

# Chapter 9

## Pharmacy Requirements for a Comprehensive Cancer Center



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### Introduction

Healthcare is experiencing significant challenges in recent years. The aging population and increasing prevalence of chronic diseases have led to increase in demand and complexity of medication regimens requiring major changes in the way cancer care is delivered. In addition, care providers face a consumer and patient base that is better informed and educated, technologically savvy with ready access to information through social networking and the Internet of things. Compounding these are rising healthcare costs, lack of hospital and long-term care beds, and healthcare manpower shortages.

In the face of a healthcare environment that is constantly changing, pharmacy in a comprehensive cancer center needs to be cognizant of new and emerging models of care that are integrated and patient-centered, attentive to cutting-edge research, cancer treatment, and different approaches to managing the entire spectrum of oncological care. To support the functions of a comprehensive cancer center, pharmacy services need to focus on delivering care that is timely and convenient, affordable, financially sustainable, and quality assured.

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The prerequisites to transformation from a brick-and-mortar pharmacy model to a progressive pharmacy is guided by the perspectives of (1) investing in people to attract and retain the best, (2) investing in place to build a future-ready facility, (3) investing in process to create greater value for patients, and producing safe and quality products.

The COVID-19 pandemic has brought numerous challenges to the healthcare system. At the same time, it serves as a timely reminder of the importance of pandemic preparedness, not only to support safe and quality use of medicine but ensuring the availability of medicines for patients where and when they need it, as well as the safety and ability of staff to continue to function and respond to disruptions while ensuring the continuity of care for patients.

## Investing in People

At the heart of transformation and provision for comprehensive care is a competent healthcare workforce. Pharmacists, as medication experts, are accountable and responsible for promoting safe and effective medication use. As complex cancer care issues continue to demand a multidisciplinary approach, oncology-trained pharmacist is a vital member of the collaborative care team to improve treatment outcomes. The pharmacy department manpower planning needs to move in tandem with prevailing and future cancer care model. It is imperative that the plan takes into consideration a transdisciplinary, shared decision-making practice model as pharmacists expand scope of practice.

Key considerations important to attract and retain a competent pharmacy workforce (pharmacists and pharmacy support staff) include the following:

(a) *A career structure for progression and advancement framework*

Enhancing professional development and competency of existing pharmacy workforce and attracting high potential recruit is a win-win for both employees and employers. In addition to clinical practice track, inclusion of researcher and educator tracks will aid in developing a pool of pharmacists with matrix career tracks such as clinician-researcher and clinician-educator.

(b) *A competency framework to complement the implementation of proposed career pathways*

Taking reference from national, professional and regulatory bodies, the competency framework enables pharmacy workforce to reflect on their practice, identify needs for continuous professional development and acquires new competencies to advance their practice systematically.

A common enabler for workforce transformation in addition to training and development includes but not limited to identifying meaning and purpose, staff engagement, building trust, communication and creating opportunities.

(c) *Manpower and workforce optimization for effective number and skill mix to deliver comprehensive and safe cancer care*

When planning, it is important to consider activity level, service demand and variation, patient acuity, staffing norms, staff experience, organisational service and quality indicators and consistency with published best practices.

Pharmacy technicians form an important part of the pharmacy support workforce. The roles of pharmacy technicians have shifted from picking, packing, dispensing and inventory to support niche areas like medication review, medication administration, information technology support (automation, data analytics), clinical trial drug management and tele-pharmacy. A competency framework from entry to advanced practice would be instrumental to provide a structured approach towards development of this workforce in terms of practice, clinical and task specialization.

(d) *Staff benefits and recognitions*

This can come in the form of training grants and scholarships to fund for further studies and residency training, or competitive staff remuneration package that recognizes high potential and performing individuals.

## **Investing in Place**

Oncology pharmacy services in a comprehensive cancer facility go above and beyond needs to build a future-ready facility. Proper space planning for a pharmacy facility can ensure configurable space when the need arises. COVID-19 pandemic has brought about the creative use of space amidst social distancing requirements. Wherever possible, space reconfigurability, mapping of patient journey, equipment and material flow and processes must be well thought out to ensure workplace continues to support job to be carried out in the most efficient manner.

Key considerations for a future-ready pharmacy in a comprehensive cancer center include the following:

(a) *Adopting technology*

Harnessing new technology such as automation, robotic, and RFID technologies to ensure a highly efficient and accurate medication dispensing process has enabled pharmacy workforce to deliver more valued direct patient care activities. The use of automation and robotics requires careful planning, ensuring workflow marries the capabilities of robotics to seek the best outcome of safety and efficiency for the pharmacy. With the increasing complexity in medication regimes, and array of decision-making tools available, it is crucial to ensure that these tools fit into the overall information technology workflow so that these systems fulfill the purported benefits.

The use of artificial intelligence (AI) can inform patient load and flow, thereby allowing workforce planning and optimization. On the clinical front, use of AI to predict patient response or adverse reactions to a drug is not a far-off reality. Pharmacies must be ready to embrace the wealth of data and turn them into meaningful information to inform practice.

(b) *Good Manufacturing Practice (GMP)*

Sterile compounding is an integral component of a cancer center pharmacy. Quality assurance and control is paramount to ensure that cancer patients receive the right drug in the right dose, at the right time and with right vehicle and container. GMP in the pharmacy laboratory accords patients and providers of sterile compounded products a seal of quality assurance. Fatal incidents have been reported worldwide (e.g. lack of vigilant decision-making process and anticipatory models with programs to prevent errors, disaster and crisis in the New England Compounding Centre leading to fatalities from meningitis from tainted sterile products) [1]. The hub-and-spoke model for sterile compounding in Singapore leveraged on the principles of quality assurance and efficiency to provide the nation with cost-effective and quality sterile products [2]. It is of tactical importance that a comprehensive cancer center pharmacy laboratory becomes a GMP-certified hub.

(c) *Business continuity planning (BCP)*

Identifying risks that has high impact on the business operations is the initial step in formulating the BCP plan. Critical operations and functions that need to be continued are then identified and prioritized [3]. Communicating the plan to key stakeholders is important. A BCP plan once developed and implemented needs to be maintained. Constant drills and refinement should be in place to keep up with the changes in practice.

## **Investing in Process and New Models of Care**

Processes bring people and place together. The aim of achieving optimum process in pharmacy is to deliver seamless integration of pharmacy services into the patient's cancer journey. Pharmacy needs to lead in the medication management process. Organizations with foresight, agility, and resilience recognize the need to continually improve their processes to meet the needs of the changing healthcare landscape and their patients. Research forms the backbone of a comprehensive cancer center. Pharmacy involvement in the new models of care needs to embrace bench to bedside research, including novel therapies (drugs, biologics, and medical devices) and survivorship. The latter is of increasing focus as screening and treatment modalities sees shifting demographics and increased cure options.

Key considerations in process management and improvement include:

(a) *Medication use and procurement*

A good medication management system supports appropriate and judicious use of drugs. Rapid reviews using health technology assessment methodologies are useful tools for presenting evidence-based reviews and expert opinion for decision making. Drug utilization evaluation that assesses the appropriateness of drug use can provide timely feedback and presents evidence for rectification.

To help facilitate the safe, effective, and timely administration of innovative therapies to cancer patients, it will be important for pharmacy to collaborate with clinicians, researchers, educators, and administrators to develop policy and procedure pertaining to approval for access, evidence-based guidance, work instructions, and educational materials for these therapeutics.

Procurement becomes more complicated as cancer care becomes increasingly more individualized and complex with precision medicine and novel treatments, including but not limited to CAR T-cell therapy, novel immunotherapies, and gene targeting approaches.

Similarly, for access to generic drugs and biosimilars, pharmaceutical procurement expertise is needed to ensure timely and relevant input into procurement of generic drugs and biosimilar choices. Fulfillment of contracts, negotiation, and lock-in of preferential drug pricing are other important functions of procurement.

(b) *Medication supply*

From the ordering to administration of medications, numerous processes are involved before medication is supplied. These processes must be engineered and constantly reviewed to ensure effective communication between all parties involved. Strict standards should be set for ordering, preparing, dispensing, administration, handling, and storage of chemotherapy to ensure all important elements are addressed [4].

Presently, home delivery of oral chemotherapy drugs presents an attractive option for patients' convenience, avoids overcrowding in pharmacies, and facilitates round-the-clock access. Patients can wait in the comfort of their homes/offices where the medications will be delivered. Other supply alternatives include express pickup at designated dispensing sites and secure lockers for patients who do not want home delivery option.

(c) *Administration*

There has been increasing focus on delivering care that is centered on the needs and preferences of patients, administered in the most clinically appropriate and convenient settings for patients. Home and community administration of chemotherapy have been made possible with the availability of subcutaneous dosage forms and smart ambulatory infusion devices. A clear set of service guidance and criteria involving multi-stakeholders, including but not limited to clinicians, nursing, clinic operation and business office, need to be established for pharmacy to support the care model.

(d) *Monitoring*

With mobile applications that supports tele-consult, patient-reported outcomes and patient-reported experience, oncology pharmacists can help patients to achieve better medication adherence and monitoring of adverse effects arising from treatment. Research looking at mobile application-based monitoring and intervention, and factors that affect oral chemotherapy adherence, can help to improve medication use process for cancer patients [5].

(e) *Community partnership for cancer education and survivorship*

Pharmacy can support patient and caregiver engagement through development of online patient information leaflets, patient counselling, medication therapy management clinics, tele-pharmacy, and public education seminars.

According to the National Cancer Institute, survivorship starts from the time of diagnosis to the end of life, focusing on the health and well-being of a person with cancer including the physical, mental, emotional, social and financial effects of cancer [6]. Pharmacy can support survivorship initiatives through patient education, pharmacy and nurse-led survivorship programs or clinics, as well as partnering with community pharmacies to support the physical effects of cancer such as nutrition, prosthesis, stoma and dressing supplies.

(f) *Resource optimization*

Pharmacy must work within allocated resources to achieve desired outcomes. Through utilization of visual stream mapping and data analytics to guide day-to-day activities and its variation, for example in chemotherapy scheduling, staff rostering, and medication fulfilment, pharmacy will have the capability to balance and optimize available resources with service demand.

(g) *Quality improvement*

Continuous quality improvement must be embedded into the culture of a future-proof pharmacy. Process improvements can range from small changes in workflow to improve efficiency, to impacting patients' experience in the cancer care journey. Embracing the concept of Kaizen is a good start. It involves applying 'process-oriented thinking', 'plan-do-study-check-act' and 'standardize-do-check-act cycles' approaches, speaking with data, embracing quality-first and focusing on the customer [7]. New processes are also subjected to failure mode effect analysis to identify risk and develop mitigation strategies. Investing in process improvement requires a proactive and concerted effort by staff at all levels. It is important to raise issues promptly and seek timely support for resolution.

## Building a Sustainable Pharmacy

From terrorist attacks and cyber threats to hurricane, riots, and pandemic, disrupters abound. Technological disrupters such as the Internet, social media, and AI are also changing the fabric of society. While future events may not take same form, they will require a deliberate effort from organization to navigate with agility and effectively.

Key considerations in building a sustainable pharmacy include:

(a) *Self-sustainability*

The pandemic has highlighted the importance of diverse supply chains. Establishing emergency drug formularies and resolving drug shortages has become a priority in these times. Strong collaborations with the governmental

agencies and establishing networks to ensure adequacy of essential medications must complement rational stockpiling and stock rotation to achieve national drug supply objectives. Methods of drug savings through centralized compounding can and should be explored.

Pharmacy ought to support different models of care and work together with other care providers to provide remote pharmacy services through telemedicine and home delivery when the need arises. Empowering patients for self-care and flagging issues to pharmacists and healthcare professionals allows patients to be more involved in their own care, allowing healthcare professionals' limited resources to be used in the most value-added tasks.

Staff well-being, as well as education and training, plays an important role towards self-sustenance. Staff must now cope with disruptions brought about by technological advances as well as new working norms brought about by pandemic. Mental health and staff well-being are thus integral factors to build a sustainable workforce. The pandemic has also changed the delivery of education, and training and new modalities must be explored to ensure staff are upskilled and remain relevant and always ready.

Societal changes and demographic shifts necessitate the adoption of technology, including mobile applications, AI-enabled medication support, robotics, and automation, to sustain pharmacy services and delivery of pharmaceutical care in peace time and during disruption.

(b) *Environmental sustainability*

Interventions for a greener pharmacy include the adoption of a wide array of environmentally friendly activities ranging from facility to practice. Energy-saving ventilation, water, and lighting practices should be encouraged in the facility. The energy consumption of equipment and automation should form part of the evaluation criteria in the procurement process. Proactive scheduling of replacement of older equipment with newer and energy-saving ones should form part of the equipment management process. Pharmacy must strive to encourage recycling, reduce the use of paper through adoption of electronic systems, and decrease reliance on plastics. This will save running costs in the long term and decrease the carbon footprint from these day-to-day activities.

On the practice front, interventions include reducing imprudent prescribing, which can result in stockpiling, improper storage, and irresponsible disposal with the consequences of poisonings, pollution, and wasted healthcare resources [8]. Patient education becomes important to prevent adherence problems arising from lack of understanding of drugs and their side effects and thus wastage of medications. Stockpiling of medications at home should be discouraged through medication reviews and counselling.

Patient education on proper medication disposal, in particular, cancer and targeted therapies, should be part of the patient journey. Pain medications like fentanyl patches can also lead to issues of drug abuse and harm through inadvertent exposure if not disposed properly. Pharmacists are in the prime position to provide advice on the proper handling and disposal of these medications as well as to provide support for proper disposal.

(c) *Financial sustainability*

It is challenging to achieve the right balance across the key priorities of efficiency, safety, quality, accessibility and affordability. To achieve efficiency, safety and quality, pharmacy needs to invest more resources and inject technology in the overall medication management and use. To make accessible innovative and novel therapeutics to patients, pharmacy needs to have sufficient drug budget to procure, while affordability remains questionable depending on who is paying for the costs of treatments. Therefore, an important consideration that underpins these priorities is financial sustainability.

Health technology assessment is an important capability to have, grow and apply in pharmacy, so that new treatments, technologies, and drugs can be evaluated, and judicious decision can be made for availability and access. Given the rapid medical advances, this can help to avoid unnecessary expenditure on new and unproven, or less effective treatment.

## Conclusion

Pharmacy in a comprehensive cancer center must be geared to provide comprehensive pharmacy services to a diverse population of cancer patients. The pharmacy workforce consisting of oncology specialty trained pharmacists, generalist pharmacists, pharmacy technicians, administrators, and other support personnel is competent and committed to clinical excellence, continuous process improvement, and innovation in pharmacy practice.

Investment in a modernized pharmacy will lead to improve safety, efficiency, and effectiveness in medication management, distribution, handling of hazardous drugs, and advancement in practice model.

Given the likely increase in demand for cancer care, new therapeutics and the complexity of cancer treatment, it is apparent that high-quality care for cancer patients will require an end-to-end medication use process that is robust and cost-effective, while also helping patients access pharmaceutical care when and where is needed.

Building to last should be the long-term strategic view for a sustainable pharmacy practice model. The need to be nimble and responsive to changes, recognize the need to be innovative and develop new solutions, being eco-conscious and prudence in spending are key ingredients toward better, faster, safer, and enduring pharmacy for the patients we serve.

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