Standard of practice in oncology and haematology for pharmacy services

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Preface

This Standard references and relies upon SHPA Standards of Practice for Clinical Services \(^1\) as the foremost Standard. This Standard supersedes the previous Standard SHPA Standards of Practice for the Provision of Clinical Oncology Pharmacy Services \(^2\) and SHPA Standards of Practice for the Provision of Oral Chemotherapy for the Treatment of Cancer\(^3\).

This Standard may overlap with others and depending on the area of specialty practice it may be advisable to refer to additional Standards of Practice. For matters related to compounding, handling and transport of cytotoxics refer to the SHPA Guidelines for Medicines Prepared in Australian Hospital Pharmacy Departments \(^4\), SHPA Standards of Practice for the Transportation of Cytotoxic Drugs from Pharmacy Departments \(^5\) and SHPA Standards of Practice for the Safe Handling of Cytotoxic Drugs in Pharmacy Departments \(^6\).

This Standard was developed prior to the release of the draft NSQHS Standard User Guide for Medication Management in Cancer Care \(^7\). Oncology and haematology pharmacists should be familiar with the draft NSQHS Standards \(^7\), Clinical Oncology Society of Australia (COSA) Guidelines \(^8\) and this Standard.

The use of the word ‘specialisation’ in this standard is in line with the National Competency Standards Framework for Pharmacists in Australia \(^9\) where ‘specialisation’ refers to the scope of practice rather than the level of performance. ‘Specialisation’ of itself does not confer additional expertise.

This Standard is for professional practice and is not prepared or endorsed by Standards Australia. It is not legally binding.

Introduction

In Australia, everyone shares a fundamental right to safe and high-quality healthcare. This is enshrined in the Australian Charter of Healthcare Rights \(^10\) by which all healthcare systems, including the provision of pharmacy services, must abide. The Charter summarises the basic rights of patients and consumers when accessing healthcare services including access, safety, respect, communication, participation, privacy and the ability to comment. The provision of pharmacy services must encompass the Charter to deliver effective, efficient, timely, and equitable patient-centred care.

The National Competency Standards Framework for Pharmacists in Australia \(^9\) complements the underpinnings of the Charter across five domains of competency for the pharmacy profession, namely: (1) professionalism and ethics; (2) communication and collaboration; (3) medicines management and patient care; (4) leadership and management; and (5) education and research.

Purpose and definitions

The purpose of this Standard is to describe best practice provision of clinical pharmacy services for oncology and haematology patients (Box 1) in hospitals, outpatient and ambulatory services and in the community.

This Standard refers to both the role of the pharmacy service and the pharmacists’ practice in oncology and haematology. For consistency this Standard refers to all pharmacists who provide care to people with oncology and haematology conditions as ‘oncology and haematology pharmacists’, regardless of whether the pharmacist works in a specialist oncology and haematology service or another setting that provides care for oncology and haematology conditions. The Standard
predominantly refers to oncology and haematology pharmacists but does not intend to exclude suitably qualified pharmacy technicians where appropriate \(^1\). The SHPA supports both pharmacists and pharmacy technicians to operate at their full scope of practice in order to achieve optimal patient and pharmacy outcomes.

### Oncology and Haematology Services
An oncology service, sometimes called a cancer service, is defined as a service caring for patients with malignancy (both solid tumours and haematological malignancies) and may include haematopoietic stem cell transplantation (HSCT), palliative care and radiation therapy. The service may also care for patients with non-malignant haematological or related conditions.

**Box 1 Oncology and haematology services**

This Standard is intended to be used across hospital pharmacy services in Australia, irrespective of the service type (public or private) or location (metropolitan, regional or rural). While this Standard is intended for hospital pharmacy services, the principles and aspects of patient management discussed herein can be applied to broader pharmacy services that provide oncology and haematology care, including home cancer therapy services and teleoncology \(^11\). It is acknowledged there are significant variations in pharmacy services that are dependent on organisational capacity, patient population, oncology and haematology service and pharmacy department priorities, and availability of oncology and haematology pharmacists; all of which may influence the range of services.

The Standard describes current best care for the provision of oncology and haematology pharmacy services (see Box 1) by oncology and haematology pharmacists and the pharmacy department or employer. Essential services relate to services that demonstrate the full scope of pharmacy practice. Pharmacy are often involved in providing a coordinated multidisciplinary approach, which broadly engages in activities including, but not limited to:

- pharmacovigilance
- review and development of medicine-related policies and guidelines
- staff education and training
- quality improvement initiatives to develop strategies for improving medicines utilisation
- collaborative research

Emerging services relate to services that are innovative and future-focused and are provided in addition to essential services. Emerging services could include anticoagulation stewardship, pharmacist-led ambulatory care or outpatient clinics, and home cancer therapy. SHPA encourages all pharmacy services to strive to provide emerging services wherever possible, in addition to essential services.

**Evidence of pharmacist impact in oncology and haematology services**

The American Society of Clinical Oncology (ASCO) describes oncology pharmacists as essential interdisciplinary team members who have specialised knowledge of cancer therapy, help to maximise the benefits of therapy and minimise toxicities \(^12\). As integral members of interdisciplinary
teams, oncology and haematology pharmacists offer a variety of services as described in the continuum of care flow chart (see Table 1) such as contributing to the selection of therapy, prescribing, dosing, monitoring, evaluation, education, procurement and storage.

Integration of a clinical pharmacist into an outpatient clinic setting has proven to help achieve goals including improved management of supportive care, enhanced education of patients receiving complicated chemotherapy regimens, improved efficiency of chemotherapy infusion units and provides better interacting opportunities with patients and the health care team. Delpeuch et al have also shown the integration of clinical pharmacy services resulted in significant medicines-specific interventions of the prescriptions for hospitalised adult cancer patients.

Australian research has highlighted that clinical pharmacists in the specialty area of oncology and haematology can improve the continuum of care during clinic handover by providing accurate information in relation to cancer therapies. Maleki et al. reviewed the literature on the impact of outpatient clinical oncology and haematology pharmacy services and conclude clinical pharmacists contribute towards the assessment of medication adherence, medication understanding, symptom control favouring pain, nausea and constipation, patient satisfaction and improvement in the quality of life.

Objectives of the Service

The objectives of an oncology and haematology pharmacy service are to provide safe cancer and supportive therapies according to current evidence-based best practice while limiting unintended consequences for patients such as adverse drug events. Oncology and haematology pharmacists must deliver the service as part of multidisciplinary collaboration and within the framework of evidence and patient-centred healthcare ensuring optimal cancer care.

Scope

This Standard applies to all pharmacists providing oncology and haematology services. The service provided by the oncology and haematology pharmacist may be delivered across several settings including both public and private hospitals, in an inpatient, outpatient or ambulatory care setting, and in community or domiciliary settings such as home cancer therapy. Broadly, the range and scope of service considers activities that have a direct impact on patient care (e.g. governance, policies and procedures as well as direct patient care activities) and in-direct activities such as teaching and research, summarised in Table 1.

In addition to providing Clinical Pharmacy services as outlined in SHPA Standards of Practice for Clinical Pharmacy Services, oncology and haematology pharmacists are expected to provide services relevant to their clinical area and scope of practice. The range of services provided by oncology and haematology pharmacists will be dependent on a variety of factors including: the setting, patient population, the services that the hospital or health service provides, funding models, governance structures for oncology and haematology services, oncology and haematology service and pharmacy department priorities, organisational priorities and the scope of practice of the individual pharmacist.

The role of the oncology and haematology pharmacist should include (i.e. essential services):
• attendance on ward rounds, in outpatient consultations, at multi-disciplinary team meetings and at individual patient case conferences
• delivery of pharmacy services that improve patient medication outcomes and adds value to healthcare systems, while encouraging the financial sustainability of healthcare
• development of and input into policies, procedures, guidelines and resources
• comment on cancer therapy formulary applications and decisions
• provision of education and training for healthcare professionals and students
• quality improvement activities; and
• research related to cancer care.

It may additionally include involvement in compounding, clinical trials and emerging pharmacy services. Pharmacists with specialist expertise in oncology and haematology should be a point of contact and provide advice for medicines inquiries from other pharmacists and health professionals within the health service.

Whilst the range of services provided in cancer is primarily delivered by pharmacists, it is increasingly supported by pharmacy technicians in clinical and non-clinical roles.
# Range and scope of oncology and haematology pharmacy services

## Direct impact on patient care

<table>
<thead>
<tr>
<th>Policies, procedures and governance</th>
<th>Patient care activities</th>
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<tbody>
<tr>
<td><strong>Prescribing</strong></td>
<td></td>
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<tr>
<td>Contribute to:</td>
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<tr>
<td>• Development and review of cancer</td>
<td>• Ensure safe prescribing of cancer therapies</td>
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<tr>
<td>therapy protocols</td>
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<tr>
<td>• Development and review of</td>
<td>• Ensure use of referenced and locally approved protocols</td>
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<tr>
<td>guidelines for:</td>
<td>• Ensure appropriate supportive care medications are prescribed with cancer therapies</td>
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<tr>
<td>- supportive care medicines</td>
<td>• Contributes to therapeutic decision making as part of a multi-disciplinary team</td>
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<td>- management of toxicities</td>
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<td>• Development of prescribing</td>
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<td>procedures including for oral and</td>
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<td>intrathecal cancer therapies</td>
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<tr>
<td>• Development, implementation and</td>
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<td>maintenance of electronic</td>
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<td>medication management systems</td>
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<td>for prescribing cancer therapies</td>
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<td>• Local cancer therapy governance</td>
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<td>committees</td>
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<td>**Medication reconciliation and</td>
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<tr>
<td>clinical verification</td>
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<tr>
<td>• Lead on development of clinical</td>
<td>• Clinical verification of cancer therapies and supportive care according to <a href="https://www.cosaonline.com.au">COSA Guidelines for the Safe Prescribing, Dispensing and Administration of Systemic Cancer Therapy</a></td>
</tr>
<tr>
<td>verification procedures for cancer therapies. This could include international, national, state or local procedures</td>
<td>• Regular and ongoing review of medications in the context of cancer therapy and disease, including complementary and alternative medicines (CAMs)</td>
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<tr>
<td><strong>Compounding and dispensing</strong></td>
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<td>Contribute to:</td>
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<tr>
<td>• Development of cancer therapy</td>
<td>Facilitate safe provision of compounded cancer therapies in collaboration with compounding services (either internal, external or both)</td>
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<tr>
<td>manufacturing guidelines in</td>
<td>Support compounding and dispensing:</td>
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<tr>
<td>collaboration with compounding</td>
<td>• Dispense systemic cancer therapies, including oral therapy</td>
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<tr>
<td>pharmacists</td>
<td>• Dispense supportive care medications</td>
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<tr>
<td>• Development of oral cancer</td>
<td>Involvement in the management of:</td>
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<tr>
<td>therapy related procedures</td>
<td>• Medication shortages</td>
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<tr>
<td>• Development of intrathecal cancer</td>
<td>• Medicines access programs</td>
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<tr>
<td>therapy related procedures</td>
<td>• Special Access Scheme (SAS) medicines</td>
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<td>• Safe work environment</td>
<td>• Formulary and individual patient use applications</td>
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<tr>
<td><strong>Patient education</strong></td>
<td>• Educate patients and/or carers on cancer therapies and supportive care medications</td>
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<td>Lead and contribute to the</td>
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<td>development of written</td>
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<td>information and educational</td>
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<td>resources on cancer therapies</td>
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1 N.B. The order in which items are listed does not necessarily imply the order in which they should be performed.
| Administration of therapy | • Provide written information e.g. consumer medicines information (CMIs) and medication lists | • Educate and support nursing and medical staff on the administration of cancer therapies
• Advise patients and/or carers on the administration of cancer therapies and supportive care medications
• Provide advice to health professionals and patients and/or carers on the safe handling of cancer therapies |
| --- | --- | --- |
| Monitoring of therapy | Contribute to: • Development of administration guidelines for cancer therapies for medical and nursing staff, including oral and intrathecal cancer therapies | Monitors: • Response and toxicities to cancer therapies
• Organ function
• Therapeutic drug levels
• Cumulative dosing
• Adherence and ensures cancer and supportive care medicines are adjusted appropriately |
| • Contribute to the development of policies and procedures regarding: • Monitoring of patient’s therapy • Use of electronic medication management (EMM) tools to facilitate monitoring |
| Teaching and training | • Provide structured training and competency assessment for oncology and haematology pharmacists which may include local credentialing practices
• Education of pharmacy students, interns and pharmacists providing care to cancer patients in non-oncology settings
• Teaching of medical, nursing and allied health professionals |
| Research | • Retrieve and critically appraise literature
• Identify evidence gaps in the treatment and pharmaceutical care of patients with cancer and non-malignant haematological conditions
• Initiate, conduct and supervise research in oncology and haematology services
• Participate in interdisciplinary and multidisciplinary research |
| Quality assurance and improvement | • Conduct audits to demonstrate compliance with guidelines for the provision of cancer therapies and oncology and haematology pharmacy services
• Report and investigate incidents and adverse effects, and participate in open disclosure and root cause analyses
• Monitor compliance with and variations from approved cancer therapy protocols
• Lead and contribute to quality improvement initiatives |
| Clinical trials | • Liaise with the clinical trials pharmacists and/or personnel
• Ensure that the prescribing, preparation, dispensing and administration of clinical trial medications adheres to the trial protocol
• Order investigational agents and ensure inventory accountability
• Refer to the Standard of Practice for Pharmacy Investigational Drugs Services |

Table 1 The range and scope of oncology and haematology pharmacy services and the role of the pharmacist in direct and indirect patient care activities
Operation (of the service)

The service must be provided by oncology and haematology pharmacists whose main area of specialisation should be cancer care and who demonstrates competence in such as relevant to their scope of practice (refer to Training and Education). Components of the service may be delegated to non-specialised pharmacists after undergoing training and demonstrating an appropriate level of competence to perform their tasks.

Policies, Procedures and Governance

Pharmacists must have knowledge of the following documents which provide a framework within which they must practice:

- Australian Charter of Healthcare Rights
- National Safety and Quality Health Service Standards including the National Model Clinical Governance Framework
- Pharmacy Board of Australia Code of Conduct
- SHPA Code of Ethics
- National Competency Standards Framework for Pharmacists in Australia
- Professional Practice Standards
- Clinical Governance Principles for Pharmacy Services
- Relevant legislation specifically State and Territory Acts and Regulations

Policies for the practice of clinical pharmacy provide a basis upon which cancer specific policies may be developed and applied.

Local, institutional and state-based policies guiding practice may include consultation and/or ownership by other professions or by the pharmacy department and should cover:

- Cancer therapy prescribing, medicines reconciliation and clinical verification, patient education, compounding and dispensing, administration and monitoring of therapy, including both oral and intrathecal cancer therapies
- Cancer-related therapies in EMM systems with electronic prescribing, or National Inpatient Medication Chart (NIMC) and pro formas for services with paper-based prescribing systems
- Cancer therapy protocol management, including protocols about complex supportive care requirements e.g. tumour lysis syndrome
- Management of variation from standard institutional protocols
- Training and local authorisation of oncology and haematology pharmacists and technicians
- Quality and auditing in cancer (e.g. prescribing variation, protocol currency)

In consultation with compounding (if a separate role exists):

- Compounding specific guideline recommendations
- Safe handling and transport of cytotoxic and non-cytotoxic hazardous drugs

For further information to develop local policies and procedures the following resources may be of use:

- Draft NSQHS Standards User Guide for Medication Management in Cancer Care
- COSA guidelines for the safe prescribing, dispensing and administration of systemic cancer therapy
• eviQ cancer treatments online

• BOPA Standards for Pharmacy Verification of Prescriptions for Cancer Medicines

• ASHP guidelines on preventing medication errors with chemotherapy and biotherapy.

The oncology and haematology pharmacist must contribute to the development of evidence-based cancer therapy and supportive care protocols and actively contribute to local oncology and haematology clinical governance committees. When evidence is not available to support protocols, consensus-based guidelines may be considered in the development of protocols. Variation from locally approved protocols in the absence of supporting evidence and/or a rational decision-making process must only occur in consultation with the responsible treating physician for the patient as per local policy. The use of non-approved protocols must adhere to local governance processes.

Protocol variations or the use of non-approved protocols must be clearly documented in the patient’s health record.

Prescribing of treatment protocols must be done via an EMM system (where available) or an institutionally approved chart. Protocols must include supportive care medications, such as antiemetics and prophylactic medications. Development and approval of prescribing protocols should include a lead or delegate oncology and haematology pharmacist as part of the multidisciplinary team. The pharmacist should be familiar with federal, state and territory based legal requirements for prescribing specific medicines e.g. retinoids, immunomodulatory medications such as thalidomide and lenalidomide.

Direct Patient Care

Clinical Services

A clinical pharmacy service must be available to all cancer patients, which aligns to the clinical activity of the health service. For example, if an inpatient service is provided and where resources allow, a seven-day clinical pharmacy service should be provided with the support of an oncology and haematology pharmacist (either onsite or remotely contacted for emergency call outs). For outpatient or ambulatory services, and in community or domiciliary settings such as home cancer therapy, clinical pharmacy services should align with patient activity.

The pharmacist must work as a member of the multidisciplinary team. The establishment of an effective working relationship with other health professionals, patients and/or carers, as well as other stakeholders, forms the basis of successful clinical practice. The oncology and haematology pharmacist should regularly contribute to relevant clinical activities such as ward rounds, ward meetings, case presentations, journal clubs and lectures.

Medication reconciliation and Clinical verification

Medication reconciliation should be conducted as outlined in SHPA Standards of Practice for Clinical Pharmacy Services. The oncology and haematology pharmacist should further consider the:

• impact and interaction of complementary and alternative medicines on cancer therapies and disease
• compliance and adherence to cancer therapy
• impact of a patient’s personal and cultural beliefs on delivering their therapy
• socioeconomic situation of a patient and impact on treatment

Oncology and haematology pharmacists must have ready and easy access to information that is detailed, documented and relevant. The information must be kept up to date and referred to prior
to every dispensing of systemic cancer therapy to integrate all treatment. Pharmacists must have access to information on:

- disease and stage of cancer or disease
- cancer therapies regimen including medicines and doses, and other relevant treatment modalities such as radiotherapy and surgery
- intent or goal of treatment (i.e. curative, palliative)
- type of treatment relative to other modalities (e.g. adjuvant, neo-adjuvant)
- height, weight and body surface area
- relevant laboratory and clinical diagnostic measurements (e.g. renal function, pulmonary function, left ventricular function, relevant mutational testing)
- reported signs and symptoms of toxicity
- preferred supportive care therapies (e.g. pre-medications, antiemetics)
- cumulative medicine doses where appropriate (e.g. anthracyclines, bleomycin, carmustine)
- past cancer-directed therapies

All cancer therapy orders must be verified by a locally authorised pharmacist prior to dispensing. As part of the clinical verification process, the oncology and haematology pharmacist must consider the following steps outlined by COSA which are summarised below:

1. Patient details, patient parameters and body surface area (BSA)
2. Prescription/medication order
3. Protocol and scheduling
4. Prescribed medication, dose calculations
5. Patient organ function and laboratory blood tests including toxicity assessment of previous cycles of therapy.

Refer to the COSA Guidelines for the Safe Prescribing, Dispensing and Administration of Systemic Cancer Therapy for full details of these clinical verification steps.

Any clinical issues identified should be clarified with the treating registrar or consultant prior to verifying and dispensing treatment.

**Patient education**

The oncology and haematology pharmacist should provide education to patients and/or carers regarding cancer therapies, supportive care medicines and adverse effect management, with the aid of patient information resources tailored to their needs. Advice on recognising and minimising potential delayed adverse effects is an essential component of this counselling process. Written patient information must be offered to the patient or carer. Resources are available from **eviQ Cancer Treatments Online, Cancer Council**, the **Leukaemia Foundation** and local institutions providing information for health professionals, patients and/or carers. If a specific information resource is not readily available and needs to be developed, the pharmacist must be involved in the preparation and review process. Pharmacists must assess company-printed materials and patient aids to determine their applicability in oncology and haematology pharmacy practice before provision to patient or carer.

**Compounding and Dispensing (including procurement)**

The oncology and haematology pharmacist must liaise with the compounding service responsible for the provision of compounded cancer therapy doses (whether in-house or external) to coordinate the supply of cancer therapies requiring manufacture. Decisions regarding compounding affected by patient factors (e.g. volumes and diluents) should be made in collaboration with the...
compounding service. The preparation and administration of non-cytotoxic and/or hazardous cancer therapies must adhere to the local policy which may be informed by consensus guidelines. The service should have a process of releasing compounded medicines that is compliant with existing guidelines. The pharmacist must liaise with the relevant pharmacy staff or external manufacturer to ensure there are adequate medicines stock levels for the oncology and haematology service. There is mandatory reporting of prescription medicines shortages in Australia with information available via the Medicines Shortages Information Initiative governed by the Therapeutic Goods Administration (TGA). In the event of a medicine shortage, the pharmacist should communicate with relevant medical, pharmacy and/or external manufacturer staff to identify alternative product or treatment protocol options and to source alternative supply to ensure treatment is not delayed. Oncology and haematology pharmacists have a role in facilitating access to medicines via medicines access programs, SAS, formulary and individual patient use applications.

**Oral Cancer Therapy**

Oral cancer therapy must be subject to the same prescribing and checking procedures as is applied to cancer therapy administered by other routes. Oral cancer therapy may present a health and safety risk to staff, patients and/or carers handling them, although the risk of exposure is minimal. Health and safety precautions must be followed to minimise the risk of exposure. When a defined course of therapy is prescribed it is recommended the exact quantity for a course of oral cancer therapy is issued (as opposed to whole packs). This decision must be based on the judgement of pharmacists experienced in cancer therapies (cytotoxic and non-cytotoxic hazardous medicines) and may depend on local/state policy. If a whole pack is issued, the patient should be informed that medicine may be remaining (leftover) at the end of the course and they must be clear on the start and stop dates for the course.

Where a repeat prescription is issued, the dose and intention to continue therapy should be checked at each dispensing.

**Indirect patient care activities**

Indirect patient care activities of the oncology and haematology pharmacist may include administrative activities required for the management, organisation and ongoing development of the clinical service, such as:

- preparation and at least biennial review of a written policy and procedure manual for the provision of a clinical service to oncology and haematology patients. Where possible this should be done in conjunction with the pharmacist responsible for the provision of clinical pharmacy services to the entire institution;
- development and maintenance of a quality improvement program for the provision of clinical services to the patients of the oncology and haematology units;
- supervision of staff as well as the provision of direction and education to pharmacy undergraduates, interns/trainees, and pharmacists with less experience in the provision of pharmacy services to oncology and haematology patients.
Recommended Staffing

As per the Clinical Pharmacy Standard there are three major factors driving staffing levels for clinical pharmacy services including the range of clinical pharmacy services, the complexity of care required and hospital throughput. Recommended oncology and haematology pharmacist staffing levels for pharmacy services are presented in Table 2 and should be interpreted with consideration of the health service, activities performed by the oncology and haematology pharmacist, and those that are undertaken by other pharmacists and pharmacy technicians.

The roles of oncology and haematology pharmacists are varied, dependent on the model of care and size of the health service, and recommended staffing is, therefore, a reflection of this. Whereas the traditional model has been to have ward-based pharmacists wholly responsible for an individual patient, pharmacists are increasingly practising in team-based models and with specialisation, consultant-type roles. As the model changes and roles are growing, providing pharmacy care for an individual patient may be shared between pharmacists.

There should be at least one pharmacist responsible for the coordination of all aspects of the oncology and haematology service. Staffing ratios should consider dedicated time for this lead pharmacist to perform these coordination duties in line with the range and size of the clinical service. This dedicated time is not included in the recommendations below.
<table>
<thead>
<tr>
<th>Type of care</th>
<th>Medical oncology [Inpatient]</th>
<th>Haematology [Inpatient]</th>
<th>Haematopoietic stem cell transplantation [Inpatient]</th>
<th>Same day admission or home-based care</th>
<th>Outpatient or Ambulatory clinic providing care for oncology or haematology</th>
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</thead>
<tbody>
<tr>
<td>Optimal FTE pharmacist: patient ratio based on patients/day</td>
<td>Adults 1:20 Adults 1:15 Paediatrics 1:15</td>
<td>Adults 1:15 Paediatrics 1:15</td>
<td>Adults 1:10 to 15* depends on acuity (*autograft 1:15 and allograft 1:10) Paediatrics 1:10</td>
<td>Adults 1:20 Paediatrics 1:17</td>
<td>Ratio cannot be determined due to the emerging nature of practice in an outpatient setting. If this service is to be offered, dedicated pharmacist FTE needs to be allocated</td>
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<td>Optimal clinical pharmacy service</td>
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<td>Medication history and reconciliation on admission</td>
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<tr>
<td>Assistance with cancer therapies planning and review</td>
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<tr>
<td>Clinical verification of cancer therapies and supportive care, and coordination of compounding and/or dispensing of cancer medications</td>
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<tr>
<td>Medication chart review and monitoring of cancer therapies</td>
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<tr>
<td>Type of care</td>
<td>Medical oncology [Inpatient]</td>
<td>Haematology [Inpatient]</td>
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<tr>
<td>Monitoring of cancer therapies and optimisation of supportive care plan</td>
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<td>✓</td>
</tr>
<tr>
<td>Optimisation of graft-versus host-disease management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Multidisciplinary ward rounds</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Multidisciplinary team meeting</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Patient and/or carer education on cancer therapies and supportive care medications including appropriate administration and handling of cancer medicine</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Discharge prescription review and reconciliation in the context of cancer therapies and disease</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Preparation and delivery of discharge medication information for patients and/or carers</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Type of care</td>
<td>Medical oncology [Inpatient]</td>
<td>Haematology [Inpatient]</td>
<td>Haematopoietic stem cell transplantation [Inpatient]</td>
<td>Same day admission or home-based care</td>
<td>Outpatient or Ambulatory clinic providing care for oncology or haematology</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------------</td>
<td>------------------------</td>
<td>---------------------------------------------------</td>
<td>-------------------------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>Provision of information about medication changes to patients and/or carers</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Facilitation of post-transplant vaccines administration</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Development and review of cancer therapy protocols, procedures and guidelines, and patient education materials on cancer therapy</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Participation in cancer therapy governance committee and Quality Use of Medicines activities such as audits and staff education</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Participation in research projects</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 2 Recommended clinical pharmacy services and pharmacist: patient ratios for oncology and haematology services

References: 2,32-34

DRAFT prepared 15.07.2019. Property of The Society of Hospital Pharmacists Australia
Training and Education

It is essential to develop the pharmacy workforce enabling delivery of excellent pharmacy care in cancer through training and education of pharmacists and technicians. Oncology and haematology pharmacists should have a scope of practice competency profile with a Continuing Professional Development (CPD) plan that covers the five domains of professional performance as per the National Competency Standards Framework for Pharmacists in Australia 2016. Whilst the framework itself is not tied to any area of specialisation, there are qualifications, educational activities, knowledge and skills that are recommended for oncology and haematology pharmacists, in addition to those of a clinical pharmacist. The following have been informed by the SHPA Oncology and Haematology Standard of Practice Working Group.

In addition, pharmacists and pharmacy technicians commencing practice in oncology and haematology services must undertake a relevant orientation and training program as determined by the health service. This should include credentialing relative to their role as implemented by the local or state-based health service.

Oncology and haematology pharmacists must contribute to the education and development of procedures for non-specialist pharmacists caring for patients being treated with cancer therapies.

Credentialing and Qualifications

Desirable certification, credentialing and qualifications for oncology and haematology pharmacists include:

- a postgraduate qualification in clinical pharmacy e.g.
  - Graduate Diploma or Master of Clinical Pharmacy
- credentialing as an Advancing or Advanced Practice Pharmacist is provided by Pharmacy Development Australia
- formalised certification such as that offered by the US Board of Pharmaceutical Specialties
- other relevant postgraduate degrees which may be available nationally or internationally.
  - Master of Cancer Sciences administered by The University of Melbourne
  - Oncology and Palliative Care MSc studies administered by Newcastle University UK

Educational Activities

Further to the Pharmacy Board of Australia Guidelines on Continuing Professional Development it is recommended that oncology and haematology pharmacists have a significant proportion of their continuing professional development per year tailored to oncology and haematology services. Recommended continuing education for oncology and haematology pharmacists include the following:

- SHPA Oncology and Haematology Seminars and related CPD activities
- COSA Cancer Pharmacist Group Seminars for Cancer Pharmacists
- International Society of Oncology Pharmacy Practitioners (ISOPP) Australasia Regional Oncology Pharmacy Symposium (AusROPS)

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This is a limited list offered for general information and does not represent endorsement of any provider; new providers may emerge, and this list is current as of January 2019.
Joining professional organisations:

- The Australia and New Zealand Children’s Haematology and Oncology Group (ANZCHOG)
- American Society for Blood and Marrow Transplantation (ASBMT)
- American Society of Clinical Oncology (ASCO)
- American Society of Hematology (ASH)
- British Oncology Pharmacy Association (BOPA)
- The Children’s Oncology Group (COG)
- Clinical Oncology Society of Australia (COSA)
- European Society of Bone Marrow Transplantation (EBMT)
- European Society of Medical Oncology (ESMO)
- The European Haematology Association (EHA)
- Hematology/Oncology Pharmacy Association (HOPA)
- Haematology Society of Australia and New Zealand (HSANZ)
- International Society of Oncology Pharmacy Practitioners (ISOPP)
- Multinational Association of Supportive Care in Cancer (MASCC)
- The International Society of Paediatric Oncology (SIOP)

Educational material and resources are additionally provided on the SHPA Specialty Practice Oncology and Haematology stream page on the SHPA eCPD website. For oncology and haematology pharmacists, joining and actively participating in the SHPA Specialty Practice Oncology and Haematology stream at the Practice Group level is strongly recommended.

The Oncology and Haematology Standard working group considers the ability to undertake preceptorships and/or site visits to health services in either geographically diverse areas or areas of diverse practice to be a useful way of expanding knowledge and skills, particularly for those oncology and haematology pharmacists practising alone or at smaller sites.

Attendance at specialist conferences and educational meetings should be supported to maintain and update specialist knowledge in cancer. Relevant domestic conferences include those organised by SHPA, COSA, Haematology Society of Australia and New Zealand (HAA Blood), and ANZCHOG. International conferences include the ISOPP International Symposia, Multinational Association of Supportive Care in Cancer (MASCC) Annual Meeting, Transplantation and Cellular Therapy (TCT) Meetings, and the ASCO Annual Meeting.

Knowledge, Skills, Activities and Experiential Learning

Peer collaboration and peer-to-peer supported learning and review should be encouraged in the workplace. The focus of peer engagement should be on the knowledge and skills which result in clinical practices that improve patient outcomes. Informal and formal frameworks including the SHPA Clinical Competency Assessment Tool (ClinCAT) could be used, ideally with assessment by a senior oncology and/or haematology pharmacist. Recommendations for essential and desirable knowledge, skills, activities and experiential learning follow.
<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Essential</th>
<th>Desirable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology of cancer therapies</td>
<td></td>
<td>Rare cancers</td>
</tr>
<tr>
<td>Cancer therapy dosing in special situations e.g. dialysis</td>
<td></td>
<td>Other cancer treatments e.g. radiation oncology, palliative care</td>
</tr>
<tr>
<td>The aetiology, presentation, diagnosis, monitoring and management of common cancers</td>
<td></td>
<td>Cancer wellness and survivorship</td>
</tr>
<tr>
<td>Prevention and management of cancer therapy related adverse effects (e.g. haematological toxicities and associated complications such as febrile neutropenia, and infection, gastrointestinal toxicities including nausea and vomiting, diarrhoea, mucositis and other organ toxicities such as cardiac, hepatic, renal etc.)</td>
<td></td>
<td>Pharmacoeconomics</td>
</tr>
<tr>
<td>Techniques and procedures for safe handling and disposal of cytotoxic and hazardous agents</td>
<td></td>
<td>Knowledge required according to the role of the pharmacist and range of services:</td>
</tr>
<tr>
<td>Understanding of the use of complementary therapies by cancer patients and the potential effects on treatment</td>
<td></td>
<td>• Compounding</td>
</tr>
<tr>
<td>Research and clinical trial methodology</td>
<td></td>
<td>• Operation of clinical trials in cancer therapies</td>
</tr>
<tr>
<td>Knowledge required according to the role of the pharmacist and range of services:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>Desirable</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>-----------</td>
<td></td>
</tr>
</tbody>
</table>
| - Well-developed communication skills including the ability to have difficult conversations  
- Demonstrate confidence, competence and cultural sensitivity, as well as empathy in dealing with patients with cancer and in end of life care  
- Ability to practice self-care principles and maintain professional boundaries for oncology and haematology pharmacists | - Ability to provide clinical input in the multidisciplinary setting contributing to decision-making at the point of care  
- Capability to critically appraise evidence base  
- Ability to promote and support the skills development of oncology and haematology pharmacists  
- Demonstrating leadership to support and promote advanced pharmacy care in cancer |
| **Activities and experiential learning** | **Activities and experiential learning** |
| - Completion of an evaluation of clinical skills using the ClinCAT (version 2) which can be found in Chapter 15 of the SHPA *Standards of Practice for Clinical Pharmacy Services*¹ | - Effectively impart up to date cancer therapy and other medication-related information to health professionals and patients  
- Provide expert advice to drug committees on formulary applications relating to cancer therapies  
- Mentorship of early career pharmacists, those newly working in cancer and those caring for cancer patients requiring specialist input  
- Teaching to increase advanced capability e.g. training and education of healthcare professionals regarding cancer  
- Engage and advocate in national health and community policy  
- Effective contribution to medication safety and clinical governance committees |

¹Table 3 Knowledge, Skills, Activities and Experiential Learning
Training and education will predominantly be work-based education and should follow adult learning principles. Further information can be found in Chapter 10 of the SHPA Standards of Practice for Clinical Pharmacy Services ¹.

Quality Improvement

Quality improvement activities should demonstrate advanced pharmacy care in cancer is delivering improvements in patient care by targeting and achieving the best outcomes for all patient groups, including those at greatest risk for medication misadventure. Examples of quality improvement activities which may be considered within a plan, do, study, act (PDSA) cycle for quality improvement activities are listed in Table 4.

<table>
<thead>
<tr>
<th>Quality improvement activities for oncology and haematology pharmacy services</th>
</tr>
</thead>
</table>
| **Essential** | • Auditing and reporting of variation from standard institutional protocols and recommendations from national alerts on high-risk medicines e.g. vincristine ²⁷  
  • Incident analysis relating to cancer therapies  
  • Development and review of practice guidelines and treatment protocols considering current evidence |
| **Desirable** | • Medicines Usage Evaluations or Quality Use of Medication audits for specific agents or protocols e.g. utilisation of new agents or supportive care medicines  
  • Report on medicines usage and medicines expenditure within cancer  
  • New practice introduction and assessment  
  • Evaluating clinical and patient reported outcomes  
  • Review of pharmacist interventions resulting in a change to treatment |

An indicator for quality use of medicines is the validated medication safety self-assessment tools for oncology and antithrombotic therapy ³⁸-⁴⁰ and may be used by organisations to identify potential medication risks and enable implementation of processes for managing high-risk medicines ⁴¹. As part of quality improvement, the following key performance indicators (KPIs) listed in Table 5 should be considered. Other indicators may be measured as per local policies.

<table>
<thead>
<tr>
<th>Key performance indicators for oncology and haematology pharmacy services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Governance, Policies and Procedures</strong></td>
</tr>
</tbody>
</table>
| **Prescribing** | • ‘Percentage of patients receiving cytotoxic chemotherapy whose treatment is guided by a hospital approved chemotherapy treatment protocol’ (QUM 3.6 ⁴²)  
  • Proportion of occasions that a variance from a hospital or accepted standard protocol or dose is ordered with no acceptable justification for the variance |
Medication reconciliation and Clinical verification

- Proportion of patients for whom a medication reconciliation is completed prior to commencing cycle one of therapy
- Proportion of cancer therapy orders clinically verified by a locally authorised pharmacist prior to dispensing to the patient
- Proportion of relevant laboratory or diagnostic results checked and confirmed prior to cancer therapy. Results checked may include full blood counts, creatinine clearance, liver function tests and any other parameter required for administration of a specific agent or protocol

Patient Education

- Proportion of patients and/or carers educated and provided written information about their cancer therapy by a pharmacist according to local practice

Teaching and training

Pharmacist training and authorisation

- Proportion of pharmacists involved in the clinical verification of cancer therapies who are trained and locally authorised

Table 5 Key performance indicators for oncology and haematology services

Further information on quality improvement can be found in Chapter 14 of the SHPA Standards of Practice for Clinical Pharmacy Services and the NSQHS are developing indicators for use and an auditing tool.

Research

Research is vital for developing the pharmacy profession and may inform pharmacy services current level of, and future contributions to, advancing pharmacy and patient care. Oncology and haematology pharmacists should initiate, conduct and supervise research that contributes to the body of knowledge providing evidence of impact in support of optimal use of medicines and advanced pharmacy care in cancer care. Cross-sector, inter-sectoral and interdisciplinary research is advocated to ensure the input of key stakeholders and that research is relevant to the Australian community. Collaborations with research institutes and groups are also advocated, for example, The Australian Leukaemia and Lymphoma Group.

To undertake practice-based research in cancer, the pharmacist should understand the following:

- the treatment settings for patients with cancer
- professional practice standards and guidelines as they apply to oncology pharmacy practice, research and ethics
- methods for handling cytotoxic medicines and related materials
- investigational medicine management
- patient-reported measures (PRMs).

To facilitate oncology and haematology pharmacists’ participation in research it is highly recommended that pharmacists possess knowledge in the areas of epidemiology, statistical analysis, and research protocol development and in the areas of:

- oncology literature and information retrieval systems
• study design and methodology
• common study endpoints (e.g. treatment response, adverse events, economics, quality of life, pharmacokinetics, pharmacodynamics)
• selective strengths and limitations of different study designs
• statistical methods used for data analysis
• clinical versus statistical significance
• qualitative research in the area of pharmaceutical care of cancer patients (including patients and/or carers education and counselling)
• regulatory and ethical issues related to research in patients with cancer (including confidentiality, informed consent and patient rights).

The research question and study design must be of benefit to patients and of interest to the oncology and haematology team. Liaising with medical staff may identify medicine-related aspects of existing cancer projects. Research may relate to everyday practice and include identifying evidence gaps for oncological and haematological conditions, implementing evidence-based practice in cancer care, evaluating novel cancer therapies, comparator studies of cancer therapies, and interventions directed at reducing patient admissions for supportive care and improving patient safety.

Data collection for any research should be achievable in a timely manner. Students, intern pharmacists, early career pharmacists and oncology and haematology trainees may assist with data collection and performing research. There should be clearly defined outcomes with objective measures where possible.

External funding enables larger and feasibly multi-centre studies to be conducted. The SHPA National Translational Research Collaborative (NTRC) funds research grants, practitioner grants and educational grants to develop research capacity. Grants may also be available from other organisations including the COSA. Presentation and publication of studies by Australian oncology and haematology pharmacists are imperative to aid others in the implementation of oncology and haematology services (such as anticoagulant stewardship services) and illustrate how oncology and haematology pharmacists are demonstrating improvements in patient care.

Presentation of research at relevant conferences and seminars as referenced in Training and Education, such as those organised by SHPA, COSA, ASCO, and ISOPP is highly recommended. The Journal of Pharmacy Practice and Research (JPPR) has a readership of primarily Australian pharmacists. Journals specific to cancer which may be appropriate are listed in Appendix 2.

Further information on research can be found in Chapter 11 of the SHPA Standards of Practice for Clinical Pharmacy Services 1.

Acknowledgements

The authors additionally wish to acknowledge the work of the former SHPA Committee of Specialty Practice in Oncology on previous versions of this and related Standards including Jill Davis, Stuart Harsley, Robert McLauchlan, Li-ling Ng, Sheue-Ching Ooi, Jim Siderov, Angela Stefanou, Sue Kirsa, Christine Carrington, Peter Gilbar and Jeanette Wintraaken.
References


18. SHPA Committee of Specialty Practice in Investigational Drugs. SHPA Standards of Practice for Pharmacy Investigational Drugs Services. 2006.

### Appendix 1. Oncology and Haematology Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved protocols</td>
<td>Protocols that have been ratified for routine use by a national, state or local institution governance process.</td>
</tr>
<tr>
<td>Cancer therapy/cancer therapies</td>
<td>Includes chemotherapy, immunotherapy, biological therapy, targeted therapy and associated supportive care medications.</td>
</tr>
<tr>
<td>CAR-T therapy</td>
<td>A type of treatment in which a patient’s T cells (a type of immune system cell) are changed in the laboratory so they will attack cancer cells. Also called chimeric antigen receptor T-cell therapy (see cancer.gov).</td>
</tr>
<tr>
<td>Clinical verification</td>
<td></td>
</tr>
<tr>
<td>Cytotoxic</td>
<td>An agent capable of disrupting the growth and function of both healthy and diseased cells and can be carcinogenic, genotoxic, mutagenic, teratogenic or hazardous to cells in any way. Commonly used in referring to antineoplastic drugs that selectively damage or destroy dividing cells.</td>
</tr>
<tr>
<td>Electronic medication management (EMM)</td>
<td>Also referred to in the literature as computerised physician order entry (CPOE), oncology management information system (OMIS), electronic prescribing system (EPS)</td>
</tr>
<tr>
<td>Emerging services or skills</td>
<td>Emerging services relate to services that are innovative and future-focused and are provided in addition to essential services; described using ‘could’ or ‘may’.</td>
</tr>
<tr>
<td>Essential services or skills</td>
<td>Essential services relate to services that demonstrate the full scope of pharmacy practice; described using ‘should’ and ‘must’.</td>
</tr>
<tr>
<td>eviQ Cancer Treatments Online</td>
<td>A free resource of evidence-based, consensus-driven cancer treatment protocols and resources for use at the point of care. eviQ is developed for the Australian context and supports health professionals in the delivery of cancer treatments. Maintained by the Cancer Institute NSW.</td>
</tr>
<tr>
<td>Hazardous non-cytotoxic medicine/ substance</td>
<td>A medicine or substance that is not cytotoxic but still has the potential to cause harm, via occupational exposure, to healthcare workers and carer.</td>
</tr>
<tr>
<td>Locally authorised pharmacist</td>
<td>Pharmacist who has been approved by the relevant governance process as component to work within the required scope of practice.</td>
</tr>
<tr>
<td>Medicines Access Programs (MAP)</td>
<td>Includes compassionate supply, cost sharing and familiarisation programs.</td>
</tr>
<tr>
<td><strong>Multidisciplinary</strong></td>
<td>Collaborative approach to patient care including health professionals from various fields of practice including (not exclusively) medical, nursing, pharmacy and allied health.</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Non-approved protocols</strong></td>
<td>Protocols that have not been ratified for routine use by a national, state or local institution governance process.</td>
</tr>
<tr>
<td><strong>Scope of practice</strong></td>
<td>'A time sensitive, dynamic aspect of practice which indicates those professional activities that a pharmacist is educated, competent and authorised to perform and for which they are accountable' ⁹.</td>
</tr>
<tr>
<td><strong>Variation</strong></td>
<td>A deviation from an approved cancer therapy protocol. This includes change in medication component, dosing regimen or treatment schedule.</td>
</tr>
</tbody>
</table>
## Appendix 2. Resources

### Recommended texts for Oncology and Haematology


### Key Journals for Oncology and Haematology practice and research

- [Annals of Oncology](https://www.annalsofonscology.org)
- [Asia Pacific Journal of Clinical Oncology](https://apjco.apsipec.org)
- [Biology of Bone Marrow Transplant](https://www.bone marrowtransplantjournal.com)
- [Blood](https://www.bloodjournal.org)
- [British Journal of Cancer](https://www.bjcancer.com)
- [Cancer](https://www.cancerjournal.net)
- [Journal of Clinical Oncology](https://www.jco.org)
- [Journal of the National Cancer Institute](https://jnci.oxfordjournals.org)
- [Journal of Oncology Pharmacy Practice](https://www.jcnp.com)
- [Journal of Pain and Symptom Management](https://www.jpsm.com)
- [Journal of Thrombosis and Haematology](https://www.jthj.org)
- [Lancet Oncology](https://www.thelancet.com/oncology)
- [New England Journal of Medicine](https://www.nejm.org)
- [Seminars in Oncology](https://www.soci.org)
- [Supportive Care in Cancer](https://www.sccj.com)
- [Paediatric Blood and Cancer](https://www.pbcjournal.com)

### Useful Guidelines

- ASCO
- BC Cancer
- BOPA
- Children’s Oncology Group Care
- COSA guidelines for the safe prescribing, dispensing and administration of systemic cancer therapy available on [Cancer Guidelines Wiki](https://cancer.guidelines.wiki)
- ESMO
- eviQ Cancer Treatments Online
- HOPA
- MASCC
- NCCN

### Useful websites

N.B. The oncology pharmacist must critically review all information obtained from the Internet.
<table>
<thead>
<tr>
<th>Organization</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Society of Cancer</td>
<td>cancer.org</td>
</tr>
<tr>
<td>American Society of Clinical Oncology</td>
<td>asco.org</td>
</tr>
<tr>
<td>Macmillan Cancer Support</td>
<td>macmillan.org.uk</td>
</tr>
<tr>
<td>Memorial Sloane Kettering Cancer Centre</td>
<td>mskcc.org</td>
</tr>
<tr>
<td>National Cancer Institute (NCI)</td>
<td>cancer.gov</td>
</tr>
<tr>
<td>National Comprehensive Cancer Network</td>
<td>nccn.org</td>
</tr>
<tr>
<td>Penn Medicine Abramson Cancer Center</td>
<td>pennmedicine.org/cancer</td>
</tr>
</tbody>
</table>