Own hospital pharmacy; B = Other hospital pharmacy; C = Commercial contractor

**Notes**  
* On-site  
1. 1999 estimates, Statistics New Zealand.  
2. Official cancer centre catchment regions.  
3. Nelson and Marlborough are within the Wellington regional unit’s catchment, but there is no visiting service. Patients requiring more specialist treatment may be referred to either Wellington or Christchurch.
Specialist medical workforce

Table 1.2 demonstrates the specialist medical workforce available. Full-time equivalent medical oncologists per 100,000 population for each of the centres lie in a relatively narrow range of 0.41 to 0.53. The population for each of the base units is based on official cancer centre catchment areas. These attribute the Marlborough, Nelson and Tasman regions to the Wellington unit, although links between the Wellington unit and these regions are not well developed.

Table 1.2: Medical oncologist numbers

<table>
<thead>
<tr>
<th>Unit</th>
<th>Number of medical oncologists</th>
<th>FTE medical oncologists (vacancies)</th>
<th>Number of registrars</th>
<th>Registrars FTE medical oncology specific</th>
<th>Medical oncologists FTE per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland</td>
<td>6</td>
<td>5.4</td>
<td>4</td>
<td>4.0</td>
<td>0.41</td>
</tr>
<tr>
<td>Hamilton</td>
<td>3</td>
<td>3.0</td>
<td>1</td>
<td>1.0</td>
<td>0.49</td>
</tr>
<tr>
<td>Palmerston North</td>
<td>3</td>
<td>2.7</td>
<td>2</td>
<td>1.0</td>
<td>0.49</td>
</tr>
<tr>
<td>Wellington</td>
<td>3</td>
<td>2.8</td>
<td>2</td>
<td>2.0</td>
<td>0.53</td>
</tr>
<tr>
<td>Christchurch</td>
<td>3</td>
<td>2.5</td>
<td>2</td>
<td>2.0</td>
<td>0.48</td>
</tr>
<tr>
<td>Dunedin</td>
<td>2</td>
<td>1.5</td>
<td>2</td>
<td>0.7</td>
<td>0.53</td>
</tr>
</tbody>
</table>

Profile of regional cancer units

Table 1.3 indicates the number of inpatient beds at each centre, along with the speciality use of those beds. It is difficult to make comparisons among the six units because of differences in demand and bed numbers that result from differences in population and geography, as well as differences in specialist disciplines using those beds.

Also indicated in Table 1.3 is the distribution of other specialist staff, which is considered important for the good functioning of a specialist cancer unit, or for optimal patient welfare. These other specialist staff include clinical oncology pharmacy support (as opposed to reconstitution services), social workers, counsellors or other psychological support, oncology community nurses, and trial co-ordinators/research assistants. While there is significant variation in the availability of these important members of the multi-disciplinary team, their numbers are very low across the units.
### Table 1.3: Profile of regional cancer units, as of October 2000

<table>
<thead>
<tr>
<th>Unit</th>
<th>Inpatient beds (speciality)</th>
<th>Clinical oncology pharmacist</th>
<th>CNS Social worker</th>
<th>Trials co-ordinator/research nurse/data handler</th>
<th>Counsellor/psychological support</th>
<th>Oncology community/district nurse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland</td>
<td>23 (A)</td>
<td>+</td>
<td>4.0</td>
<td>2.0</td>
<td>4.4</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.0</td>
</tr>
<tr>
<td>Hamilton</td>
<td>30 (A, B, C)</td>
<td>+</td>
<td>3.0</td>
<td>1.0</td>
<td>1.2</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>Palmerston North</td>
<td>16 (A, B)</td>
<td>+</td>
<td>(1.0*)</td>
<td>0.5*</td>
<td>0.5</td>
<td>–</td>
</tr>
<tr>
<td>Wellington</td>
<td>18 (A, B)</td>
<td>+</td>
<td>4.0</td>
<td>0.5</td>
<td>4.0</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.0</td>
</tr>
<tr>
<td>Christchurch</td>
<td>30 (A)</td>
<td>+</td>
<td>1.0</td>
<td>2.0</td>
<td>2.6*</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>Dunedin</td>
<td>16 (A, B)</td>
<td>+</td>
<td>2.0</td>
<td>1.0</td>
<td>1.0</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.0</td>
</tr>
</tbody>
</table>

**Key**
- A = Medical and radiation oncology
- B = Haematology
- C = Palliative care
- * Shared
New Zealand Radiation Oncology

2.1 Key issues

The following issues are central to radiation oncology in New Zealand.

- Current capacity for radiation treatment in New Zealand is marginal and barely meets demand.
- There is a significant annual increase (projected 5.4 percent) of new cancer cases requiring radiation treatment.
- Current radiation treatment capacity will be compromised unless there are adequate levels of key staff.
- Eight of 17 existing linear accelerators are due for replacement by the end of 2000.
- An additional four appropriately staffed linear accelerators will be required in New Zealand to meet the growth in radiation treatment over the next five years.
- Clinical alliances must be developed between adjacent radiation oncology units to optimise resource use and enhance clinical service provision.
- A radiation oncology advisory group should continue to develop and review the national provision of radiation treatment services.

2.2 Overview

At present six radiation oncology centres provide radiation treatment, covering New Zealand’s population of 3.63 million.

Radiation oncology is the use of high-energy radiation accurately and safely delivered for the cure, long-term local control or palliation of cancer. Radiation treatment delivery involves the use of capital intensive equipment and highly specialised staff, including radiation oncologists, physicists and radiation therapists.

Despite the initial high capital cost of equipment, and significant operational costs, a course of radiation treatment is cost effective compared to other types of cancer care such as surgery and chemotherapy. Most courses of radiation treatment involve a complex planning process and a sequence of daily visits by the patient for treatment. A radical or curative course of treatment can take up to seven weeks.

One in three New Zealanders will develop cancer in their lifetime; in 1995 there were 17,798 new cancers registered. It is estimated that 45 to 55 percent of patients who have cancer will require radiation treatment. Population growth and rising cancer incidence mean the demand for radiation treatment will increase.
Radiation treatment will remain a major modality in cancer treatment over the next 30 years.

The delivery of radiation treatment services is dependent on appropriate resources to purchase, maintain and upgrade equipment, and to attract, train and retain highly qualified staff. Limited resourcing of radiation oncology services in New Zealand over the past decade has several times resulted in highly publicised delays for radiation treatment.

2.2.1 Definition of radiation oncology

Radiation oncology is the branch of medicine that deals with the management of cancers by radiation. Commonly treated cancers are breast, lung, rectum and prostate.

Radiation oncology procedures include:

- 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.

Radiation is often given in addition to other forms of cancer treatment, such as chemotherapy, surgery and hormonal therapy. Radiation oncology services require close linkages with medical oncology, palliative care and most surgical and medical subspecialities.

2.2.2 Role and effectiveness of radiation treatment

General background

Radiation treatment has an established role in responding to many types of cancer. Outcomes can be measured in terms of cure, long-term tumour control, improved survival or palliation of symptoms.

The following are the primary roles for radiation treatment.

- **Radical primary treatment** is when radiation treatment is the major or sole modality for tumours, with long-term local control rates of 20 to 80 percent expected depending on tumour type and stage at time of treatment. For early stage cancer radiation treatment is frequently an alternative to surgery and often used in preference because of better functional and cosmetic results. It is commonly used for locally advanced tumours where surgery is not an option. Cancers for which radiation treatment has a significant role include head and neck, cervical, prostate, lung and lymphoma.
Radical postoperative radiation treatment is when radiation treatment is used postoperatively to improve locoregional tumour control (reducing the risk of tumour relapse at the operative site). Use of postoperative radiation treatment will permit less radical surgery, enabling better functional or cosmetic results. The cancers for which radiation treatment is used postoperatively include breast cancer, testicular seminoma, endometrial cancer, rectal cancer and head and neck cancers.

Combined chemotherapy and radiation treatment is when radiation treatment is used in conjunction with chemotherapy. The combined treatment may include surgery or be an alternative to it. The indications for this approach have increased significantly over the last 10 years, especially in the management of oesophageal, rectal and anal cancers, and Hodgkin’s disease. It is likely to become established for cervical, bladder, and some head and neck cancers.

Palliative radiation treatment is when radiation is used for symptom control with advanced cancer. Occasionally palliative treatment may extend survival. Radiation treatment has a major role for palliation of pain due to bone metastases from most types of cancer, cerebral metastases and primary lung cancer.

2.2.3 Radiation oncology cost

The costs involved in radiation treatment for a cancer patient may be broadly divided into general care, diagnostic procedures and specific radiation treatment. Costings in New Zealand have been difficult because of the use of different definitions of output such as fractions, attendances, fields, courses or duration of treatment. Current costing methodologies vary significantly.

An estimate for the cost of a radiation treatment attendance in New Zealand is approximately $238. If the planning procedures are included, the cost for a course of radiation treatment ranges from $476 for a single fraction palliative course to $7600 for an average radical course.

Equipment costs in radiation treatment are high (30 percent). To be economic a linear accelerator should be used for more than 5000 attendances per year. However, more than 9000 attendances becomes less cost efficient because of the cost of employing additional staff. The lifespan of a linear accelerator is reduced if it is operated for more than 9000 attendances per year.

Despite these costs, medical literature shows radiation treatment is at least as cost effective as surgery or chemotherapy.
2.3 Service issues

2.3.1 Resources

There are a total of 17 linear accelerators in the six oncology centres (see Table 2.1). The majority of these machines are operating at maximum capacity. When funded positions are fully staffed there is sufficient capacity to manage current volumes. However, frequent vacancies or temporary staff shortages significantly impact on the capacity of a linear accelerator. Even small reductions due to vacancies or sick leave, particularly among radiation therapists, can significantly reduce capacity leading to treatment delays. Tight control of staff establishment numbers in all centres means there is little reserve capacity to cope with unplanned leave or resignations. Most centres have difficulties with recruitment and retention.

Table 2.1: Current staffing levels and linear accelerator numbers, May 2001
(This updates Table 1 in the April 1999 Radiation Oncology Report.)

<table>
<thead>
<tr>
<th>Centre</th>
<th>Linear accelerators</th>
<th>Radiation oncologists</th>
<th>Medical physicists</th>
<th>Radiation therapists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland</td>
<td>5</td>
<td>10 (1)*</td>
<td>7 (1)</td>
<td>48 (15.5)</td>
</tr>
<tr>
<td>Hamilton</td>
<td>3</td>
<td>5 (1)</td>
<td>5 (1.5)</td>
<td>24 (3.5)</td>
</tr>
<tr>
<td>Palmerston North</td>
<td>2</td>
<td>4 (0)</td>
<td>4 (0)</td>
<td>17 (0)</td>
</tr>
<tr>
<td>Wellington</td>
<td>2</td>
<td>3.5 (0.5)</td>
<td>4 (0)</td>
<td>18 (3.8)</td>
</tr>
<tr>
<td>Christchurch</td>
<td>3</td>
<td>5 (2)</td>
<td>3.8 (0)</td>
<td>24 (4)</td>
</tr>
<tr>
<td>Dunedin</td>
<td>2</td>
<td>2 (0)</td>
<td>4 (1)</td>
<td>16 (0)</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>28.5 (2.5)</td>
<td>27.8 (3.5)</td>
<td>147 (26.8)</td>
</tr>
</tbody>
</table>

Notes
* Numbers in parentheses indicate vacant positions.

2.3.2 Growth projections based on actual radiation treatment attendances

Data on linear accelerator treatment attendances, collected from each of the six radiation oncology centres over five years (1994–1998), show a 5.4 percent average growth. This growth is not evenly distributed throughout New Zealand. The best available data have been used; it is recognised that there are some differences in data collection between centres, but these do not affect the overall trends.
2.3.3 Equipment

The equipment required in a modern radiation oncology centre is:

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

Additional equipment for specialist treatment includes high- and low-dose rate brachytherapy units and stereotactic radiosurgery systems. Some centres will not require this additional specialist equipment.

The major equipment unit is the linear accelerator. However, centres also need to purchase, replace, upgrade and maintain the other equipment.

An Australian report (AHTAC 1996) recommended that linear accelerators have a 10-year life span for planned replacement. This life span is based on an average of 8,250 attendances per accelerator per year. Beyond 10 years linear accelerators are likely to become less reliable, requiring increasingly costly maintenance and possibly significant upgrading. Earlier replacement may be necessary when linear accelerators are utilised regularly for longer than eight hours each day and for more than 8,250 treatment attendances per year.

There are 17 linear accelerators in New Zealand. Of these, 50 percent will be beyond the recommended 10-year life span during the year 2000. Within five years 70 percent will need to be replaced.

The Radiation Oncology Working Party has developed a five-year national programme to replace accelerators and to purchase new units, based on the need to maintain current capacity and provide for projected increases in demand. The programme takes account of the age and condition of existing equipment, and the need to sequence replacements to allow for transfer of patients between centres during installation periods.

Installation of new equipment is a complex and involved process that requires considerable expertise and time commitment from the medical physics team. Replacing a new linear accelerator in an existing treatment bunker takes six to nine months. If a new bunker is to be constructed, a minimum of nine to twelve months is required for machine installation. Therefore recommended dates are for operational commencement. The financial approval or tendering process should begin well in advance of the commissioning date.

The length of the installation period for replacement linear accelerators means that oncology centres should consider building an additional bunker to ensure uninterrupted treatment delivery during the changeover period.
Table 2.2: Linear accelerator programme for replacement and additional equipment, 1999–2004

<table>
<thead>
<tr>
<th>Year</th>
<th>Auckland</th>
<th>Waikato</th>
<th>Palmerston North</th>
<th>Wellington</th>
<th>Christchurch</th>
<th>Dunedin</th>
<th>Additional equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>Replacement dual energy(^1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>Replacement dual energy</td>
<td>Upgrade single energy(^2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>Replacement dual energy</td>
<td></td>
<td>Replacement dual energy</td>
<td></td>
<td></td>
<td></td>
<td>Dual energy + new bunker(^3)</td>
</tr>
<tr>
<td>2002</td>
<td>Replacement single energy</td>
<td>Replacement dual energy</td>
<td></td>
<td>Dual energy + new bunker</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>Replacement dual energy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dual energy + new bunker</td>
</tr>
<tr>
<td>2004</td>
<td>Replacement single energy</td>
<td>Replacement dual energy</td>
<td>Replacement dual energy</td>
<td>Replacement dual energy</td>
<td></td>
<td></td>
<td>Dual energy + new bunker</td>
</tr>
</tbody>
</table>

Cost $9.5 m $4.6 m $6 m $3.5 m $3.5 m $7 m $20 m

Notes
1. Dual energy is a dual energy, dual modality linear accelerator with multileaf collimation and electronic portal imaging. Current cost $3.5 million (based on currency exchange rate of US$0.53).
2. Single energy is a single energy linear accelerator with multileaf collimation and electronic portal imaging. Current cost $2.5 million (based on currency exchange rate of US$0.53).
3. Estimated cost of a new linear accelerator treatment bunker is $1.5 million.

The total capital cost estimate for the five-year programme of replacement plus three additional linear accelerators is $52.6 million.

In addition to the capital cost, the ongoing maintenance cost of approximately $100,000 per linear accelerator per annum is a significant component of each centre’s budget.

Calculations based on projected growth show that New Zealand will require an additional three to four linear accelerators to be installed sequentially by 2004. Overall patterns of growth indicate at least three new machines will be required in the North Island and one in the South Island. Decisions on the location of the machines should take account of population demographics along with:

- tertiary and subspecialty linkages
- the development of academic and educational linkages
- the likely ability of centres to recruit adequate staff
- a review of current oncology centre service boundaries
- the development of strategic links among oncology centres based in tertiary and secondary centres.

Replacement and upgrading of other items such as kilovoltage machines, planning computers and simulators will be required. For example, four kilovoltage units (total $1.2 million approximately) and three simulators (total $4.5 million approximately) require replacement within the next five years.
Recommendations – equipment

1. In its business planning District Health Boards should incorporate the requirements for linear accelerator replacement and additions, including the staffing and development of support facilities. This planning should involve:
   (a) reviewing establishments to ensure they have the staff and infrastructure necessary to operate current linear accelerators to their required capacity
   (b) acknowledging the need to replace linear accelerators that are more than 10 years old
   (c) accepting the programme for linear accelerator replacement and additions as detailed by the working party (see Table 2.2)
   (d) considering provision of spare bunker(s) to allow linear accelerator replacement without loss of capacity
   (e) building a minimum annual increase in workload of 5 percent into planning assumptions, in view of the increasing incidence of cancer and increasing intervention rate and number of attendances needed for each patient.

2. The previous system for purchasing and maintaining major capital equipment for radiation treatment worked poorly, and the current price volume contracts need continued review to ensure that:
   (a) appropriate adjustment of the capital formula for replacing old equipment and adding new equipment
   (b) the purchase unit for outpatient radiation treatment developed by the working party (Appendix 2B) is adopted
   (c) contracting mechanisms allow greater flexibility to cope with projected volume increases
   (d) inpatient case weights for radiation and medical oncology and haematology are adjusted to accurately reflect a true cost.

2.3.4 National booking time priorities for radiation treatment

Nationally accepted guidelines for booking time priorities need to be established because most oncology centres in New Zealand have had delays for radiation treatment at various times. Booking time priorities will allow:

- equity of access for all patients waiting for radiation treatment, regardless of geographic location
- a programme of systematic quality control for all centres in New Zealand
- criteria for monitoring each centre to allow early implementation of corrective measures when delays occur.
Unnecessary delay in receiving radiation treatment for cancer is unacceptable. In view of the known biology of cancer and differences in cure rate with advancing stages of tumours, it is evident that delay will work against cure. From existing evidence it is difficult to quantify the reduction in cure rate that such delay causes. However, for a few tumour types, limited evidence indicates that delays are associated with poorer outcomes. When radiation treatment is used for palliation of symptoms, delays are likely to have a significant impact on quality of life. With screening programmes in place for breast and cervical cancers, members of the public are increasingly aware of a need to present early if cancer is suspected and they are likely to be anxious if prompt treatment is not available once cancer is diagnosed.

Radiation treatment should begin as soon as reasonably possible once the decision to treat has been made. There will always be a time interval between identification of the need for radiation treatment and starting treatment, to allow for treatment planning.

The recommendations for booking time do not take into account the delays that may occur prior to a radiation oncologist assessment or the time taken to complete assessment before a decision to offer radiation treatment is made (see Appendix 2A at the end of this section).

### 2.3.5 Staffing

Provision of radiation treatment involves three main professional groups:

- radiation oncologists
- radiation therapists
- medical physicists.

For each group the major problems relate to training, recruitment, staff retention and conditions of employment.

**Radiation oncologists**

A radiation oncologist is a specialist doctor who manages patients with cancer and undertakes patient assessments. The assessments lead to management and administration of treatment with ionising radiation and other forms of cancer therapy such as chemotherapy.

In 1999 New Zealand had 28.5 FTE funded positions for radiation oncologists. There were 25 actively practising radiation oncologists, each working an average 50-hour week. There were 7.9 funded radiation oncologist posts per million of population. It was estimated that each radiation oncologist sees an average of 334 new patients per year and supervises an average of 269 megavoltage courses per year.
Planning for appropriate staff numbers

Future planning for radiation oncologists should proceed on the assumption that each oncologist will manage 250 treatment courses per year (AHTAC report 1996). This planning guide may underestimate the real requirement because it does not fully allow for evolving work practices, changing complexity of the speciality and the considerable work-related stress factors.

Allowing for local requirements

A model based on linear accelerator courses and regional growth trends will not necessarily reflect local requirements for the number of radiation oncologist positions per centre. Local factors such as academic positions, administrative responsibilities, and subspecialty radiation treatment will justify adjustments to numbers based on projections from historical growth projections. Other subspecialty radiation treatment programmes that may justify additional positions include stereotactic radiation treatment, paediatric oncology and brachytherapy. Readjustment of current service boundaries would significantly influence the numbers required in individual cancer treatment centres.

To meet demand in the short to medium term, specific concerns are that:

- the current 28 positions will need to be increased to at least 39 speciality positions by 2004; meeting this increase would require two additional radiation oncologists per year
- overseas-trained oncologists will be needed to fill new positions in the next two to three years because most New Zealand trainees at present are in the early stages of their training
- New Zealand has 13 registrar positions of which 11 are funded by the CTA. This number of training posts is sufficient to meet predicted requirements for radiation oncologists, provided that the trainees can be retained in New Zealand oncology positions after achieving their speciality qualification.

Medical physicists

Radiation oncology physicists are essential for the delivery of safe and accurate radiation treatment. Their role is to ensure the accuracy of the physical parameters of radiation treatment. Medical physicists are an integral part of the radiation oncology team.

In New Zealand there are currently 22.5 FTE funded positions, with three vacancies. Based on Australasian guidelines and other international recommendations, the recommended number of physicists is 2.2 physicists per linear accelerator. If this guideline were adopted now, it would mean an increase of 15.5 medical physicists.
Risks of current understaffing

Understaffing increases the chance of treatment error. In several international incidents in which higher rates of morbidity/recurrence and deaths applied to hundreds of patients, reports highlighted that significant contributing factors were shortages of experienced physicists and resources for adequate quality assurance procedures. At the time of the reported incidents in the United Kingdom the centres involved had staffing levels similar to New Zealand’s current levels.

Understaffing also means that staff can only attend to the basic requirements of day-to-day operation. There are many examples of work that has been unreasonably delayed or not completed because of a lack of physics staff.

Planning for appropriate staff numbers

In the short to medium term, a national guideline of two physicists per linear accelerator should be set as an overall goal. Achieving this target would increase physicist numbers from 22.5 to 34 FTE. An additional six positions are also required over the next five years, to allow for predicted growth in workload.

Recruitment will be difficult because:

- there is no pool of experienced physicists in New Zealand
- salary levels deter potential candidates from North America, and increasingly also those from Australia and the United Kingdom
- New Zealanders who work overseas to broaden their experience usually do not return.

New Zealand will have to more closely align with Australian physicist salaries and conditions if there is to be successful recruitment of competent staff for existing vacancies and for the new positions.

Training issues

A major problem related to training of New Zealand graduates is that there is a lack of suitable postgraduate training opportunities for medical physicists. The sole New Zealand medical physics course (MSc) was discontinued in 1997 because the small numbers of students involved made it financially unattractive. New graduates with medical physics training now have to be recruited from overseas, or employed without basic medical physics knowledge. Once employed a new graduate must train and build work experience over four to five years to gain the experience and competency required to work independently as a medical physicist.

Few centres recruit new graduates because, with physicist understaffing, there is little time to provide training and development. The lack of suitable training opportunities means that very few young graduates are taking the option of a career in medical physics.

A suitable postgraduate training programme in New Zealand needs to be re-established. Appropriate funding sources need to be identified.
Recruiting and retaining other essential staff

Physics, electronics and mechanical technicians are also essential to the broader ‘physics’ team. It is difficult to recruit and retain these staff within the hospital system because of the differences in employment conditions compared to competing private organisations.

Radiation therapists

A radiation therapist administers radiation treatment safely and accurately to patients with cancer. This role includes all aspects of radiation treatment planning and delivery, patient education and support.

New Zealand has 139 funded radiation therapist positions, including charge and clinical tutor radiation therapists. As at 1 March 1999 there were 7.4 vacancies, with no pool of radiation therapists within New Zealand seeking work.

Using a factor of eight radiation therapists per linear accelerator, it is projected that 174 radiation therapists will be required for the year 2004.

Staff shortages

In some centres there is no cover for staff leave or professional development within the radiation therapy staff establishment. Staffing levels are vulnerable within all services. Any reduction in daily operation due to insufficient numbers of radiation therapists can increase waiting times for patients and cause stress for staff.

Currently, numbers of student radiation therapists graduating with a BHSc (RT) are inadequate to meet the present and long-term requirements of the six New Zealand radiation therapy centres.

The six centres continue to experience extreme difficulty in recruiting students.

Training issues

Some reasons for the difficulty in recruiting students for training are that:

- radiation therapy as a career is relatively invisible in the public arena
- the needs of the six centres have increased substantially over the past five years but the intake of students has not met these needs
- the number of students on an intake is directed by the number of clinical placements available
- it has proved difficult to attract people with the appropriate academic aptitude and the appropriate personality (empathetic, caring) to the profession
- there is a lack of accessible funding for aggressive marketing
- there is a lack of funds to train more students.
Recruitment and retention

It has been difficult to recruit and retain adequate numbers of qualified staff because:

- the numbers of students in the training programme are inadequate
- there is an attrition of staff to overseas positions
- overseas centres actively recruit New Zealand graduates
- New Zealand centres are unable to meet salary expectations of overseas staff
- career opportunities in New Zealand are limited to the six hospitals providing radiation therapy services.

There continues to be an international shortage of radiation therapists. It is anticipated that there will be ongoing difficulties in recruiting staff from overseas and in the attrition of trained radiation therapists from New Zealand with overseas centres continuing their active recruitment. It is a major concern that 174 radiation therapists will be required by 2004, as the number of graduates from the New Zealand training programme falls well short of this need.

Recommendations – staffing

3. Radiation therapy as a career should be aggressively marketed nationwide.
4. The number of students within the training programme should be increased from 16 (1999) to 25 (2000) per year.
5. The clinical setting should be restructured to enable access to clinical training for more students while maintaining current standards and clinical hours.
6. Sufficient funds should be provided to train an adequate number of students to meet professional needs.
7. Salary packages and conditions of employment should be reviewed with the aim of attracting appropriate radiation therapists, both nationally and internationally, and retaining existing staff.
8. For staffing and planning purposes, a guideline of eight radiation therapists per linear accelerator should be adopted.

2.3.6 Facilities

Oncology centres are traditionally stand-alone buildings on hospital sites because of requirements for the siting of radiation treatment machines and ancillary equipment. Services provided within an oncology centre include medical oncology, planning, simulation, radiation treatment, administration of cytotoxic drugs and outpatient clinics. In some centres, haematology and palliative care clinics are included in the service. It is desirable that on-site outpatient clinics and chemotherapy facilities are co-located with radiation treatment.
In recent years there has been little emphasis on maintaining or developing physical oncology facilities. It will be necessary to maintain and develop appropriate facilities to allow treatment of patients given the projected increase in their numbers. New bunkers to house linear accelerators must be built. Larger outpatient clinic facilities will be required. With more staff, more office facilities will be required.

It is recommended that District Health Boards incorporate facilities issues into its business plans. It is recognised that facility requirements differ significantly throughout the country.

## 2.4 Contracting and planning

A major factor affecting provision of radiation treatment in New Zealand is whether the price paid accurately reflects the cost of the service provided. Specific concerns are:

- prices per purchase unit differ among the six centres
- provision for capital replacement in the contract price is inadequate
- provision for salary in the contract price is inadequate
- outpatient purchase units have been inadequately developed and radiation oncology services are predominantly outpatient-based
- inpatient prices are based on Australian cost weights, which may not reflect New Zealand practice.

Purchase volumes often do not reflect current activity nor do they align well with increasing demand. Purchase volumes may not take account of referral patterns that sometimes do not reflect the currently defined oncology regional boundaries. Consideration should be given to reviewing regional boundaries for oncology services along with business and strategic realignment of current radiation oncology facilities.

Easier transfer of patients between centres could resolve problems of unplanned waiting time or planned downtime while old machines are being replaced. Administration of transfers can be complicated and would need to be simplified if the proposed booking priorities are to be adopted.

## 2.5 Clinical alliances between radiation treatment centres

With a geographic size similar to the United Kingdom and a widespread population, New Zealand needs to retain six oncology centres. The Radiation Oncology Working Party believes clinical alliances between centres would strengthen all six centres and enhance high quality delivery of radiation treatment nationally.
Alliances would be between the following centres:

- Auckland and Waikato
- Wellington and Palmerston North
- Christchurch and Dunedin.

The following benefits would stem from such alliances.

**Service delivery** would be improved because:

- a centre could provide a degree of cover when resources in the allied centre were temporarily reduced, eg, by staff shortages, treatment machine malfunctions
- the allied centres could ensure coverage of increased workload, eg, through logical placement of additional treatment machines and staff
- recruitment and retention of staff would improve.

**Quality** would be enhanced because:

- professional interactions would be improved with the development of common treatment protocols and audit
- equity of patient access to quality treatment delivery would be established
- professional isolation would be reduced.

**Education** opportunities would increase because:

- allied centres could run common training and educational programmes (undergraduate and postgraduate)
- participation in multidisciplinary clinics would increase.

**Research** would be enhanced because:

- access to appropriate clinical research facilities would increase for all centres.

All six radiation treatment centres are committed to developing clinical alliances. This strategy requires a re-examination of boundaries and careful forward planning. The needs of medical oncology, haematology and palliative care would need to be addressed.

An ongoing National Advisory Group is essential to ensure the development and coordination of cancer treatment services throughout New Zealand.
Recommendations – clinical alliances

9. The Ministry of Health and the District Health Boards should provide support and resources to continue a National Working Party to develop the concept of clinical alliances that would rationalise the current distribution of resources. In consultation with District Health Boards and the Ministry of Health will need to be realignment of oncology service boundaries.

10. The six oncology centres should co-operate on recruitment, training and retention strategies for key staff.

11. The Minister of Health should include cancer treatment as a priority within the Crown Statement of Objectives.

12. The Minister of Health should note that District Health Boards are unlikely to be able to fund the required linear accelerator replacements as outlined in this report.
Appendix 2A: National booking time priorities for radiation treatment of patients with cancer

Categories for booking time priorities

These guidelines for booking time priorities take into account current practice in New Zealand and recommendations from overseas groups such as the United Kingdom Joint Council for Clinical Oncology and the Faculty of Radiation Oncology of the Royal Australian and New Zealand College of Radiologists.

The provider and funder should include these criteria in contracts for provision of quality cancer care.

These criteria are only one set of measures for quality care. Services should also be working to address measures along the continuum of cancer care from diagnosis to radiation treatment.

The timeframes defined by these criteria will be achieved only where oncology centres have adequate procedures, workforce, specialised equipment and supporting facilities. When delays occur, monitoring of centres against these criteria should allow early corrective action to be taken.

The target times for each priority category are measured from the date of the decision to treat through to the time of treatment, and assume that there are no medical factors preventing the patient from starting treatment apart from the completion radiation treatment planning procedures. In practice the time to treatment would be measured from the date of the written request for treatment until the patient starts radiation treatment. On occasions, patients who fulfil the criteria for a particular timeframe may experience delay beyond the maximum time that is acceptable because of technical problems with planning, requirements created by complex treatment planning and natural variations of departmental workload. Delays may also occur because patients ask for treatment to be deferred.

The recommended booking priority criteria for radiation treatment are as follows.

**Priority A: Urgent radiation treatment**

A patient with cancer where the severity of symptoms or complications means that no delay is acceptable.

*Maximum acceptable time to treatment is 24 hours.*

**Priority B: Curative radiation treatment**

A patient with potentially curable cancer where delay could reduce the chance of cure.

*Maximum acceptable time to treatment is two weeks.*
Priority C: Palliative and other radical radiation treatment

Priority C covers two groups:

- patients requiring radical radiation treatment for tumour local control where the impact on survival is less certain and delay, while not desirable, is less likely to impact on the result of treatment
- patients requiring radiation treatment for palliation of symptoms.

Good practice for palliative treatment is to commence treatment within two weeks according to progression rate of symptoms, severity of symptoms and degree of functional impairment. The maximum acceptable delay is four weeks.

When resources do not permit treatment within the maximum acceptable time for priority C, these patients may experience longer delays to ensure that timeframes for other priority categories are achieved.

Priority D: Combined chemotherapy and radiation treatment

The start of radiation treatment is booked for a date to allow safe and effective phasing of treatment defined by a clinical trial protocol or documented treatment protocol.

Details of the criteria for each booking time priority and clinical examples are contained in Table 2.3.

Delays for investigation and referral to a radiation oncologist

Delays prior to oncology referral are common. All new patients should be seen in the first available clinic and usually no longer than two weeks from time of referral.

Efforts should be made to reduce delay for referral by systematic review of appointment systems, ensuring appropriate staffing, adequate frequency of clinics and education of referring clinicians.

Management of booking priorities

Assignment of booking priorities

Careful clinical assessment and judgement are required in assignment of a priority, particularly to categories B and C. When difficult clinical situations exist, consultation in a joint meeting with other specialist colleagues or multidisciplinary clinics is encouraged. Clinical discretion is required in assigning a priority category taking into account fitness of patient for treatment, stage of tumour and other prognostic variables. At present it is not considered appropriate to use a scoring system for assignment of priority categories.


**Procedures when megavoltage capacity is insufficient to ensure patients can be started within the defined priority booking times**

When there is insufficient treatment capacity the recommended times for priorities A and B should not change. Priority D patients should continue to be booked according to their protocol date. Priority C patients would expect delays longer than the maximum of four weeks, with treatment starting as soon as possible.

When there are delays of longer than six weeks, arrangements for radiation treatment at other centres should be considered for suitable patients.

**Booking of patients where decision to treat has been made but treatment cannot commence**

Patients should not be booked until they are able to start treatment. However if a decision has been made for treatment, departments may consider using an administrative or holding list to track these patients until they are placed on the waiting list.

Centres should use a holding or administrative list for patients where an intervening medical condition delays treatment.

**Waiting list reporting parameters**

There should be monthly reports of the number of patients:

- **on the waiting list starting treatment**, ie, the total number of patients with booking priority A, B or C who started treatment in the calendar month

- **on the waiting list starting treatment after a delay of longer than four weeks**, ie, the number of patients with priority A, B or C who started treatment in the calendar month with a delay longer than four weeks

- **on the waiting list starting treatment after a delay of longer than six weeks**, ie, the number of patients with priority A, B or C who started treatment in the calendar month with a delay longer than six weeks

- **given a booked treatment date for starting treatment**, ie, the number of patients starting treatment in the calendar month who were priority D and given a booked date according to a combined chemotherapy–radiation treatment protocol.

**Rationale for reporting**

The reporting will allow a single indicator to be used for monitoring centres. The indicator will show the proportion of patients who commence treatment more than four weeks after the decision to treat. This format will give a consistent method of reporting from all centres and allow easy identification of significant delays.

A proportion of patients will start treatment after four weeks for justifiable reasons not related to departmental treatment capacity. A benchmark for the proportion of patients starting treatment over four weeks will need to be established, which acts as a trigger for commencing booking list audit.
Procedure when a significant proportion of patients are starting treatment after a delay of longer than four weeks

When a significant proportion of patients commence treatment after four weeks, it is recommended that centres audit and report the reasons for these delays. The reported information would categorise patients starting treatment after four weeks in terms of the numbers who:

• requested a delay for treatment once a priority was allocated
• were delayed for medical reasons
• were delayed because planning procedures could not be completed on time
• were delayed because space was not available on a linear accelerator machine.
Table 2.3: Radiation treatment booking priorities

<table>
<thead>
<tr>
<th>Priority category</th>
<th>Good practice</th>
<th>Maximum acceptable</th>
<th>Criteria</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Urgent</td>
<td>Within 24 hours</td>
<td>Patients with rapidly progressive complications of malignancy that require rapid treatment to prevent or minimise severe morbidity or life threat</td>
<td>Spinal cord compression, Superior vena cava obstruction, Cord equina compression, Major life-threatening haemorrhage not amenable to surgical intervention, Major upper airways or bronchial obstruction with stridor</td>
<td></td>
</tr>
<tr>
<td>B Curative</td>
<td>Within 2 weeks</td>
<td>Tumours for which radiation treatment usually results in 20 percent or better survival at five years and there is evidence that delay may compromise chance of cure, Patient fit to have radical radiation treatment</td>
<td>Head and neck cancer, Bladder cancer, Carcinoma oesophagus, Paediatric cancer, High grade Non Hodgkin’s Lymphoma, Hodgkin’s Disease, Cervix cancer, Pre-operative radiation treatment</td>
<td></td>
</tr>
<tr>
<td>C Palliative and other radical</td>
<td>Palliative treatment within 2 weeks or sooner according to severity of symptoms</td>
<td>Within 4 weeks</td>
<td>Radical or adjuvant radiation treatment where there is no clear evidence that short delays are likely to affect the outcome</td>
<td>Prostate cancer, Post operative breast cancer, Post operative endometrial cancer, Skin cancer, Seminoma testis (stage I), Brain tumours</td>
</tr>
<tr>
<td>D Combined chemo-therapy and radiation treatment</td>
<td>Start date booked according to treatment schedule</td>
<td>Patients having combined radiation treatment and chemotherapy where safe, effective sequencing of treatment modalities is required, Tumours treated according to clinical trial or documented referenced national/international protocols</td>
<td>Anal cancer, Oesophageal cancer, Bladder cancer, Rectal cancer, Paediatric cancer, Hodgkin’s disease, Non-Hodgkin’s lymphoma, Patients in clinical trials</td>
<td></td>
</tr>
</tbody>
</table>

Note:
When treatment resources do not allow priority C patients to start treatment within four weeks, priorities for A, B and D should not change. Priority C patients should be started as soon as possible but could expect delays longer than the accepted maximum of 4 weeks.
Appendix 2B: Recommended purchase unit definitions

First assessment
The patient is seen by a radiation oncologist or a palliative care physician or a medical oncologist for the first time for a particular neoplasm/condition.

A first assessment for non-melanoma skin cancer is defined as a separate first assessment for one or more skin cancers not seen at a previous first assessment.

Note: This definition would include both inpatients and outpatients. The HFA definition is for outpatients only and excludes first assessment of inpatients on the ward because this is included as part of the inpatient diagnostic related groups.

Subsequent assessment
Any subsequent visit that is not a first assessment. It includes:

- follow-up
- reassessment for a new event associated with the same neoplasm/condition
- radiation treatment review.

Radiation treatment attendance
An attendance where the purpose is to plan or receive prescribed radiation treatment. It includes all planning, simulation/CT, radioactive isotope implants or treatments, and external beam radiation treatment. A treatment can take place in an inpatient or outpatient setting.

Note: If a patient has a planning session and a treatment on the same day, this will be counted as two attendances.

Radiation treatment course
A radiation treatment course is the total radiation dose given to a patient in a specified number of fractions over a defined period to one site for a particular neoplasm/condition.

Notes
- A treatment course includes new treatment courses and re-treatment courses.
- Boost fields, including those given on a different machine or by different radiation modality, are included as part of a course and should not be counted as a separate course.
• Treatment breaks, whether planned or unplanned, are part of the course and a break in a total planned course does not define a separate course of treatment.
• A course is defined by the final total dose and fractions given which may be more or less than was initially prescribed.
• Part of the treatment given on a different linear accelerator or orthovoltage machine should be included as part of one course.
• A course can include one or more prescriptions that may be on different prescription dates.
• A course could include additional treatment to the original prescription. An extension of dose prescription on completion of the initial prescription is included as one course, regardless of whether there is a treatment break.

**New radiation treatment course**

A course of radiation treatment given to a patient for the first time for a particular neoplasm/condition.

**Notes**

- There should be no recorded history of previous radiation treatment given to that patient for the same neoplasm/condition at that centre.
- A patient who has previously received a radiation treatment course for a different neoplasm/condition is counted as having a new treatment course.

**Radiation retreatment course**

Any subsequent course of radiation treatment given to a patient for a previously treated neoplasm/condition to any site including previously treated sites.

**Radiation treatment site**

A defined anatomical location or region to which a course of radiation treatment is given.

**Radiation treatment field**

An individual application of external beam radiation to a particular site.

**Notes**

- A concurrent boost would count as a separate field.
- A field applied using a mixed beam on the same or a different machine would count as additional fields.
- Modification to the beam with wedges, shields or compensators when there is interruption to the exposure during the delivery of a fraction would count as additional fields.
3 New Zealand Haematology Services

3.1 Key issues

In regard to haematology services, the following key issues have been identified.

- Inpatient diagnostic related groups (DRGs) do not cover the costs of the resources required for intensively treated patients.
- There is no national process for the funding, evaluation and introduction of new cancer technologies and drugs.
- There is inequitable access to haematology treatments throughout New Zealand.
- There is a lack of suitably trained staff, especially nurses with experience in chemotherapy and bone marrow transplants.
- Given that cancer services are a national priority, there are inadequate mechanisms for funding appropriate international and national trials of new treatments.
- The present ethics committee system is not responding in a timely fashion to applications for national trials.
- There is a lack of clinical and management data available nationally.

3.2 Overview

Haematology services in New Zealand are complex, with a wide variety of clinical and laboratory responsibilities. The services include:

- management of haematology malignancies
- provision of bone transplantation
- management of a wide variety of non-malignant haematological disorders
- management of thrombotic and bleeding disorders, including haemophilia
- provision of haematology laboratory services
- responsibility for transfusion medicine services (in association with the New Zealand Blood Service).

Over recent years, haematology services have been organised in six geographic regions, similar to other cancer services. However, unlike the cancer treatment services, the Auckland region is served by three separate haematology services. Table 3.1 details the distribution of services nationwide.
### Table 3.1: Distribution of haematology services in New Zealand, as at December 2000

<table>
<thead>
<tr>
<th>Region</th>
<th>Services</th>
<th>Other hospitals serviced</th>
<th>Funding</th>
<th>Other factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland</td>
<td>All</td>
<td>Northland</td>
<td>Central</td>
<td>Academic appointment</td>
</tr>
<tr>
<td>Middlemore</td>
<td>All except allo</td>
<td></td>
<td></td>
<td>Transfusion^</td>
</tr>
<tr>
<td>North Shore</td>
<td>BMT</td>
<td></td>
<td></td>
<td>Transfusion^</td>
</tr>
<tr>
<td>Waikato</td>
<td>All except allo</td>
<td>* Whakatane (monthly)</td>
<td>Peripheral</td>
<td>NZBS-shared SMO</td>
</tr>
<tr>
<td></td>
<td>BMT</td>
<td>* Rotorua (monthly)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Tauranga (2 x monthly)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Thames (monthly)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palmerston North</td>
<td>All except allo</td>
<td>* Wanganui (monthly)</td>
<td>Central and Peripheral (THC)</td>
<td>NZBS-contracted SMO</td>
</tr>
<tr>
<td></td>
<td>BMT</td>
<td>* New Plymouth (2 x monthly)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Hawke’s Bay (monthly)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wellington</td>
<td>All</td>
<td>Hutt Valley</td>
<td>Central</td>
<td>NZBS-shared SMO academic appointments</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Masterton (monthly)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nelson-Marlborough</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christchurch</td>
<td>All</td>
<td>* Greymouth (3 x monthly)</td>
<td>Peripheral</td>
<td>Academic appointments</td>
</tr>
<tr>
<td></td>
<td></td>
<td>** Dunedin (monthly)</td>
<td>Central</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>** Invercargill (monthly)</td>
<td>Central</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Timaru/Nelson/ Marlborough</td>
<td>No clinic</td>
<td></td>
</tr>
<tr>
<td>Dunedin</td>
<td>All except allo</td>
<td>* Invercargill (monthly)</td>
<td>Central</td>
<td>NZBS-shared SMO</td>
</tr>
<tr>
<td></td>
<td>and auto BMT</td>
<td></td>
<td></td>
<td>Academic appointments</td>
</tr>
</tbody>
</table>

**Key**

* Regular ‘away’ clinics  
** BMT clinics  
^ Management of Hospital Bloodbank

### 3.2.1 Effectiveness

Because treatments for haematological malignancy are highly effective, they have a significant impact on cancer statistics. The best results are in child leukaemia where cure rates of up to 80 percent are achieved. The results of treatment for haematological malignancies continue to improve.

In the late 1980s the results for acute myeloid leukaemia (the most common form of adult leukaemia) were unsatisfactory in New Zealand (survival at five years was 2 percent). However, survival at five years had increased to 42 percent by 1995 and continues to improve.
3.2.2 Growth

There is a lack of good data about the current level of activity in haematology services in New Zealand. However, these services are growing and are expected to continue to do so, for the following reasons:

- growth and ageing of population
- increasing incidence of haematological cancers, eg, non-Hodgkin’s lymphoma
- increasing applicability of successful treatments to a broader range of conditions.

3.3 Service issues

3.3.1 Funding of inpatient services

In ensuring that the treatment of haematological cancers remains sustainable and available equitably across the country, one of the important aspects is understanding the real cost of treating these malignancies.

The translation of the Australian DRGs to the New Zealand haematological environment has not produced a reflection of the true costs of service. In part, this shortcoming results from differences in admission and discharge policies between Australian and New Zealand health care systems. For example, in Australia transfers between services within the hospital are counted as separate DRGs whereas in New Zealand these are counted as a single DRG attracting significantly less money overall. Urgent review is required in particular for the cost weights of intensively treated haematology patients, such as acute leukaemia and bone marrow transplant patients. For example, for a standard course of treatment for an adult patient with acute leukaemia, the funding discrepancy is approximately negative $45,000.

Therefore, there is urgent need for review of the funding mechanism to allow appropriate sustainable funding of haematology services.

**Recommendation – funding of inpatient services**

1. The cost weights of the intensively treated haematology patients should be reviewed to ensure an appropriately priced service.
### 3.3.2 Funding of outpatient services

There is increasing recognition that high quality care can be delivered in the ambulatory care setting. Haematology is at the forefront of such innovative practice. Current funding mechanisms provide perverse incentives for inpatient care. This anomaly can be addressed by more flexible funding approaches.

**Recommendation – funding of outpatient services**

2. More flexible funding mechanisms should be adopted to provide appropriate reimbursement for ambulatory treatment where it is clinically appropriate.

### 3.3.3 Access to new drugs and treatments

There are major advances internationally in the treatment of haematological malignancies. The Haematology Working Party recognises the challenges presented to New Zealand as it tries to introduce new drugs and procedures available in other Western countries. With more information, the New Zealand public is exerting pressure on those providing treatment to provide such a level of care. For haematology services, drugs may be part of more complex procedures such as transplantation; the introduction and funding of the drugs may lower the cost of the overall treatment. The establishment of a national process to review the evidence and, where appropriate, approve the funding for new drugs/technologies will achieve equity of access for New Zealand patients. This process needs to be able to respond in a timely way to overseas advances.

Where world leaders in the speciality are advocating the use of a particular treatment but there is as yet insufficient evidence of its effectiveness, it is beneficial to be involved in international trials, as it enables New Zealand patients to have access to the treatment in a controlled environment. By way of illustration of the importance of such participation, after New Zealand joined the United Kingdom Medical Research Council trial, patient survival for acute myeloid leukaemia increased from 2 percent in the late 1980s to 42 percent in 1995.

Trials at a national level in haematology are not driven by drug companies. Rather they involve innovative use of drugs, or new immunological approaches such as non-myleoblative bone marrow transplants. Where the trial does not indicate effectiveness, the drug or technology will not be considered for introduction. If the trial does indicate effectiveness, the drug or treatment is submitted to the national process described above.

Therefore it is recommended there be a mechanism for funding trials of treatments that show particular promise for New Zealand patients.
Recommendations on access to new drugs and treatments

3. There should be a timely, transparent, evidence-based process to evaluate and fund new cancer technologies and drugs.

4. Haematology drugs and treatments should be equitably available to all patients across New Zealand, with appropriate funding mechanisms.

5. Those drugs with an established place in haematological practice (see Appendix 3A at the end of this section) should be consistently available in all centres.

6. In regard to New Zealand’s involvement nationally in appropriate international trials, funding mechanisms should be enhanced for those treatments that are not included in Recommendation 3 but that are regarded internationally as very promising.

3.3.4 Geographic access

While geographic access is reasonable overall, supervision of haematology patients is inadequate in some regions, for example, in Northland.

There are good working relationships between pairs of geographically related centres. These alliances should be formalised to maximise efficient interchange of staff and resources.

Evidence from the UK has shown that well designed randomised trials lead to better overall results and removes the socio-economic variances that occur in cancer treatments.

Recommendations – geographic access

7. Patients with haematological conditions should have access to specialist haematology services to allow for appropriate assessment and monitoring of care.

8. All hospitals in which chemotherapy is administered for haematological conditions should have a formal process to allow oversight of that service by a specialist haematologist.

9. All hospitals in which patients with haemophilia or other severe bleeding disorders are treated should have a formal process to allow oversight of that service by a specialist haematologist.

10. Official recognition should be given to the alliances that already exist between the pairs of tertiary centres (Waikato–Auckland, Palmerston North–Wellington, Dunedin–Christchurch).
3.3.5 Staffing

Haematology nurses

There are serious shortages of trained haematology and bone transplant nurses, which have resulted in delays in transplants and other acute treatments. Significant factors in recruitment and retention are:

• salaries are not competitive with other Western countries or other New Zealand occupations
• the need for haematology nurse educators on specialist units is insufficiently recognised
• there is a lack of postgraduate training opportunities
• opportunities for national networking among nurses are insufficient
• staff experience stress due to the complex nature of haematology nursing and grief over loss of patients.

Recommendation – haematology nurses

11. The acute shortage of haematology nurses should be reviewed to identify the underlying reasons, and to develop innovative solutions to this problem including the establishment of postgraduate courses and support and recognition for ongoing training.

Haematologists

It appears that haematology is not an attractive speciality to New Zealand trained registrars. One of the reasons may be that consultant staff work the long hours. As a result, New Zealand is reliant on overseas-trained haematologists. While currently New Zealand is able to attract suitable haematologists from overseas, this method of recruitment may prove a problem in the future.

Recommendation – haematologists

12. The working conditions of the consultant haematology staff should be reviewed to ensure recruitment of suitable New Zealand trainees.
Pharmacists

The Haematology Working Party recognises the same staffing issues in relation to pharmacists as those identified by the Medical Oncology Working Party, namely:

- staff shortages
- limited training
- legislative barriers
- potential monopoly of supplies
- transportation constraints.

**Recommendation – pharmacists**

13. The Haematology Working Party supports the recommendations outlined in the medical oncology report in relation to pharmacist staffing issues (see Section 1.3.3).

3.4 Contracting and planning

The lack of accurate haematological data is a problem for planning. It needs to be addressed on both a regional and national basis. It is difficult to interpret data from the cancer registry due to specific issues that relate to the coding of haematological malignancies.

**Recommendations – contracting and planning**

14. The purchase units outlined in Appendix 3C should be adopted nationally and there should be a process for updating them to allow for innovative practice.

15. A national data set relating to clinical haematology activities should be defined, collected by all hospitals providing such services, and collated by the regional cancer centres.

16. The national cancer registry should be reviewed so that it records data in accordance with modern international classification (eg, World Health Organization) for haematological malignancies. The data should be made available regularly to the haematology centres.

17. There should be ongoing co-ordinated strategic planning for the treatment of haematological malignancies. There should be development of a National Cancer Treatment Programme. There should be a National Cancer Control Programme.
3.5 Research

High quality clinical research is a force for maintaining and advancing quality clinical practice and an effective mechanism for recruiting and retaining staff.

There is concern, however, that clinicians are finding the national ethics approval system so cumbersome that obtaining approval for national studies cannot be completed in a timely and efficient manner. There is a need for this process to be reviewed.

Recommendation – research

18. The national ethics process should be reviewed so that it is able to deal with national applications with the minimum of delay.
Appendix 3A: Drugs already in established use in haematological units

Cytotoxics

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Drug Name</th>
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<tbody>
<tr>
<td>All trans retenoic acid (ATRA)</td>
<td>Etoposide</td>
</tr>
<tr>
<td>Amsacrine/m-Amsa</td>
<td>Fludarabine</td>
</tr>
<tr>
<td>Arsenic Trioxide</td>
<td>Gemcytabine</td>
</tr>
<tr>
<td>Asparaginase</td>
<td>Hydroxyurea</td>
</tr>
<tr>
<td>Azothiaprine</td>
<td>Ifosphamide</td>
</tr>
<tr>
<td>BCNU (Carmustine)/CCNU</td>
<td>Interferon (for specific indications)</td>
</tr>
<tr>
<td>Bleomycin</td>
<td>Melphan</td>
</tr>
<tr>
<td>Busulphan</td>
<td>6 Mercaptopurine</td>
</tr>
<tr>
<td>Chlorambucil</td>
<td>Methotrexate</td>
</tr>
<tr>
<td>2 Chlorodeoxyadenosine</td>
<td>Methyl Prednisolone/Dexamethasone</td>
</tr>
<tr>
<td>Cisplatinum</td>
<td>Oxymetholone</td>
</tr>
<tr>
<td>13 Cis-retinoic acid</td>
<td>Pamidronate</td>
</tr>
<tr>
<td>Cyclophosphamide</td>
<td>Prednisone/Prednisolone/Hydrocortisone</td>
</tr>
<tr>
<td>Cytosine Arabinoside</td>
<td>Procarbazine</td>
</tr>
<tr>
<td>Darcarbazine/DTIC</td>
<td>Thalidomide</td>
</tr>
<tr>
<td>Daunorubicin/Idarubicin/Mitoxantrone</td>
<td>6 Thioguanine</td>
</tr>
<tr>
<td>Deoxycoformycin</td>
<td>Vincristine/Vinblastine/Vindesine</td>
</tr>
<tr>
<td>Etopophos</td>
<td>VM 26</td>
</tr>
</tbody>
</table>

Immunosuppressive and other support care drugs

This list does not include drugs already in more general use in other hospital departments.

<table>
<thead>
<tr>
<th>Drug Name</th>
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<tbody>
<tr>
<td>Acyclovir (Poliv)</td>
<td></td>
</tr>
<tr>
<td>Anegralide (specific guidelines required)</td>
<td></td>
</tr>
<tr>
<td>Anti Thymocyte Globulin</td>
<td></td>
</tr>
<tr>
<td>Clodronate</td>
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<tr>
<td>Cyclosporin</td>
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<tr>
<td>DDAVP</td>
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<tr>
<td>Gancyclovir</td>
<td></td>
</tr>
<tr>
<td>G-CSF or GM-CSF*</td>
<td></td>
</tr>
<tr>
<td>Low Molecular Weight Heparin</td>
<td></td>
</tr>
<tr>
<td>Mabthera</td>
<td></td>
</tr>
<tr>
<td>Tacrolimus/FK 506</td>
<td></td>
</tr>
<tr>
<td>Tranexamic acid</td>
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</tbody>
</table>

Note
* Used as per American Society of Clinical Oncology Guidelines 2000.
Appendix 3B: Expensive new drugs that are not in general use in haematology units

Drugs to be assessed in 2001

Erythropoietin
Anti CD20

Other drugs

Anti CD33
STI 571
Thrombopoietin or associated analogues
Appendix 3C: Recommended definitions for purchase units

To ensure consistency of output measurement, agreed definitions are essential. After the Radiation and Medical Oncology working parties developed the basis for the following definitions, the Haematology Working Party agreed to them with some modification. They are set out below in their modified form.

First assessment
The patient is seen by a radiation oncologist, palliative care physician, medical oncologist or haematologist for the first time as an outpatient for a particular neoplasm or condition.

Follow-up visit
Any subsequent attendance to a specialist for a consultation that is not a first attendance, including: follow up appointments; reassessment for a new event associated with the same neoplasm/condition; and all treatments reviews undertaken by a specialist.

Chemotherapy attendance
An outpatient attendance for the administration of a parenteral anti-cancer agent, including chemotherapy, monoclonal antibodies, vaccines and hormonal treatments.

Treatment attendance
Any attendance for a treatment or procedure that is not a chemotherapy or blood transfusion attendance. This includes, but is not limited to: pamidronate infusions, paracentesis, CV access devices, DDAVP treatment, venesection, and IV antimicrobial agents.

Blood transfusion
Includes attendances in which blood or blood products are administered.

Nursing attendance
An assessment by a nurse that is not a chemotherapy or treatment attendance. This includes nurse-only treatment reviews, but does not include a simple request for a prescription or any attendance that is in conjunction with a specialist attendance.
4 Palliative care

4.1 Introduction

4.1.1 Definition of palliative care

Palliative care is the total care of people who are dying from active, progressive diseases or other conditions when curative or disease-modifying treatment has come to an end. Palliative care services are generally provided by a multidisciplinary team that works with the person who is dying and with his or her family/whānau. Palliative care:

• affirms life and regards dying as a normal process
• aims to neither hasten nor postpone death
• aims to provide relief from distressing symptoms
• integrates physical (tinana), social (whānau), emotional (hinengaro) and spiritual (wairua) aspects of care to help dying people and their family/whānau attain an acceptable quality of life
• offers help to the family/whānau/carers during the person’s illness and then during their bereavement.

4.1.2 Principles of palliative care

Five guiding principles underpin the above definition of palliative care:

• The focus of palliative care is the person who is dying as well as his or her family/whānau.
• All dying people should be informed of their entitlement to palliative care and have access to quality health and support services appropriate to, and consistent with, their needs.
• Each person’s uniqueness, culture and autonomy should be respected, with all care based on his or her expressed needs and wishes.
• Palliative care affirms and encourages the quality of life for each individual. Although interventions (such as radiotherapy, chemotherapy and surgery) have a place in palliative care, the symptomatic benefit should outweigh any disadvantages of the procedure.
• The achievement of total care for the person requires both a multidisciplinary approach and continuity of care (before, during and after diagnosis of the terminal illness).
4.1.3 When should palliative care services commence?

It is not always easy to know when the provision of palliative care services should commence. Some people may live for many years with an illness or condition that is not curable and yet they may not be in the terminal phase of their illness.

The palliative approach assists health professionals determine the stage in a person’s illness or condition when palliative care services are needed. This holistic approach to care is informed by the knowledge and practice of palliative care principles and promotes a person’s physical, psychological and social wellbeing. The palliative approach assists a health professional to recognise all the care needs of a person from the time of diagnosis as well as informing the decision on when to commence discussing referral to palliative care services with a dying person and his or her family/whānau.

This strategy recommends that palliative care should generally be available to people whose death from progressive disease is likely within 12 months. The introduction of palliative care or referral of a person to palliative care services should be:

- guided by referral protocols
- supported by the advice of a health professional
- most importantly, based on the person’s needs and choices.

Until people require palliative care, it is important that they receive appropriate support care and clinical care to enable them to maintain their independence for as long as possible or desired. This strategy recognises that further work must be undertaken to address the needs of those with chronic and disabling diseases/conditions, particularly in relation to the type of services needed for those who do not yet require palliative care.

4.2 Background to the palliative care strategy

4.2.1 Reasons for a palliative care strategy

A palliative care strategy is necessary for the following reasons.

Palliative care is effective

It is globally recognised that palliative care is a legitimate component of health care. Evidence shows palliative care is effective in improving the quality of life for people who are dying, and that it should be a central feature of all good clinical practice.

In New Zealand, palliative care has not always been well understood or accepted by providers, nor has it been consistently incorporated into clinical practice (*The New Zealand Palliative Care Strategy*). These shortcomings are particularly noticeable in some hospital services, primary care services, rest homes and private hospitals. Some dying people therefore may not be in a position to make an informed choice about their care (as required under the Code of Health and Disability Services Consumers’ Rights). For this reason, a
strategy is needed to raise awareness of the effectiveness of palliative care among health and disability professionals and providers and the general population.

**Increasing need for palliative care services**

At present, approximately 90 percent of people known to be accessing hospice palliative care services have cancer. The large majority of these people are aged 60 years and over (with this age group also accounting for 78.8 percent of cancer deaths). The proportion of the population that is aged 65 or over is projected to more than double (from 12 percent to 26 percent) over the next 50 years. It is also estimated that by 2011, the number of people with cancer will increase by 24 percent. Thus palliative care services in future must be sufficient to meet the needs of an increasing number of people with cancer.

In addition, there is an increasing awareness that people with non-malignant diseases can benefit from palliative care services. Currently only 10 percent of those people accessing hospice services have non-malignant diseases, yet it is estimated that more people could benefit – possibly in numbers similar to the number of people who currently access hospice services. Extending services to these people as well could place a heavy burden on palliative care services if they are not resourced to manage this need (*The New Zealand Palliative Care Strategy Appendix 4)*.

**Service issues need to be addressed**

A number of issues are preventing the delivery of good palliative care to people who are dying and to their family/whānau:

- lack of a palliative care approach in some services
- variable access to palliative care services due to:
  - service gaps and national variation in different aspects of care
  - lack of recognition that people who are dying from conditions other than cancer can benefit from palliative care services
  - cultural barriers, in particular for Māori and Pacific peoples
  - lack of services in rural areas
  - lack of services designed for children and young people
  - interface, framework and funding boundaries between personal health and DSS services
- poor integration and lack of co-ordination of palliative care services, resulting in variable service
- lack of standard quality specifications or performance indicators/outcome measures, making benchmarking impossible
- lack of workforce planning for palliative care. There are not enough palliative care specialists in New Zealand and relatively few palliative care health professionals for Māori and Pacific peoples
- variability in the funding of palliative care services, particularly for hospices, which are not fully funded by government (*The New Zealand Palliative Care Strategy Appendix 5)*.
4.2.2 Palliative care strategy in context

The health and disability sector is being reconfigured to increase local decision-making and improve the responsiveness of health funders and providers to their communities. The Health Funding Authority and the Ministry of Health are being amalgamated, and funding is to be devolved to 21 District Health Boards (District Health Boards), which are currently being established.

District Health Boards will be responsible for working within allocated resources to ensure that services reflect the needs of individuals and communities at a local level. Each DHB will enter into a funding agreement with the Crown. This agreement will outline the Crown’s expectations of each DHB in relation to the services that should be funded and provided. The new sector is designed to take a more integrated and co-operative approach to health care.

4.2.3 Aim and objectives of the palliative care strategy

The aim of the palliative care strategy is to set in place a systematic and informed approach to the provision and funding of palliative care services.

In developing this strategy, key objectives are to:

- develop a practical strategy that builds on current service arrangements (including services provided by hospices, hospitals, general practitioners, district nurses, Māori health providers, home support, rest homes, aged care hospitals and charitable organisations such as the Cancer Society, MS Society and Motor-Neurone Society)
- develop a more responsive system that can support people’s choice to die at home. Research shows that 50 to 70 percent of people would prefer to have the choice of home care. At present, only 31 percent of people with cancer die at home (although for Māori and Pacific people the figures are 53 and 42 percent respectively)
- raise awareness of the importance of good palliative care
- incorporate work already done in relation to palliative care
- learn from overseas directions in palliative care that point to the need for more co-ordination and integration of services (The New Zealand Palliative Care Strategy Appendix 6).

4.2.4 Vision for palliative care services

The vision for the provision of palliative care services in New Zealand is that:

All people who are dying and their family/whānau who could benefit from palliative care services have timely access to quality palliative care services that are culturally appropriate and are provided in a co-ordinated way.
Underpinning the vision is a community model of palliative care services. That is, palliative care services should be provided for most dying people and their family/whānau in their own home, when this form of provision is their wish. The vision also assumes that the family/whānau will be active in assisting with care where their assistance is appropriate.

To implement the vision there is a fundamental need to develop awareness and knowledge of palliative care among communities and providers of health and disability services. In addition there is a need to clearly identify:

• the essential and accessible palliative care services for people who are dying and for their family/whānau
• the service configuration required to ensure access to co-ordinated quality palliative care services that are culturally appropriate.

4.3 Access to the essential palliative care services

A set of essential services to which dying people and their family/whānau should have access has been developed. This approach is consistent with overseas practice and current thinking in New Zealand. It also recognises that for people to have the option of dying at home, there must be access to a range of services provided in the community.

The Government is committed to funding essential palliative care services to ensure that services are available. It should be noted, however, that the services provided to dying people by primary care providers will be addressed within the framework of the Primary Healthcare Strategy. This strategy states that, over time, the Government will commit additional funding to primary care.

The essential palliative care services to which dying people and their family/whānau should have access are described below.

4.3.1 Assessment and care co-ordination

Assessment

Following confirmation that a person’s illness or condition has reached its terminal stage, that person should have an initial multidisciplinary assessment to identify the physical, social, spiritual and emotional needs of the person and of his or her family/whānau. After this initial assessment, team members directly involved in the person’s care should provide ongoing assessment.

A multidisciplinary assessment is important to ensure that all needs are identified early, and that an individualised care plan is established. It is important that the multidisciplinary team includes the general practitioner/practice nurse of the dying person to ensure continuity of care.
Care co-ordination

Each person who is dying should be allocated a care co-ordinator at, or following, the initial assessment. The care co-ordinator is responsible for ensuring that the dying person and his or her family/whänau are provided with information regarding palliative care options and services. In addition, the care co-ordinator ensures that the family/whänau are provided with the necessary information and skills to assist in caring for their dying family member.

The care co-ordinator also has responsibility for co-ordinating and ensuring access to the appropriate palliative care and other services, including:

- specialist palliative care
- primary care services
- hospital services
- Māori provider services
- residential care services
- home support
- services provided by social support agencies (eg, Work and Income New Zealand)
- voluntary services (eg, Cancer Society, MS Society and Motor-Neurone Society).

The care co-ordinator ensures care is appropriate to the person’s needs and culture. They are responsible for promulgating the palliative care approach and for liaising with and maintaining working relationships with all providers and volunteers.

4.3.2 Clinical care

Each person who is dying should have access to clinical care that includes:

- access to medical services (including primary care and specialist services), domiciliary nursing services, and equipment to provide symptom control, nursing and medical management for 24 hours, seven days per week, in the community
- access to inpatient care for respite care and/or control of symptoms that cannot be controlled adequately in a community setting; inpatient care should also be provided if required or preferred
- bereavement counselling and spiritual care for the person, as well as for his or her family/whänau before and after death to assist them to work through their bereavement.
4.3.3 Support care

People who are dying and their family/whānau should have access to support services based on need that include:

- support in the home (e.g., picking children up from school, general household management)
- long-term residential care in an appropriate setting for people who are unable to be cared for in the home.

4.4 Service configuration for palliative care services

The service-based framework is required which ensures that dying people and their family/whānau can access the essential palliative care services they need.

This framework should:

- build on existing services and workforce
- integrate/co-ordinate services at local, regional and national levels to ensure continuity of care
- ensure that all palliative care services are culturally appropriate for all population groupings, including Māori and Pacific peoples
- ensure the quality of palliative care services
- provide the flexibility to meet people’s needs, including the needs of those who do not wish to die at home
- take account of the future direction for primary health care.

4.5 Palliative care service networks

To ensure that dying people and their family/whānau have access to essential palliative care services, the service framework should have a network of two inter-linked levels of palliative care services:

- local palliative care services
- specialist palliative care services.
4.5.1 Local palliative care services

Each DHB area will be required to have at least one local provider that can meet most of the palliative care needs of the community.

Providers of local palliative care services may be a hospice, a hospital community-based service and/or primary health organisations. These providers will be required to:

- provide access to the essential palliative care services in both community and institutional settings for their DHB area in line with the funding agreement between District Health Boards and the Minister of Health
- have a formal agreement with specialist palliative care services in line with specialised palliative care services outlined below (Section 4.5.2)
- have formal links with relevant service providers in the area, including hospital services, primary care services and primary health organisations, Māori providers, and disability support service providers
- develop a plan with local Māori to ensure there is appropriate access to the palliative care services that Māori need.

People requiring local palliative care services are likely to be referred from a number of services, including primary care, Māori provider organisations, hospitals, rest homes, and community provider organisations. It is important that these providers understand and utilise the palliative care approach, to ensure timely referral to palliative care services.

General practitioners, primary health nurses and community support providers are very important in providing continuity of care for dying people and their family/whānau. If primary care providers and community support providers are not part of the contracted local palliative care service, they should still be considered part of the palliative care service. They should also be members of palliative care multidisciplinary teams.

Palliative care providers who do not have respite or long-term care beds will need to have formal links with rest homes or private hospitals. They should be responsible for ensuring the person receives quality palliative care services.

It is important that where there is more than one provider providing palliative care services, those services are well co-ordinated to ensure that the dying person and his or her family/whānau receive seamless care.

4.5.2 Specialist palliative care services

All District Health Boards should have access to specialist palliative care services but it will not be possible for all District Health Boards to provide these services directly. To ensure an appropriate level of access there should be at least six specialist palliative care services based in Auckland, Hamilton, Palmerston North, Wellington, Christchurch and Dunedin. For appropriate access, there should be:

- close geographical proximity to tertiary hospital services
- existing hospices/hospital services in these regions that provide specialised palliative care.
Providers of specialist palliative care services are likely to be either a hospice or a hospital, or both of these service providers may work together. Specialist palliative care service providers will provide the essential services for their community. They will also provide a full range of specialist palliative care services, which include:

- providing evidenced-based specialist advice to local palliative care providers, on-site care and consultation where necessary
- establishing effective links with local palliative care providers in the region
- facilitating quality improvement in all local palliative care providers in the region
- ensuring that appropriate specialist education and training are available, eg, through clinical placements for medical and nursing staff
- establishing effective links with specialist palliative care services nationally and working nationally on quality improvement, eg, in developing evidenced-based referral and best practice guidelines, developing outcome/performance indicators and undertaking benchmarking activities
- undertaking/participating in palliative care research activities.

Specialist palliative care services will employ health professionals with a broad range of palliative care competencies. These staff should include:

- two or more full-time equivalent doctors with a recognised palliative care specialist qualification
- a majority (over 60 percent) of registered nursing staff with a recognised palliative care qualification, while the rest are working towards palliative care qualifications
- one or more trained bereavement counsellors with skills in palliative care.

There should also be access to trained occupational therapists, physiotherapists and pharmacists with palliative care expertise.

Specialist palliative care services must meet the Health and Disability Sector Standards fully before being eligible to be recognised as a specialist palliative care service. It is also likely that they will be either accredited or working towards accreditation using Quality Health Palliative Care Standards.

Specialist palliative care services will also have formal links with hospital palliative care teams. These teams, while linked to specialist palliative care services, will work in tertiary hospitals. Hospital palliative care teams are necessary to educate and advise all hospital services on the palliative care approach and the need to provide palliative care as an option for people who are dying. They will also assist hospital providers in ensuring that people gain access to the appropriate palliative care service in their communities.

While hospital palliative care teams will initially operate in the tertiary hospitals it is expected that over time health professionals with palliative care training/experience will be present in all hospitals.
4.6 Role of the community

This palliative care strategy recognises that community organisations and their paid and unpaid workforce play an important part in the delivery of palliative care services. It recognises the many hours that the community workforce, family/whānau and neighbours contribute in caring for those who are dying and strongly supports their continued role. This strategy also recognises the important part played by this workforce in reflecting community values and ownership in health service provision.

It is important that where the community workforce is assisting in palliative care services, appropriate induction and ongoing training are made available. Hospice New Zealand is currently undertaking national work on volunteer education.

4.7 Needs of specific population groups

While most of the people requiring palliative care are older and have varying needs, other population groups have specific needs. The needs of Māori, Pacific peoples, people with disabilities and non-malignant disease, people under the age of 65 years, and children are outlined below. Given that there are further groups with specific needs, it is important that palliative care services are flexible enough to meet the full range of needs.

4.7.1 Māori

To address the needs of Māori, it is important that:

- palliative care services have policies in place that recognise the specific needs of Māori
- palliative care providers have linkages with Māori development organisations and a plan for services for local Māori is developed to assist in meeting the specific needs of Māori
- at a local level, where appropriate, each provider employs a care co-ordinator(s) to meet the special needs of Māori, particularly in those areas with a high Māori population. The care co-ordinator will co-ordinate services and work with the whānau (who are often caring for the person) to ensure that the needs of the dying person are met in a culturally appropriate way. The care co-ordinator could be employed in conjunction with local Māori providers. It is important that the principles of cultural safety are recognised in the employment of Māori.
4.7.2 Pacific peoples

Palliative care services and other health services must understand Pacific cultures in terms of care of the dying. It is also important that Pacific people have information about palliative care services.

In areas where there is a high Pacific population it is important that palliative care services recruit Pacific health professionals and volunteers. It is recognised, however, that there are very few trained Pacific health professionals and more need to be trained.

4.7.3 People with disabilities and non-malignant disease

It is important that palliative care services recognise the palliative care needs of people with disabilities and those with non-malignant disease, for example those with motor-neurone disease, multiple sclerosis and chronic obstructive airways disease. These diseases are often longer in duration than diseases such as cancer and often require a higher level and complexity of support care. Specific needs associated with this group are:

- to consider the availability and suitability of support services and other services for these people following diagnosis of their condition, before they receive palliative care services
- to ensure timely access to palliative care services when they require it.

4.7.4 People under the age of 65

Local palliative care services and community support services should generally be able to meet the palliative care needs of people under the age of 65 years.

A small proportion of these people cannot be cared for at home and require longer-term inpatient care. Residential care services, which mainly cater for older people, are not always suitable for younger population groups. When organising longer-term care for people under 65 years, it is important that palliative care services consider the suitability of the available services for this group.

4.7.5 Children

Children’s needs differ from adults’ needs, and they require different services. Children who are dying require the expertise of a paediatrician and paediatric nurse with palliative care experience.

The Paediatric Review identified a need for a children’s care co-ordinator at the local level. However, the care co-ordinator must have experience in paediatrics and palliative care and must be part of a multidisciplinary team, which includes a paediatrician and paediatric nurses.
Given that only a very small number of children need to access palliative care compared with adults and that they often require highly specialised services, this strategy supports the implementation of the recommendations from the Paediatric Review. These recommendations include:

- the development of a national network for those involved in paediatric palliative care and a working group of representatives both to advise on the national standards of care required and to monitor these standards
- the development of a national palliative care team to provide expert advice to local teams (this recommendation has been implemented in part with the appointment of the child palliative care team at Starship Hospital, which has a role both regionally and nationally)
- the employment of a co-ordinator of paediatric palliative care for each local specialist child health team and each paediatric oncology unit
- recognition that much of the care will be delivered by local specialist child primary health teams.

While the palliative care strategy is supportive of the national palliative care team and local teams (including co-ordinators) for children, it recognises that it is important for them to have formal links with local and specialist providers of palliative care services for adults. This linkage should assist with sharing expertise and ensuring that children receive appropriate bereavement counselling if a parent dies.

### 4.8 Summary and the way ahead

The vision for palliative care services is that ‘all people who are dying who could benefit from palliative care and their family/whānau should have timely access to quality palliative care services that are culturally appropriate and provided in a co-ordinated way’. It is underpinned by four key features:

- an awareness and knowledge of palliative care among communities and providers of health and disability services
- the provision of essential palliative care services for people who are dying and for their family/whānau. These services include care co-ordination to ensure that services are co-ordinated and appropriate for each individual
- a framework that is based around a palliative care network comprising two inter-linked levels of care
- well co-ordinated and flexible service arrangements to meet the needs of all population groups.

The Palliative Care Working Party will establish a number of workstreams that will each deal with a key issue. They will report back to the working party with their recommendations.

This phase of developing the palliative care strategy will be a joint process between District Health Boards and the Ministry of Health. This joint approach will ensure all sector participants are engaged in the process and ensure smooth implementation of results.