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Re: Options for reform of the regulatory framework for pharmacy compounding

The Society of Hospital Pharmacists of Australia (SHPA) is the national professional organisation for over 3,000 pharmacists, pharmacists in training, pharmacy technicians and associates working across Australia’s health system. SHPA is the only professional pharmacy organisation with a strong base of members practising in public and private hospitals and other health service facilities.

SHPA is committed to facilitating the safe and effective use of medicines, which is the core business of pharmacists, especially in hospitals. SHPA supports pharmacists to meet medication and related service needs, so that both optimal health outcomes and economic objectives are achieved for Australians, as individuals, for the community as a whole and for healthcare facilities within our systems of healthcare.

SHPA believes that patient safety should be the primary concern when considering any changes to how medicines are manufactured or compounded.

SHPA would like to make the several comments in addition to addressing the consultation questions. Each is discussed in detail below:

- SHPA is concerned that the scope of the consultation is too narrow to address or ensure public safety.
- SHPA believes that a framework to identify the various types of compounding services, and the standards they need to meet to ensure public safety, should be identified irrespective of current legislative / regulatory inconsistencies.
- Quantifying public risk
- Pharmacy services in private hospitals
- Options outside the Therapeutics Goods Act framework

1. SHPA is concerned that the scope of the consultation is too narrow to address or ensure public safety.

The consultation excludes the compounding of medicines by pharmacists within all public hospitals and community pharmacies and private hospitals in Queensland, Western Australia and the Northern Territory. This means the consultation only concerns community pharmacies and private hospitals in five jurisdictions (New South Wales, Australian Capital Territory, Victoria, Tasmania and South Australia) and possibly other types of pharmacy services such as those in correctional facilities and the armed forces where the pharmacy is in one of these jurisdictions.
SHPA believes that the outcome of the consultation will be irrelevant if it is not nationally applicable and equally applicable across the range of health settings, health services and pharmacy services.

The ownership or location of the pharmacy service should not be the major determinant for assuming safety or ‘lack of risk’ associated with the use of medicines.

In addition, it creates ‘grey areas’ such as how any changes would apply to community pharmacies contracted to provide services in public hospitals, conversely when public hospital pharmacy services provide services to co-located private hospitals or correctional facilities.

2. SHPA believes that a framework to identify the various types of compounding services, and the standards they need to meet to ensure public safety, should be identified irrespective of current legislative / regulatory inconsistencies.

Whilst SHPA acknowledges that TGA must operate within the current legislative framework, we believe that this consultation should have explored the model required to ensure public safety and identify the legislative / regulatory changes that would be required to achieve this outcome.

SHPA believes that the outcome of the consultation will not deliver any public benefit as providers who wish to by-pass the regulatory framework can do so by operating in Queensland, Western Australia or the Northern Territory.

We would also like to highlight that any requirements regarding the labelling and advertising of medicines should also apply to compounded medicines that are simultaneously prepared for multiple patients.

3. Quantifying public risk

For information we have supplied details of the range of activities undertaken in hospital pharmacy services under the heading of ‘prepare pharmaceutical products’, see Appendix 1. This includes comment on the activities that require professional judgement and should therefore only be undertaken by a pharmacist.

SHPA believes that the preparation of a pharmaceutical product should be considered a separate activity to the dispensing of that product.

The National Competency Standards Framework for Pharmacists in Australia includes the competency standards required for “the extemporaneous preparation of a single or multiple units of a medicine intended for immediate use by a specific consumer” that pharmacists are required to meet at the time of their registration as a pharmacist. It also highlights that additional competencies are required if a pharmacist is required to:

- develop formulations where no standard formulation exists
- aseptically prepare medicines
- prepare chemotherapy medicines

None of these competency statements are included in the professional practice profile for a dispensing pharmacist in community pharmacy.

SHPA believes that these competency statements should be used to describe “the traditional role of a pharmacist in preparing medicine for a known particular patient”. It would therefore follow that pharmacists require additional competencies and additional regulation may be required when a medicine:
SHPA to TGA re pharmacy compounding

- requires the development or alteration of a formulation and / or
- requires aseptic preparation and / or
- is a chemotherapy medicine and / or
- is a radiopharmaceutical and / or
- the medicine is simultaneously prepared for multiple patients (i.e. bulk manufacture)

The figure below links the three factors that need to be considered when identifying public risk: pharmacist competency, facilities and equipment and if the item is prepared for an individual patient or prepared in bulk.

Considered in the milieu of a consequence/probability matrix the biggest risk to public safety if:

- an error occurs in the compounding of one ‘high risk’ item (e.g. chemotherapy) which leads to one person experiencing significant morbidity or mortality
- an error occurs in the compounding of one bulk prepared item provided to multiple patients which leads to many persons experiencing significant major temporary injury (including lack of therapeutic effect)
- an error occurs in the compounding of one bulk prepared item provided to multiple patients which leads to several persons experiencing significant morbidity (e.g. loss of eye sight) or mortality

Therefore SHPA believes that the consultation should consider how differences in risk to public safety between the pharmacy compounding services offered / provided should be identified. The actions required to address these risk through regulatory or other arrangements can then be identified.

**SHPA agrees that where the primary practice of a pharmacy is the manufacture and supply of medicines produced in bulk for a number of customers simultaneously that practice should not be exempt from the operation of Schedule 8 of Part 3-3 of the Therapeutics Goods Act.**
In addition SHPA considers that the TGA should recognise two categories between “the traditional role of a pharmacist in preparing medicine for a known particular patient” and TGA licensed facilities that may require exemption from the operation of Part 3-3 of the Therapeutics Goods Act:

- pharmacists / pharmacy services that develop formulations and prepare items based on these formulations for a known particular patient
- pharmacists / pharmacy services that develop formulations and prepare items based on these formulations including aseptic or cytotoxic medicines for a known particular patient

It does not necessarily follow that no regulatory framework should apply to these services. Rather that it is not appropriate to apply the current regulatory framework to these types of services.

SHPA would encourage TGA to continue to work with the Pharmacy Board of Australia and other professional groups to:

- identify the labelling requirements for compounded / extemporaneously prepared medicines at the time of preparation (i.e. prior to dispensing)
- identify the need for quality control activities (e.g. random sterility testing of final products or analysis for active ingredients)
- identify the need for reporting adverse drug reactions related to the items supplied
- identify the regulatory framework that should apply to these services and
- ensure the current (and proposed) regulatory framework is nationally applicable and equally applicable across the range of health settings, health services and pharmacy services

for each of the categories identified.

4. Pharmacy services in private hospitals

SHPA would like to highlight that although the majority of private hospital pharmacy services are classified as a community pharmacy for the purpose of reimbursement of the cost of medicine through the Pharmaceutical Benefits Scheme (i.e. Section 90 pharmacies – pharmacy services that are owned and operated by a pharmacist or pharmacists) there are also a small number of hospital pharmacy services which are classified as Section 94 pharmacies – i.e. pharmacy services that are owned by the (not-for-profit) hospital or health service and operated by a pharmacist employed by the hospital. This issue was highlighted in the recent Senate Inquiry regarding the supply of chemotherapy medicines.

SHPA believes that the use of a classification based on the notion of a ‘community pharmacy’ is irrelevant and should not be used as a differentiator in this context.

If the pharmacy service in a private hospital provides services akin to a public hospital pharmacy service it should be assessed / accredited / licensed under the same framework irrespective of the ownership of the pharmacy or the hospital. All hospitals are expected to meet the Australian Commission on Safety and Quality in Health Care’s National Safety and Quality Health Service Standards and be accredited based on the Hospital Accreditation Workbook.

SHPA also notes that similar to public hospital pharmacy services that often have a centralised compounding service for their local hospital network (i.e. within one separately constituted health service) there are a small number of private pharmacy services that provide centralised compounding services to multiple hospitals, potentially across State boundaries. That is the pharmacy service may not be on the hospital premises. This requires that any assessment / accreditation / licensing process be focused on the pharmacy service as a whole rather than the...
service provided to an individual hospital, again irrespective of the ownership of the pharmacy or the hospital or the physical location of the compounding facility.

We note that, as the consultation covers private hospitals, reference to SHPA’s documents such as the SHPA Guidelines for Medicines Prepared in Australian Hospital Pharmacy Departments should have been included in the consultation paper.

5. Options outside the Therapeutics Goods Act framework

As the limitations in current regulatory framework prevents a nationally applicable and equally applicable approach across the range of health settings, health services and pharmacy services, SHPA suggests that the TGA initiates discussions to investigate how current, national accreditation processes could be used to improve the safety of medicines manufactured or compounded by pharmacists practising within a pharmacy / pharmacy service.

This would require a mechanism to consider the appropriateness of both the facilities and the competency of the staff developing formulations and preparing the medicines.

SHPA believes that all pharmacies / pharmacy services that undertake what is described in the consultation paper as ‘complex compounding’ or ‘batch’ manufacturing should be approved as such by the jurisdictional pharmacy authority irrespective of the health setting or ownership of the pharmacy / pharmacy service or jurisdiction.

In addition we would suggest that the Pharmacy Board of Australia publish a specific guideline on the compounding of medicines that includes:

- comments on the pharmacist competencies required to both manage preparing pharmaceutical products and compound or prepare medicines (potentially including the need for recognition as an advanced pharmacy practitioner)
- the role of support staff in providing this service
- comments on the link to practice standards and codes of ethics
- comments on when informed patient consent may be required (e.g. for investigational medicines or medicines labelled ‘not for human use’)
- comments on preparing products for animals
- the advertising of products prepared within the pharmacy

Combining the need for the facilities to be approved and the ensuring the competency of the pharmacists involved in providing the services could then be specifically included in national accreditation processes such as the Pharmacy Guild of Australia’s Quality Care Pharmacy Program and the Australian Commission on Safety and Quality in Health Care’s Hospital Accreditation Workbook (which already includes reference to required governance structures, the use of standard procedures and competency with respect to medication safety within the organisation as a whole).

Consultation questions

Are there other risks and benefits of the continuation of existing regulatory arrangements that have not been identified in this consultation paper?

As noted above SHPA has identified issues relating to pharmacy services in private hospitals.

SHPA believes that the use of a classification based on the notion of a ‘community pharmacy’ is irrelevant and should not be used as a differentiator in this context.
What are the risk and benefits of Option B?

SHPA agrees that the professional activity of compounding is separate to the activity of dispensing.

SHPA fully supports the inclusion of the statement from the Pharmacy Board of Australia that extemporaneous preparations should be used only in circumstances where a commercial product is unavailable or unsuitable.

SHPA notes that in table 3A there is reference to the ‘manufacturer’ and the ‘manufacture of medicines’, for consistency this should probably be ‘compounder’ or ‘compounding of medicine’.

We have assumed that the second half of Table 4 reads as:
...produced by the pharmacist in compliance with the Pharmacy Board of Australia guidelines for compounding:
(a) in premises where the pharmacist practises and the premises are approved in accordance with state or territory legislation on pharmacies or are
(b) on the premises of a private hospital for supply (other than by wholesale) on or from those premises

If this is correct SHPA is unsure why dot point (b) is required. In addition SHPA believes that a definition of ‘biologicals’ needs to be provided.

The greatest risk associated with this option is that it is not a nationally applicable and equally applicable approach across the range of health settings, health services and pharmacy services. It entrenches the notion that patient safety and public risk is not important / does not need to be assured within some jurisdictions or if the pharmacy is publically owned.

Do you have any views on how Option B could be improved?

Option B needs to be nationally applicable and equally applicable approach across the range of health settings, health services and pharmacy services.

As noted earlier SHPA considers that the TGA should recognise two categories between “the traditional role of a pharmacist in preparing medicine for a known particular patient” and TGA licensed facilities that may require exemption from the operation of Part 3-3 of the Therapeutics Goods Act:

- pharmacists / pharmacy services that develop formulations and prepare items based on these formulations for a known particular patient
- pharmacists / pharmacy services that develop formulations and prepare items based on these formulations including aseptic or cytotoxic medicines for a known particular patient

This approach would permit TGA to clearly identify pharmacies / pharmacy services that should be considered as ‘manufacturers’ as discussed in option C.

What wording should be used on medicine labels to highlight that the medicine is compounded?

SHPA supports the concept of clearly identifying extemporaneously compounded medicines. However as we believe that as the definition would need to include all TGA registered medicines that are manipulated to be in a ‘ready-to-administer’ format (e.g. parenteral nutrition solutions) that more than one label may need to be defined and used.

The label “This is a compounded medicine” could be required when a product is prepared in line with the manufacturer’s instructions or when a medicine is prepared according to a standard formulation (e.g. extemporaneous products listed in the Australian Pharmaceutical Formulary and Handbook).
However the label “Compounded medicine. Not TGA approved” or “Extemporaneous medicine. Not TGA approved” may be more appropriate when the formulation has been defined by a pharmacist, doctor or other prescriber for either an individual patient or multiple patients.

**What are the risks and benefits of Option C?**

The greatest risk with Option C is that it will be difficult to apply in a standard manner across pharmacies and across time. For example does a pharmacy require a manufacturing license if they are asked to compound eye drops for one patient or they prepare one dose form that is terminally sterilised? Conversely is a manufacturing license not required if the pharmacy manufactures one product and produces 499 batches of 4.9 kilograms of cream in one month?

Licensing requirements should be risk-based, not dependent upon arbitrary volume of products. If a product is manufactured / compounded and it poses a significant risk to the patient involved, then licensing is required. This should be regardless of the number or volume of items manufactured. The lack of a license then clearly indicates that this product should not be prepared / the manufacturing activity should not be undertaken within that facility and the pharmacist should contract with a licensed facility to provide the requested product.

**Do you have any views on how Option C could be improved?**

SHPA agrees that the definition cannot be based solely on the number of prescriptions, nor the number of medicines / formulations. We believe that the definition requires matrix that combines:

1. the inherent risk associated with the medicines being prepared (e.g. dose forms required to comply with a sterility standard)
2. if the medicines prepared on behalf of another provider / health service (which increases the risk in terms of the number of patients that could be affected by any error)
3. the range of medicines prepared and
4. the volume of labelled items (defined by number of labelled items produced rather than number of dispensed items or batch size, again linked to increased risk in terms of the number of patients that could be affected by any error)

That is a hybrid of sub-options C1, C2 and C3.

**If your business would be affected by this proposal, what would be the financial impact on your business and flow-on impact on consumers, if any?**

No specific comment

**Do you support sub-option C1, C2 or C3, or a combination or hybrid of these options?**

As noted above a hybrid of sub-options C1, C2 and C3 would better reflect the need for a manufacturing licence.

SHPA suggests a grading or point scoring system approach where a designated number of points is allocated based on:

1. the inherent risk associated with the medicines being prepared
2. if the medicines prepared on behalf of another provider / health service
3. the range of medicines prepared and
4. the volume of labelled items.
This could include the notion of ‘zero’ points for all or the majority of items defined as “the extemporaneous preparation of a single or multiple units of a medicine intended for immediate use by a specific consumer” so that the whole range of medicines prepared by one pharmacy / pharmacy service can be identified.

Pharmacies that record a score above a pre-determined number of points would require a manufacturing license.

For example points (possibly with a sliding scale) could be allocated for:

- if the pharmacy identifies / describes formulations including identifying stability, storage conditions and shelf life of the product using that formulation
- if the pharmacy produces products where the dosage form is required to comply with a sterility standard
- if the pharmacy produces products where the dosage form is required to comply with Uniformity of Dosage Units standard using Content Uniformity
- if the pharmacy produces products that require special facilities / equipment to maintain efficacy of the product
- if the pharmacy produces products that may not be interchangeable when made by different pharmacies / manufacturers
- if the pharmacy produces products for individual patients through more than one physical pharmacy location or across more than one health service / hospital
- the total number of labelled items produced in each of these categories covered by “the extemporaneous preparation of a single or multiple units of a medicine intended for immediate use by a specific consumer”:
  - eye preparations
  - parenteral preparations including cytotoxic medicines
  - radiopharmaceuticals
  - medicines where segregation of activities is required (e.g. hormones)
  - specialised dosage forms (e.g. sustained release, modified release, liposomal products)
  - oral or topical liquids
  - creams, ointments and gels
  - loose powder blends or capsule powder blends
  - suppositories, pessaries and other single solid dose forms
- the total number of labelled items produced in each of these categories not covered by “the extemporaneous preparation of a single or multiple units of a medicine intended for immediate use by a specific consumer”:
  - eye preparations
  - parenteral preparations including cytotoxic medicines
  - radiopharmaceuticals
  - medicines where segregation of activities is required (e.g. hormones)
  - specialised dosage forms (e.g. sustained release, modified release, liposomal products)
  - oral or topical liquids
  - creams, ointments and gels
  - loose powder blends or capsule powder blends
  - suppositories, pessaries and other single solid dose forms

This approach would allow the TGA and the pharmacy / pharmacy service to readily identify those pharmacies that are essentially acting as manufacturers. The points allocated needs to reflect...
public risk and be sufficient to ensure that pharmacies that manufacture one item in large quantities, many items in significant quantity or high risk items in substantial quantities would be classified as requiring a manufacturing license.

**In sub-option C3, which means of controlling quantity do you support?**

See comments above.

**Are there other mechanisms that can discriminate using quantities between traditional and commercial scale compounding?**

See comments above.

**At the commencement of any new requirement for requiring a manufacturing licence, would a two year transition time be sufficient?**

No specific comment.

**Which option, or combination of options or parts thereof, do you favour and why?**

In summary SHPA believes that the outcome of the consultation will be irrelevant if it is not nationally applicable and equally applicable across the range of health settings, health services and pharmacy services.

SHPA believes that a framework to identify the various types of compounding services and the standards they need to meet to ensure public safety should be identified irrespective of legislative / regulatory inconsistencies and need to be equally applicable across all pharmacies and pharmacy services.

For this reason SHPA would support the identification of four levels of compounding activity:

1. pharmacies / pharmacy services that only provide “the extemporaneous preparation of a single or multiple units of a medicine intended for immediate use by a specific consumer” i.e. “the traditional role of a pharmacist in preparing medicine for a known particular patient”
2. pharmacies / pharmacy services that develop formulations and prepare items based on these formulations for a known particular patient (e.g. compounding pharmacies)
3. pharmacies / pharmacy services that develop formulations and prepare items based on these formulations including aseptic or cytotoxic medicines for a known particular patient
4. pharmacies / pharmacy services that require a manufacturing license

A hybrid of sub-options C1, C2 and C3 using a grading or point scoring system could be used to identify a category each pharmacies / pharmacy services and importantly those that would be classified in the first category and those that require a manufacturing license.

If you would like to discuss the issues raised in this submission or require further information please contact [blacked out].

Yours sincerely,

Helen Dowling
Chief Executive Officer
(BPharm,DipHospPharmAdmin,GDipQIHCare,FSHP,AICD)
Appendix 1 Definition of hospital pharmacy activities: prepare pharmaceutical products

This is an extract from a larger document that describes the five ‘core business’ of a hospital pharmacy service with a hierarchical description of activities included, they are:

1. **Quality use of medicines** which includes the organisation-wide activities undertaken to ensure the safe use of medicines across the health service (including supporting electronic medication management and the management of adverse medicines events) and promote the quality use of medicines across different patient cohorts (including institutional medicines policy management and drug utilisation evaluation).

2. **Clinical services** which consist of the clinical pharmacy service to individual patients and groups of patients and medicines information services.

3. **Medicines procurement and distribution** which includes all facets of the procurement, storage and distribution of medicines throughout the health service, preparing medicines so that they can be administered (including extemporaneous compounding) and the issue of medicines to individual patients.

4. **Teaching and research** which consists of the teaching of under-graduate and post-graduate pharmacists and other health professionals and pharmacy practice research.

5. **Administration and pharmacy management** which underpin all of the activities undertaken by the pharmacy, this includes human resource management, training and professional development, information and technology management, policy and planning activities, ABM and quality activities.

The definitions are not specific to any site or any sector (although not all activities are offered by every hospital pharmacy service), nor where the patient receives care (e.g. inpatient or non-admitted patient or through a hospital outreach service, acute or sub-acute). They are independent of the size, ownership and location of the pharmacy. It should be noted that not all hospital pharmacy services will provide every activity described.

**Prepare pharmaceutical products**

Pharmaceutical products may be prepared ‘on demand’ for an individual patient or ‘pre-prepared’ to be available when required.

This includes the preparation of a product that is not commercially available from raw materials or intermediary products. It includes the activities required to:
- ensure facilities and infrastructure are suitable to prepare pharmaceutical products
- identify the need for the extemporaneous preparation of every product
- identify if each product should be prepared ‘on demand’ for an individual patient or ‘pre-prepared’ so that it is available when required
- for each product identifying if the use of an external manufacturing facility is appropriate / preferred
- describe a formulation, storage conditions and shelf life of each product
- produce master production documentation
- ensuring staff are suitably validated to prepare pharmaceutical products and
- prepare all the products required by the organisation

**Management of preparation of pharmaceutical products**

The preparation of pharmaceutical products ‘on demand’ for an individual patient requires the pharmacist to ensure that a safe, efficacious and ‘ready-to-administer’ product is produced to ensure the safety of that patient. The overall potential risk of ‘pre-preparing’ pharmaceutical products is greater as multiple patients receive one batch of the product.

This bulk of these activities should be undertaken by a pharmacist as they require the professional judgement of a pharmacist (i.e. decisions about the formulation, standard preparation procedures, quarantine conditions, storage conditions and shelf life of pharmaceutical products).

**Master production documentation**

This activity includes:
confirming the need to manufacture or compound the product (e.g. no suitable commercial product is available, required by clinical trial protocol)
- if required confirming medicine is approved for use in the organisation
- if required confirming medicine is approved by ethics committee
- if required seeking input or advice from medicine information pharmacists
- investigating the options for the manufacture of the product including use of an external provider
- identifying the dosage from required and if the product needs to be ‘ready-to-administer’
- identifying a suitable formulation and the stability, storage conditions and shelf life of the product using that formulation
- identifying a standard procedure for the manufacture / compounding of the product
- identifying suitable primary containers and packaging
- identifying standard label (including ancillary or warning labels) and if appropriate standard instructions for use
- compiling this information into a master batch sheet
- documentation of evidence used to support the formulation, method of manufacture / compounding, primary container, stability, storage conditions and shelf life.

This activity does not include medicines information research undertaken to support decisions about formulation, shelf life etc.

**Management of daily activity**

This activity includes:

- liaison with pharmacists and others involved in organising medicines to be administered to individual patients regarding medicines required, any changes to dosage or formulation and time of administration
- confirming all requests for manufactured products and the compounding of ‘ready-to-administer’ medicines for individual patients
- producing a daily worksheet that details all the items that need to be manufactured / compounded and the time each medicine is required to be administered
- prioritisation of workload based on scheduled administration times of medicines required
- identifying staff required to ensure timely production of items
- selection of master batch sheets to produce batch record sheet for each item

**Management of products sourced from external provider**

**Management of products sourced from external provider pre-prepared items**

This includes all activities associated with ensuring product supplied accords with formal agreement between the manufacturer and the pharmacy / organisation that details the formulation, dose form etc.

**Management of products sourced from external provider ‘ready-to-administer items**

This activity includes the ordering of the medicine in a ‘ready-to-administer’ format in accordance with predetermined purchasing agreements. This requires confirmation for the need for each item medicine and the time the medicine must be available after confirming the following:

- that the medicines ordered are required
- that the medicines required are covered by the service agreement between the external provider and pharmacy / organisation
- dosage, dose form and primary container
- time of administration
- time of delivery from external provider
- verifying the items supplied against the order placed
- items intact e.g. cold chain assured
- updating pharmacy inventory records to record receipt of items
- liaison with external provider and documentation of items ordered

**Staff validation**

This activity does not include the teaching or training of staff to perform compounding or preparation of pharmaceutical products.
This activity includes:
- describing staff validation protocols for each of the types of extemporaneous compounding performed in the pharmacy
- organising appropriate staff validation tests
- documentation related to staff validation
- where required organising any teaching or training required for staff to meet validation protocols

Quality control activities
This activity does not include the management of contracts relating to quality control activities that are provided by an external provider.

This includes all activities completed by quality control personnel to ensure the provision of a quality assured product from the pharmacy department’s compounding and to comply with good manufacturing practice, PIC/S and local policies.

This includes the following activities:
- raw materials:
  - the receipt and recording of raw materials (including allocation of an identity number) within the quality control area
  - visual inspection of the material
  - if required completion of tests to confirm the identification of the raw material (including infrared and ultraviolet scanning, chemical testing)
  - testing for impurities
  - testing of physical properties (including water content, boiling or freezing point, pH determination, refractive index, optical rotation)
  - completion of assays to ensure compliance within defined limits in compendia or local procedures (e.g. aqueous titration, high pressure liquid chromatography, atomic absorbance)
  - microbiological testing to ensure compliance within limits defined in compendia or local procedures (e.g. total viable count determination, pyrogen testing)
  - radiopharmaceutical testing (including stannous / total tin assay, radiochemical purity, animal biodistribution)
  - all calculations, data interpretation and analysis
  - retention sampling
  - if required relabelling with the Australian approved name
  - release of the material for use by a pharmacist
  - all documentation related to these activities
- completed compounded products:
  - visual inspection of the product
  - if required testing for impurities
  - if required microbiological assessment to ensure compliance within limits defined in local procedures (e.g. pyrogen testing)
  - release of the material for use by a pharmacist
  - all documentation related to these activities
- environmental testing to ensure all environments used for pharmaceutical production to comply with defined standards, compendia and local procedures. Including:
  - the use of settle plates exposed at mapped locations in the work environment to monitor microbiological fall out and the incubation of the plates
  - air sampling; the mechanical transfer of environment air to growth media, determination of colony forming units per cubic metre and the testing of laminar flow units and air vents
  - direct swabbing to test sterile and cytotoxic clean room environment surfaces for microbiological contamination and the assessment of cleaning protocol effectiveness
  - analysis and documentation of the results
  - monitoring of cleaning and maintenance procedures including inspection of work log books
- activities to validate personnel, equipment and procedures within the compounding unit. This includes:
  - all facets of operator validation including as repetitive manipulation exercises
  - all facets of operator re-validation
- regular validation of equipment used in the production of pharmaceutical items to ensure compliance with standards, compendia and local procedures (e.g. balances, measures, autoclaves, refrigerators, laminar flow units)
  - routine and emergency maintenance and required calibration and quality testing post-maintenance

Extemporaneous compounding

Non-sterile, non-cytotoxic items

This includes the following activities:
- selection of appropriate the master production record sheet to create batch record sheet
- entering all information on the batch record sheet
- obtaining the raw materials, intermediary products and containers from their position in storage, including recording the quantity of items removed in the inventory control system
- prepare and print labels according to the batch record sheet and transfer the labels to the work area
- prepare the equipment necessary to produce the product according to the batch record sheet and complete any preparation required for the final storage containers
- the weighing or measuring of materials, the checking of weights and measures by a second party, and the combination of materials using equipment and techniques as defined in the batch record sheet to prepare the final product
- for accountable medicines and clinical trial medicines recording all relevant information into pharmacy register in order to comply with legislation, institutional policy, trial sponsors etc
- packaging of a specific quantity of product into containers according to the batch record sheet and placing the prepared labels on the filled containers, and sealing the containers
- inspection and verification by the pharmacist of the final product to ensure:
  - correct master record sheet used to produce batch record sheet
  - correct labelling
  - correct presentation of the product including checking the label with the batch record sheet to ensure accuracy
  - correct batch number and expiry date
  - and signing of the batch record sheet to record the inspection
- placing product in storage area and entry into inventory management system
- recording and filing of production records
- clean-up procedure after preparing product, including washing equipment and containers used to prepare product, wiping counters, discarding garbage, replacing unused supplies
- any communication necessary for providing an extemporaneous product including communication among production personnel and between other pharmacy staff and health professionals

Non-sterile cytotoxic items

This includes the preparation of cytotoxic agents by other than aseptic technique.

Although sterility may not necessarily be a requirement (e.g. for topical agents), protection of the operator and the environment remain a priority. Therefore the activities related to the environment will generally include those listed in the aseptic cytotoxic admixture section.

Aseptic admixtures

This includes the following activities:
- selection of appropriate the master production record sheet to create batch record sheet
- entering all information on the batch record sheet
- obtaining the raw materials, intermediary products and containers from their position in storage, including recording the quantity of items removed in the inventory control system
- prepare and print labels according to the batch record sheet and transfer the labels to the work area
- prepare the equipment necessary to produce the product according to the batch record sheet and complete any preparation required for the final storage containers
- preparing the laminar flow cabinet for the purpose of providing a clean working environment and the personal cleaning and washing procedures necessary for aseptic technique, including hand washing and the donning of appropriate attire
• checking and placing all items necessary to prepare the product into work area entry port in suitable condition to enter sterile environment and record relevant batch number (medicine order, labels, medicines, diluents, containers etc.).
• the weighing or measuring of materials, the checking of weights and measures by a second party, and the combination of materials using equipment and techniques as defined in the batch record sheet to prepare the final product
• preparing the product, including all types of physical manipulations:
  - medicine addition to syringe: the withdrawal of the correct dose of the medicine into a syringe or the addition of diluent to medicine requiring reconstitution in a vial, appropriate filtration and subsequent dilution, transfer into a syringe, capping syringe. This may also include serial dilution to appropriate strength or the preparation of non-standard concentrations of vial solutions using syringe transfer
  - single medicine addition to final delivery system: the withdrawal of the correct dose of the medicine into a syringe or the addition of diluents to a medicine requiring reconstitution in a vial and the addition of the correct dose to a final solution (this may also require withdrawal of solution from the bag prior to the addition)
  - multiple medicine addition to final delivery system: the withdrawal of the correct dose(s) of the medicine(s) into a syringe(s) and/or the addition of diluent to medicine(s) requiring reconstitution in a vial(s) and the addition of correct doses to a final solution (this may also require withdrawal of solution from the bag prior to the addition) for dispensing
• for accountable medicines and clinical trial medicines recording all relevant information into pharmacy register in order to comply with legislation, institutional policy, trial sponsors etc
• packaging of a specific quantity of product into containers according to the batch record sheet and placing the prepared labels on the filled containers, and sealing the containers
• inspection and verification by the pharmacist of the final product to ensure correct labelling and presentation of the product including checking the label with the batch record sheet to ensure accuracy, correct batch number and expiry date, and signing of the batch record sheet
• placing product in storage area and entry into inventory management system
• recording and filing of production records
• clean-up procedure after preparing product, including washing equipment and containers used to prepare product, wiping counters, discarding garbage, replacing unused supplies
• any communication necessary for providing an extemporaneous product including communication among production personnel and between other pharmacy staff and health professionals

Total parenteral nutrition
This does not include the preparation of parenteral nutritional fluids for individual patients through the addition of additives to pre-prepared parenteral nutrition solutions; this activity is considered an aseptic admixture (see aseptic admixtures section).

This includes the total preparation of sterile parenteral nutrition fluids from the component base solutions (for neonates, paediatrics or adults). This activity includes all of the activities listed in section 3.2.3.1 as well as the following activities that must be performed by a pharmacist:
• calculation of the requirements for each patient which may include writing/assessing biochemistry forms, trace element and fat emulsion requirements, any communication necessary to resolve discrepancies and documentation of decisions
• prepare batch record sheet based on these calculations
• visual inspection of the prepared TPN base solutions for particulate matter and verification by pharmacist to ensure TPN base solutions have been correctly prepared

Terminally Sterilised
This activity includes the production of formulation and items that require terminal sterilisation (e.g. autoclaving).

This activity includes all of the activities listed in see aseptic admixtures section as well as the following activities:
• terminal sterilisation process required according to the batch record sheet
• visual inspection of product for particular contamination
• transfer of product to quarantine storage area on completion of the sterilisation process
• quality control tests required according to the batch record sheet
inspection and verification of the final product by pharmacist on completion of quarantine period to ensure product meets requirements documented on the batch record sheet

Aseptic cytotoxic admixture
This includes the sterile preparation of cytotoxic medicines so that they are in a 'ready-to-administer' form.

This activity includes all of the activities listed in see aseptic admixtures section as well as the following activities:
- preparing the cytotoxic medicine safety cabinet
- documenting cytotoxic exposure; recording the time spent preparing chemotherapy products, the total amounts of cytotoxic medicines handled and the number of manipulations performed
- ensuring cytotoxic product is suitably packed for transport to patient care area (e.g. sealed in plastic and a in hard-walled container)

Aseptic admixture, monoclonal antibodies
This includes the sterile preparation of monoclonal antibodies in a ready-to-administer preparation and includes all of the activities listed in see aseptic admixtures section.

Radiopharmaceuticals
This includes the sterile preparation of:
- cold kits (i.e. the production of bulk solutions) where suitable facilities are available and
- the reconstitution of these or commercial kits into the final form radiopharmaceutical product for patient administration

This activity includes all of the activities listed in see aseptic admixtures section as well as the following activities:
- final sterilisation of cold kit solutions by membrane filtration
- elution of generator (in accordance with the manufacturer’s instructions) required for the reconstitution of cold kits
- ensuring radiopharmaceutical product is suitably packed for transport to patient care area (e.g. in lead transport pot)