



INTERNATIONAL COUNCIL OF NURSES

GUIDELINES ON PRESCRIPTIVE AUTHORITY FOR NURSES

2021



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2021

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GLOSSARY OF TERMS

Competence

Competence describes a state of capability of a person to perform activities and tasks to a pre-defined standard. This incorporates having the requisite competencies to do this. Competence is what a healthcare worker *can* do, whereas performance is what a health worker *does* do. There are many contributing factors to a health worker's performance at a given time or in a given setting. Some of these are associated with personal factors such as life-events. Others are contextual such as support, supervision, workload, and ready access to resources. Competence is therefore multi-dimensional and dynamic. It changes with time, experience and setting (Gebbie 2008).

Competencies

Competencies are actions that are observable in the execution of one's practice. In other words, competencies are applied skills and knowledge that enable people to perform work (Gebbie 2008).

Credentialing

"Credentialing is a term applied to processes used to designate that an individual, programme, institution or product has met established standards set by an agent (governmental or non-governmental) recognized as qualified to carry out this task. The standards may be minimal and mandatory or above the minimum and voluntary. Licensure, registration, accreditation, approval, certification, recognition or endorsement may be used to describe different credentialing processes, but this terminology is not applied consistently across different settings and countries. Credentials are marks or "stamps" of quality and achievement communicating to employers, payers, and consumers what to expect from a "credentialed" nurse, specialist, course or programme of study, an institution of higher education, hospital or health service, or healthcare product, technology, or device. Credentials may be periodically renewed as a means of assuring continued quality and they may be withdrawn when standards of competence or behaviour are no longer met." (ICN 2006).

Pharmaceutical (Medicine, Drug)

A pharmaceutical is any substance or pharmaceutical product for human or veterinary use that is intended to modify or explore physiological systems or pathological states for the benefit of the recipient. In these guidelines, the terms drug, medicine, and pharmaceutical are used interchangeably (WHO 2009).

Prescribing

An evolving process involving the steps of information gathering, clinical decision-making, communication and evaluation which results in the initiation, continuation or cessation of a medication (Adapted from NPS MedicineWise 2021). Prescribing is a complex process that requires in-depth understanding of clinical pharmacology and disease, clinical judgement to weigh the risks and benefits of a treatment and attention to detail, all within an unpredictable environment (Abuzour, Lewis & Tully 2018). Prescribing is clearly differentiated from the supply of medication or its administration to patients.

Prescription

A prescription is the direction or instruction from a qualified healthcare professional to issue and administer a medicine or treatment or care to their patients (WHO 2009). Although a prescription may sometimes initially be issued as a verbal order, in order to comply with legislative and regulatory requirements, this will typically be followed with a written instruction that bears the

prescriber's signature (this may be in handwritten or electronic format). The term 'prescription' has a legal implication and implies that a prescriber takes responsibility for the clinical care of that patient. In these guidelines, the term prescription will refer to the written order for a medicine or therapeutic (whether handwritten or electronic) with the understanding that this may sometimes manifest as a verbal order in the first instance (Nissen, Lynne & Bettenay 2015).

Prescriptive authority

The term prescriptive authority refers to the level or extent to which a healthcare professional may legally prescribe. Depending on the provisions within the legislation under which the professional is practicing, their prescriptive authority may be broad or limited (Nissen, Lynne & Bettenay 2015).

Scope of Practice

"The scope of practice is not limited to specific tasks, functions or responsibilities but includes direct care giving and evaluation of its impact, advocating for patients and for health, supervising and delegating to others, leading, managing, teaching, undertaking research and developing health policy for health care systems. Furthermore, as the scope of practice is dynamic and responsive to health needs, development of knowledge, and technological advances, periodic review is required to ensure that it continues to be consistent with current health needs and supports improved health outcomes" (ICN 2013).

Standards

"Standards are authoritative statements by which the nursing profession describes the responsibilities for which its practitioners are accountable. Standards reflect the values and priorities of the profession and provide direction for professional nursing practice and a framework for the evaluation of this practice. They also define the nursing profession's accountability to the public and the outcomes for which nurses are responsible" (American Nurses Association 2010).

FOREWORD

Nurse prescribing has existed for over 50 years in some regions of the world. The diverse global nurse prescriptive authority landscape will be highlighted in this important publication. A framework embedding core components for safe and competent prescribers necessitates appropriate education, aligned regulatory authority and continuing professional development to uphold competencies. Evidence-informed models of nurse prescribing will weave in organisational and team support considerations required.

Nurse prescribing guidance is intended to support nurses, teams, associations, organisations, educators, regulators and governments worldwide. Nations and regions can assess their population needs, while balancing nurses' capacity. Motivation for planning, implementing, sustaining and monitoring targeted outcomes require thoughtful strategy.

Healthcare workforce policies supporting nurses working to their level of education and skills improve job satisfaction and may advance nursing recruitment and retention strategies. However, respecting the professional nurses' experience, knowledge, skill, judgement, decision making, autonomy, accountability and choice is paramount. Both the professional and individual nurses' scope of practice must be appreciated and respected.

Nurse prescribing model competencies can be adapted to country needs, respond to people centredness from the lens of culturally sensitive communities, to enhance access to appropriate mediations and quality health services. Nurses can respond to the Global Patient Safety challenge by focusing on key action areas, including patient engagement, polypharmacy and transitions in care.

As Chief Nurse and a Nurse Practitioner who prescribes, I appreciate the significant system impacts that nurse prescribing offers to improve timely access to quality care across the lifespan. Nurse prescribing targets preventative health, reduces illness and disease, while also responding to public health emergencies. Nurses embed experience, knowledge, critical inquiry, care planning and prescribing evidence tailored to improving health, while also leveraging their leadership and clinical service delivery capacity.

The WHO Global Strategic Directions for Nursing and Midwifery 2021–2025 policy priorities are advanced through nurse prescribing. Nurse prescribing roles target the practice policy pillars through education, leadership and service delivery supporting improved population health outcomes across diverse practice settings.

ICN prescribes a global call to action for national and regional assessments to leverage nurse prescribing as a possible measure to enhance access to care continuity, universal health coverage and patient safety and to close the immunization and primary care gaps, experienced internationally from the COVID effect. Nurse prescribing requires affirming enabling commitments, while supporting expediting the removal of barriers for maximal success.

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PURPOSE OF THE ICN GUIDELINES ON PRESCRIPTIVE AUTHORITY FOR NURSES

The purpose of these guidelines is to facilitate a common understanding of nurse prescribing to inform policymakers, educators, regulators, healthcare planners, nurses, and other healthcare professionals. The paper recognises the diversity that currently defines nurse prescribing by describing current practice and nurse prescribing models globally. The emphasis in this guidance paper is on common principles and best practice as prescriptive authority for nurses becomes an increasingly important component of their scope of practice and role contributions to support health.

Worldwide, nursing practice has become more complex with nurses developing innovative extended roles and levels of practice. Prescriptive authority is one feature of this advancement in nursing practice. The drivers for nurse prescribing are sensitive to the country context and need. As a result, the approach to defining and implementing nurse prescribing differs by country or region. The differences between countries reflect differences in healthcare systems, the maturity of nursing within the system and governmental authority that has influence over decision making and policy.

Prescriptive authority for nurses is an ongoing process. Approaches to implementation and development of nurse prescribing require strong leadership and proactive action to promote this essential service for healthcare provision internationally.



CHAPTER ONE

INTRODUCTION

Prescriptive authority for nurses and allied health professionals has been gaining momentum in many countries across the world. Much of this drive has come as a response to the changing landscape of healthcare demands and concerns regarding access to care, the evolution of healthcare systems and the professionals who provide care. It is important to note that the roles and responsibilities of all healthcare professionals evolve in response to the demands and needs of individuals and communities. Prescriptive authority has been a positive and effective example of this type of change.

A range of healthcare professionals (e.g. nurses, midwives, optometrists, podiatrists, dieticians, pharmacists, paramedics, physiotherapists, radiographers, others) have prescriptive authority.¹ These professions, their education and professional development, credentialing and models of prescribing often differ within and between countries. Although there is limited standardisation, the specific aims of prescriptive authorisation for healthcare professionals to prescribe are generally related to:

- enhancing patient access to treatment
- improving patient outcomes without compromising patient safety
- utilising the optimal potential of the skills and expertise of health professionals in order to provide complete episodes of care (Cope, Abuzour & Tully 2016; Maier 2019)
- supportive legal protection for the prescriber and others with delegated responsibilities.

With these aims in mind, there is a need to provide guidance on nurse prescribing to protect the public, promote healthcare services and support the nursing profession as it matures in this area. ICN guidelines aim to promote a level of consistency and support countries in developing a framework for clinical practice as it relates to prescriptive authority for nurses.

1.1 Background

The role and function of nurses is evolving and changing worldwide. Nursing practice has become more complex and diverse as nurses are an increasingly visible and pivotal part of multidisciplinary teams with their own body of knowledge and expertise in managing patient care. Nurses are developing up-to-date advances in the provision of healthcare services; prescriptive authority is one aspect of these advances in the nursing profession.

The incentive for nurse prescribing is sensitive to the country context and the healthcare culture in which this possibility develops. Therefore, the approach to defining and implementing nurse

prescribing follows a distinctive pattern in different countries. This issue extends beyond nursing to collaboration and alliances with other healthcare professionals as well as with representatives from governmental agencies and consumer advocate groups.

This guidance paper examines the trends and issues relevant to introducing, implementing and supporting nurse prescribing. The paper draws on a review of systematic literature reviews, unpublished grey literature, internet searches and consultation with key informants on nurse prescribing.

¹ Although these professions may have prescriptive authority, their privileges are not identical.

1.2 Nurse Prescribing: What the evidence tells us

Prescribing has been part of nursing practice for certain nurses in some countries for several decades. The level of education and credentialing for nurse prescribing varies across jurisdictions and ranges from diploma prepared generalist nurses to advanced practice nurses with master's or doctoral degrees. There are different and varying models of prescriptive authority for nurses. These will be further

elaborated in the following sections of these guidelines.

The following section provides an analysis of available syntheses based on a review of the literature. It was conducted to describe and define patterns of prescriptive authority for nurses.

Summary of the literature review

1. Nurses practising with varying but high levels of prescribing autonomy, in a range of settings, are able to prescribe safely and are as effective as other prescribers (Clark et al. 2011; Latter & Courtenay 2004; Weeks et al. 2016b).
2. The inability of nurses to prescribe results in the delivery of fragmented care and negatively impacted on the overall quality of healthcare (Casey et al. 2020; Creedon et al. 2015; Mathibe, Hendricks & Bergh 2015).
3. Prescriptive authority for nurses can improve effective and efficient healthcare service provision and facilitate the provision of more integrated patient care, increased professional satisfaction and improve the overall quality of the health service (Hanrahan & Williams 2017; Office of the Nursing & Midwifery Service Director 2020; Park, Han & Pittman 2020; Phillips 2020; Watson 2020).
4. The practice of prescribing by nurses falls within three distinct categories: independent prescribing, supplementary prescribing and prescribing via a structured prescribing arrangement (or protocol). The adjustment of previously prescribed medications or treatments within a pre-determined range was not considered prescribing within one of these three categories. Jurisdictions must be clear about the category of prescribing under consideration for appropriate education and support for the practice to be provided. Additionally, there must be consistency in definition for each of the prescribing practices (Cooper et al. 2008; HealthWorkforceAustralia 2013; Kroezen et al. 2011a; Weeks et al. 2016a).
5. The variability in preparation for nurse prescribing practice is concerning as is the lack of clarity surrounding a differentiation between requirements for independent and supplemental prescribing. Most studies examining nurse prescribing occurred in countries where the ability to prescribe is at the general level of registration. This suggests that nurse prescribing occurs most often at the post-basic level and that it is at this level where improvements in education are needed (Kroezen et al. 2011a; Mboweni & Makhado 2019; McIntosh et al. 2016).
6. Many jurisdictions have a requirement for a set period of clinical experience prior to initiating prescribing practice. A strong clinical background and solid clinical knowledge are foundational to effective prescribing practice, regardless of level of nurse (Abuzour, Lewis & Tully 2018; McIntosh et al. 2016).
7. Nurse prescribing is progressively becoming an important role within nursing practice and improves job satisfaction and self-empowerment (Casey et al. 2011; Ling et al. 2017; Mabelane et al. 2016; Nutall 2018).

CHAPTER TWO

MODELS OF NURSE PRESCRIBING

Internationally there has been a steady increase in the number of healthcare professionals outside of the medical profession that have prescriptive authority. Examples of these professionals include nurses, midwives, paramedics, optometrists, pharmacists, dentists, physiotherapists, podiatrists and radiographers. The supportive development of these professions to prescribe has improved access to quality safe and affordable healthcare services.

The origin of regulated nurse prescribing began in the United States of America (USA) in the 1970s and now extends to countries in all World Health Organizations (WHO) regions (Weeks et al. 2016a). Whilst the models of prescriptive authority differ worldwide, there are a number of core components that allow for the summation of these elements into the following broad categories.

1. Independent prescribing

Legally permitted and qualified independent prescribers are responsible for the clinical assessment of a patient, the establishment of a diagnosis and decisions about the appropriateness of a medication, treatment or appliance, including the issuing of a prescription.

Based on the country context, prescribing can take place from a limited or open formulary. Independent prescribing is also called initial, autonomous, substitutive and open prescribing (Abuzour, Lewis & Tully 2018; Kroezen et al. 2011a).

2. Supplementary prescribing (Dependent²)

A voluntary partnership between an independent prescriber and a supplementary prescriber. The independent prescriber carries out the initial assessment and diagnosis; the supplementary prescriber prescribes from an open or limited formulary and consults with

the independent prescriber before issuing the prescription. Supplementary prescribing is also called dependent, collaborative, semi-autonomous or complementary prescribing (Abuzour, Lewis & Tully 2018; Kroezen et al. 2011a; Latter & Courtenay 2004).

3. Prescribing via a structured prescribing arrangement (Protocol)

Designed for a specific group of patients who have a particular condition; medications are only provided within the terms of a pre-determined protocol. Prescribing via a structured prescribing arrangement is not considered independent prescribing but may be considered a form of supplementary prescribing (Abuzour, Lewis & Tully et al., 2018; Kroezen et al., 2011a; Gielen et al. 2014). Based on Patient Group Directive (PGD) to be a separate type of prescribing,

there are sufficient commonalities between the use of a protocol-driven approach and supplementary prescribing that it can be considered to be a subgroup within that category. Latter and Courtenay (2004), for example, define supplementary prescribing to be prescribing according to a clinical management plan that has been approved by an independent prescriber and references protocols as necessary for this practice.

² Even if the model is dependent, the prescriber is still independently responsible and accountable for the decisions that they make within the prescribing model and relationship.

4. Prescribing to administer

Healthcare professionals may have delegated authority under a pre-approved protocol and conditions for immediate medication administration (Crown 1999). This is often used as part of emergency response to an immediate health problem causing potential harm to the patient (Nissen et al. 2010). This model is most frequently used in emergency situations, e.g. the

use of medicines on emergency carts/crash trolleys for life threatening conditions including cardiac arrest, anaphylaxis, respiratory distress and other. This model is often used by first responders to make an emergent decision under a clinical protocol where they then administer a medicine. The second most used model is by nurses in vaccination programmes.

5. Time and Dose prescribing

In this description, healthcare professionals are only allowed to alter the time and/or the dosage of a particular medication. Although referred to as prescribing in some contexts, in

this guidance paper, time and dose administration by nurses is not considered prescribing (Kroezen et al. 2011b).

Supplementary information

- As described above, nurse prescribing is a broad term used to describe a variety of models. Whilst each of these models has a good evidence base, it is important that countries clearly understand and delineate these models as they relate to the practice in their country.
- Professional boundaries and acceptance of the models are often highly debated during the initiation and implementation phase of nurse prescribing. It is important that there is consistent use of terminology to reduce confusion and increase clarity.
- In considering these models, it is important to note that they are not hierarchical. Instead, they reflect the level of 'decision making' and 'accountability' that the nurse prescriber has (Nissen et al. 2010).
- The models may need adapting to meet country specific contexts and may evolve over time.

2.1 Differentiating prescribing models (Adapted from Nissen et al. 2010)

	PRESCRIBE TO ADMINISTER	PROTOCOL	SUPPLEMENTARY/DEPENDENT	INDEPENDENT
Prescribing restrictions	Prescribe for immediate administration only Very limited formulary of emergency medicines or agreed list	Prescribe by protocol or limited formulary Prescribe after a diagnosis is made. A protocol prescriber has the capacity to initiate, alter or change the medication or therapeutic according to protocol	Prescribe following referral from or collaborative agreement with an independent prescriber Once a diagnosis has been established or a treatment plan prepared for an individual patient, the responsibility for clinical management may be transferred from the assessing clinician (an independent prescriber) to another health professional. Dependent prescriber is not responsible for the initial assessment or diagnosis, which rests with the assessing clinician	Independently diagnose condition (rather than symptoms) Makes initial diagnosis and decision to treat. The act of prescribing for a patient presenting for the first time in an episode of care
	Prescribe according to protocol for emergent clinical condition	Therapy limited to formulary or selection by protocol	Initial diagnostic decision has been made and treatment initiated	Therapy is selected according to defined scope of practice
	Therapy selection by protocol	Limited pre-approved formulary	Prescribing according to patient specific management plan or collaborative agreement	Prescribe/manage ongoing therapy without pre-defined protocol
		Continuing, discontinuing and initiating therapy according to pre-approved protocol	Formulary limited to scope of practice or collaborative agreement	Formulary based on scope of practice
		Increasing skill level, decision making and accountability		
Example Education requirements	<ul style="list-style-type: none"> Undergraduate degree 	<ul style="list-style-type: none"> Undergraduate degree 	<ul style="list-style-type: none"> Undergraduate degree +/- Post graduate study 	<ul style="list-style-type: none"> Undergraduate degree Master's or Doctoral degree
Example Registration requirements	<ul style="list-style-type: none"> Regulated health professional 	<ul style="list-style-type: none"> Regulated health professional Credentialed 	<ul style="list-style-type: none"> Regulated health professional Credentialed 	<ul style="list-style-type: none"> Regulated health professional Credentialed
Example competencies	<ul style="list-style-type: none"> Signs & symptom recognition in acute care History taking Follow protocol Drug administration 	<ul style="list-style-type: none"> Signs & symptom recognition History taking Follow protocols Drug administration Basic requirements for prescriptive authority (following protocol) 	<ul style="list-style-type: none"> Management of knowledge to patients condition according to care plan Full prescribing competencies in collaboration with an independent prescriber 	<ul style="list-style-type: none"> Diagnostic skills relevant to scope of practice and/or specialty area of practice Diagnostic test ordering Full prescribing competencies

2.2 What can nurses prescribe?

What nurses can prescribe is different across the world as it is based on diverse jurisdictional authority and regulations. The scope of authority for prescribing is governed by different levels of legislation within countries in addition to any additional hospital/health agency prescribing arrangements. Nurses can also only prescribe within their areas of competence and according to relevant guidelines. With this in mind, common areas of prescription include:

- medications
- therapies and therapeutics

- durable medical equipment
- appliances and certain dressings
- foods designated for specific therapeutic purposes
- electrolytes³

When appropriate medicines for a patient condition are not included within a formulary or protocol, the nurse prescriber may have the ability to recommend over the counter medicines and therapeutics as part of a management plan.

2.3 Additional considerations

Collaborative Arrangements

Collaborative arrangements or collaborative agreements are commonly used when there are requirements for supervision of nurse prescribing. Collaborative agreements provide a written description of the professional relationship between the nurse prescriber and a collaborating independent prescriber (most often a physician). The collaborating document defines the parameters whereby the nurse can perform delegated prescribing. At its core this arrangement is aimed at placing the independent prescriber in a supervisory role relative to a dependent prescriber (Hanson & Cahill 2019).

A collaborative agreement could be as simple as a one-page written agreement defining consultation and referral patterns to a more specific protocol for identified functions based on regulatory, legal and credentialing requirements in the country where the nurse has prescriptive authority. Ideally, collaborative agreements need to be written as broadly as possible to allow for variations in nurse prescribing and changes in policy. As prescriptive authority for nurses has evolved, in some settings specific protocols have been replaced by evidence-based guidelines within a collaborative arrangement to allow for more flexible clinical practice. However, it should be noted, that the specificity of a collaborative arrangement is usually based on trust and respect between the

collaborating nurse prescriber and supervisory colleague (Hanson & Cahill 2019; Nuttall 2018).

Some countries and jurisdictions are seeking to remove collaborative agreements. The most cited rationale for this was the time delays and approval processes for the collaborative practice agreement; confusing and burdensome governance arrangements when simpler arrangements can be made; and the dissuading of nurses and midwives from developing prescriptive authority as part of their practice (Nursing & Midwifery Board of Ireland 2019).

Clinical management and monitoring relevant to clinical status

(Nurse initiated diagnostic investigations)

The introduction of nurse prescribing has often included additional authorisations that support best practice in prescribing.⁴ These permissions include areas such as the ability to order diagnostic tests, diagnostic procedures, and other investigations. These clinical decision-making elements allow the nurse prescriber to further understand a person's clinical needs and explore possible diagnoses, thereby supporting a comprehensive patient assessment.

Formularies

Many countries, health systems and hospitals have developed committees to oversee the development of formularies that set policies in

³ In some countries, nurses are also able to prescribe blood and blood products.

⁴ These authorisations are becoming increasingly common in nursing and were first introduced for Advanced Practice Nurses.

relation to drugs and therapeutics. These committees have an impact on every prescriber, dispenser and patient.

The original purpose of formularies was to identify and designate drugs and therapeutics of choice to guide more rational prescribing. They can be used to assess, teach and guide prescribing towards the most appropriate choices for effective, safe and cost-effective therapies. It can also mitigate the risks posed by conflict of interest where the prescriber may be influenced by industry (Noblet et al. 2017; Schiff et al. 2012).

Whilst there are many perceived benefits to formularies such as defining the limits of practice, there are frequent negative examples of how they have been used and implemented. These concerns include a focus on cost containment; creating needless hurdles and complexities for prescribers and patients; and establishing barriers to nurse prescribing (Noblet et al. 2017; Schiff et al. 2012).

For countries supporting and developing nurse prescribing, it is important that formularies optimise the role of nurse prescriber instead of creating artificial boundaries that impact on the care they provide to individuals and communities. This can be achieved through ensuring clear local policy and guidance on prescribing based on the best evidence available. It is also important that nurse leaders are involved on the committees that establish formularies.

Inappropriate prescribing and deprescribing

According to O'Connor, Gallagher & O'Mahony (2012), inappropriate prescribing covers the following domains:

- Misprescribing – prescribing that involves incorrect dose, frequency, modality of administration or duration of treatment. In addition, misprescribing includes the use of medications that are likely to cause clinically significant drug-drug or drug-disease interactions.
- Overprescribing – the prescription of medications for which no clear clinical indication exists.
- Underprescribing – the omission of potentially beneficial medications that are clinically indicated for treatment or prevention of a disease.

Inappropriate prescribing is a global phenomenon causing increased adverse drug events, reduced quality of life, increased healthcare costs and hospital readmissions (Gallagher et al. 2011).⁵ This is one of the main drivers for deprescribing.

Deprescribing has been defined as “*the systematic process of identifying and discontinuing drugs in instances in which existing or potential harms outweigh existing or potential benefits within the context of an individual patient’s care goals, current level of functioning, life expectancy, values and preferences*” (Scott et al. 2015). According to this description, deprescribing is a process of complex decision making in which the risks and benefits are weighed against the health needs of the individual, patient preferences and quality of life. The stopping and starting of medicines are all part of the prescribing process.

The main reasons for deprescribing include the ceasing of medication because of an adverse event, therapeutic failure and/or because the future benefits of the medication no longer outweigh its potential for harm (Naughton & Hayes 2017). This is an important consideration for all nurses, but in particular for those with prescriptive authority as it will affect their prescribing practices.

It is expected that nurse prescribers have a demonstrated understanding beyond that of the generalist nurse in the areas of pharmacology and the ability to recognise the effects of medicines, allergies, drug sensitivities, side effects, contraindications, incompatibilities, adverse drug reactions, prescribing errors and polypharmacy (Wright et al. 2019). Each of the elements in the preparation for prescriptive authority, places the nurse in a good position to safely deprescribe when it is appropriate and required.⁶

⁵ Across several hospitals in Europe, a study concluded that between 35-77% of patients had been prescribed inappropriate medicines.

⁶ All nurses have an important role in medicine management and should have an influential voice amongst the healthcare team when it comes to deprescribing. In addition to these responsibilities, it is recommended that nurse prescribers have a more active role in medication management.

2.4 Immunization

The purpose of immunization programmes and campaigns is to control vaccine preventable diseases among individuals and groups identified as susceptible to disease. Nurses worldwide play a critical role as healthcare professionals within immunization campaigns, however, their strategical role and the authority with which they practice in this capacity varies significantly globally. In the USA, provision of immunization services is considered medical practice and under the sole control of a physician even for advanced practice nurses (Stewart, Lindley & Cox 2016). In Australia, nurses are legally able to independently prescribe and administer vaccinations in most (but not all) jurisdictions. In the United Kingdom (UK), childhood immunizations fall within the remit of the general practice nurse. In Ireland, this falls under the remit of the general practice nurse, public health nurse, community registered general nurse and registered general nurse. Travel health immunization clinics in Ireland and the UK are mostly run by nurses and more recently by pharmacists. When physicians prescribe vaccinations, these are generally limited to adult immunizations such as pneumococcal and tetanus as the opportunity arises during a consultation. In Spain, nurses may independently prescribe vaccines on the basis of the vaccination campaigns and the vaccination schedule approved by the health authorities.

In Sub-Saharan Africa, physicians are not usually involved in provision of immunizations. Immunization training is part of core pre-registration nursing, be it at Diploma or BSc level with assessed competencies. The nurse

does not have to be a prescriber but must complete immunization courses. In Nigeria, routine immunization services in primary healthcare are delivered by nurses, midwives and some cadres of community health workers (Brown, Oluwatosin & Ogundeji 2017).

One issue that arises in light of the variability of who provides immunizations is the limitation that extensive restrictions place on the provision of immunizations by nurses. These restrictions contribute to lack of access to needed vaccines in a timely manner. One solution to this dilemma is the implementation of standing orders programs (SOPs) for immunization practice to increase the uptake of vaccines (Stewart, Lindley & Cox 2016). SOPs require a legal foundation authorising delegation of immunization services performed by a wide range of healthcare providers (including nurses), administered to broad patient populations in diverse settings. For clinical settings with restrictions where providers are unable to provide preventive vaccine services, the implementation of SOPs positively influences who can administer vaccines, permissible vaccines, eligible patients and the required level of supervision. Thus, expanded authorisation under SOPs could increase the ability to deliver recommended services and remove barriers that hinder an immunization programme. Under this system, nurses can assess the need for a vaccine, identify contraindications or precautions and administer vaccines without a direct written physician or nurse practitioner order. This can be an effective means to increase immunization rates.

CHAPTER THREE

THE CASE FOR ACTION

Prescriptive authority for nurses and allied health professionals has been adopted across all regions of the world. The most common reasons cited for this include:

- improved access and continuity to healthcare advice and services
- medical officer shortages, particularly in rural and remote areas
- improved efficiency of the healthcare system as nurses are able to provide complete episodes of care, and reduce the number of encounters with multiple healthcare providers
- increased capacity of the healthcare system to meet demand and new ways of working
- enabling the healthcare workforce to work to their level of skill and education (i.e. increased nurse autonomy and thereby increased job satisfaction for nurses)
- increased patient choice and health literacy with accessing medicines and services;
- greater capacity for patient centred care/continuity of care
- reduced risk to other health professionals who may be asked to prescribe for patients they may not have seen
- improvement in patient care without compromising the quality of service provided
- improving the legal protection for nurse prescribing

(Crown 1999; Delamaire & Lafortune 2010; Maier 2019; NHS Wales 2017 ; Nissen, Lynne & Bettenay 2015)

3.1 Universal Health Coverage

Access to acceptable, available and affordable quality medicines is part of the United Nations Sustainable Development Goals (SDGs 3.8) (United Nations 2016). Poor access to quality medicines and ‘fake’⁷ medicines around the world often impedes progress on Universal Health Coverage. It is recognised that this is a multidimensional challenge and requires

numerous comprehensive policies and strategies. One pivotal strategy and positive enabler of overcoming some of the issues is safe prescriptive authority for nurses. This is an evidenced based solution that has shown to improve access to quality, safe and affordable healthcare services (WHO 2019).

3.2 Medication safety

The WHO (2017) reports that unsafe medication practices and medication errors are a leading cause of “injury and avoidable harm in healthcare across the world.” It is estimated that \$42 billion USD is associated with

medication errors each year (Donaldson et al. 2017). This means that there is a real need to improve the safety and quality of medication practices to protect health providers, individuals and the community.

⁷ Authentic versus imposter/falsified medications that have not undergone quality control measures.

In response to these challenges, the WHO developed the “Strategic Framework of the Global Patient Safety Challenge” (see Appendix 2). It depicts four domains to reduce medication-related harm and includes:

- patients and the public
- healthcare professionals
- medicines and systems, and
- practices of medication

The framework outlines a holistic approach to medication safety. This is an important concept of nursing in general, and specifically when implementing and supporting nurse prescribing. Seen in this context, safe prescribing is not just the responsibility of the nurse prescriber, it requires additional organisational approach and coordination to ensure safety.



CHAPTER FOUR

ORGANISATIONAL AND TEAM SUPPORT FOR SAFE NURSE PRESCRIBING

Safe prescribing is not just the responsibility of the individual. It requires a systems approach including a supportive team and organisation. The following section focuses on the elements that can contribute to quality, safe and effective nurse prescribing.

4.1 Decision support systems

Computerised clinical decision support systems can augment nurses in their practice. Whilst there are many options with these types of systems, the main functions include diagnostics, disease management, prescriptions, drug controls, alerts, reminders, guidelines, patient data sets, documentation and patient flow.

The benefits of these systems include:

- reducing incidence of medication/prescribing errors and adverse events
- adherence to clinical guidelines, follow-up and treatment reminders
- maintain a variety of up-to-date and evidence-based medicine-related information
- reduced costs and improve efficiency
- improved documentation and other administrative functions
- improved communication between health professionals thereby enhancing workflow (Sutton et al. 2020)

4.2 Clinical governance, policies and procedures

Safe and effective use of medicines, including prescribing, requires organisation-wide governance, leadership and commitment to support the safe and effective use of medicines. Key elements supporting nurse prescribing include:

- systems to monitor, review and improve prescribing and medication management
- establishment of feedback processes to nurse prescribers in order to support changes to practice (if required), research and/or participation in improvement activities
- establishing processes for nurse prescribers to partner with consumers (Flottorp et al. 2010)

Clinical governance policies and procedures are important to be in place prior to the education of nurse prescribers. Standardised approaches to policies ensure the quality of care and patient safety, the lines of authority and responsibility. A range of elements should be covered by these including scope of practice, parameters, boundaries, support mechanisms, funding and continuing professional development. These should be clearly documented and easily accessible to staff within the organisation (Noblet et al. 2017).

4.3 Peer support and relationships with interprofessional teams

Interprofessional relationships are an essential component of quality and safe nurse prescribing. In particular, it is important that nurse prescribers have a collaborative relationship with physicians, independent nurse prescribers and/or pharmacists. In addition to clinical supervision, this assists in discussing difficult cases, sharing knowledge, collaboration in practice, helps avoid misunderstandings or disputes, and builds professional confidence and trust (Brodie, Donaldson & Watt 2014; Graham-Clarke et al. 2018; Hindi et al. 2019; Stenner & Courtenay 2008).

A major barrier to nurse prescribing in many parts of the world has resulted from the beliefs and behaviours of physicians. Much of this negativity has resulted from a lack of understanding of nurse prescribers' roles and responsibilities with this resulting in physicians fearing a loss of power and/or control. The evidence suggests that physicians are often confused about the amount of autonomy, responsibility and accountability of nurse prescribers (Noblet et al. 2017). This in turn has led to a lack of support by the medical profession.

Conversely, when physicians understand the roles and responsibilities of nurse prescribers and have been actively involved in the policy development, there has been improved transition

and implementation. In these circumstances, physicians report the benefits of these models as extremely helpful in improving access to care, adherence to clinical treatment plans and continuity of care (Noblet et al. 2018; Tatar 2015).

In some circumstances, patients with complex healthcare needs see a range of healthcare professionals including consultants, psychologists, pharmacists and other healthcare professionals. With such a broad team of healthcare professionals, it is essential that a clear treatment plan is identified and shared. Important linchpins within this multidisciplinary team are pharmacists, who are a valuable source of information on medications, drug interactions and as a quality control measure to ensure the accuracy of prescriptions (Graham-Clarke et al. 2018).

Peer support from other nurse prescribers is critically important. Collaboratively working or consulting with other nurses is a vital source for gaining information, trouble shooting, encouragement and improving confidence. Evidence has shown that when nurse prescribers work together, nursing knowledge was expanded, and prescribing decisions were made within a faster timeframe (Jones & Cameron 2017); Muzigaba et al. 2017; Stenner & Courtenay 2008).

CHAPTER FIVE

A FRAMEWORK TO DEVELOP SAFE AND COMPETENT PRESCRIBING FOR THE NURSING PROFESSION

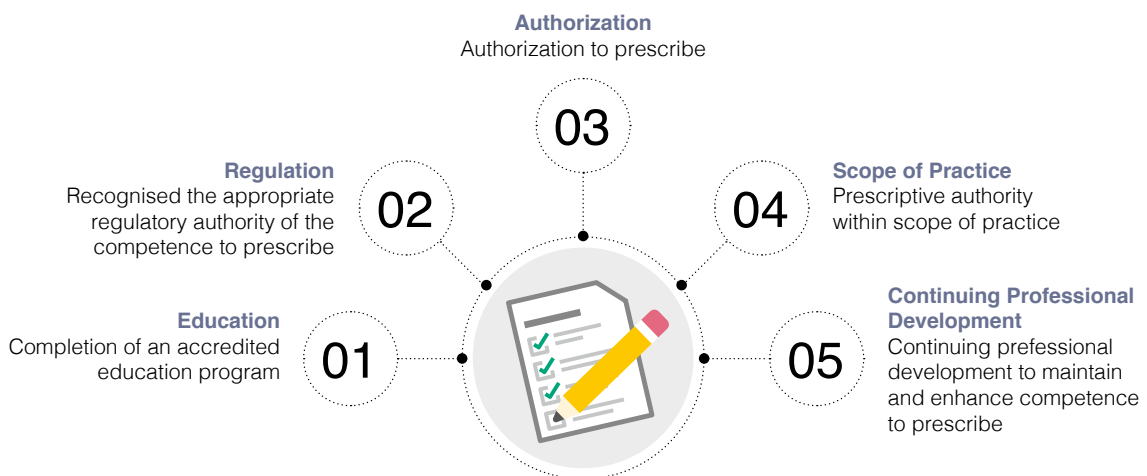
Prescribing is a complex process that requires the application of sound judgement, specific knowledge, skills and attitudes to a unique person at a given point of time. This complexity is further complicated by an increasing number of medicines available to the prescriber and the fact that many people receive multiple medicines and a range of other treatments and therapies (including traditional medicines) (NPS MedicineWise 2021).

The following framework is a guide to support safe and competent prescriptive authority for nurses. The framework encompasses five core components. The requirements under each of the components may vary according to needs of the selected nurse prescribing model. It is recommended that as part of the implementation of a framework such as this, that an education programme is developed that can adequately assess to a set standard, the performance of the nurse seeking prescriptive authority.

1. Completion of an accredited education programme

The health professional seeking prescriptive authority should complete an accredited education programme that is consistent with their scope of practice and demonstrates the required level of competence. The education should be accredited by the appropriate country

level nursing board or accreditation council. Accreditation ensures that the course has the appropriate content, and that the curricula meets or exceeds the standards that have been developed by experts in the field in order to protect the nursing profession and the public.



Core components of the education programme

The education programme or course is dependent on country requirements in addition to the prescribing model being considered. The education programme will require both theoretical and practical elements that are overseen by an authorised prescriber.

In order to achieve the knowledge, skills and behaviours, it is recommended that education curricula be designed to the appropriate level of prescriptive authority and include the elements within the following competency areas described below. Competencies can be used as the framework for an educational programme, where they are broken into sub-competencies, or knowledge/skills/attitudes and learning objectives, with classroom and laboratory activities designed to build toward complete competency (ICN 2019). It should be noted that these are minimum high-level requirements and have not taken into consideration specific state, territory or country level needs.

Competency Area 1: People centredness in care

As part of prescriptive authority, it is essential that nurses undertake a person-centred approach to care. This means that the nurse consciously adopts the perspectives of individuals, families and communities and sees them as participants as well as beneficiaries of healthcare. The nurse must be able to obtain the necessary information and develop a plan of care that is compatible with the needs of the person who is ready, willing and able to take action (WHO 2007). This competency includes the knowledge, skills and behaviours required to undertake a therapeutic partnership, perform a comprehensive medicines assessment, and generate and explore possible diagnoses.

Formal education and preparation in the pathophysiology (and pharmacologic principles) for the physiologic systems impacted by the prescribing by the nurse is crucial. Some degree of diagnostic assessment and reasoning is also key. While some form of competence would be necessary at all levels, required preparation for this competency is highly dependent on the level of autonomy in prescribing as well as level of clinical practice. For nurses who are

practising independently, advanced competencies are required in: history taking; physical assessment; clinical test interpretation; diagnostic reasoning; clinical decision-making; and comprehensive planning and monitoring for patient needs encompassing all appropriate pharmacologic and non-pharmacologic treatment options/considerations.

Competencies

- places people at the centre of all practice
- promotes individual and community agency
- provides culturally sensitive, respectful, and compassionate care
- incorporates a systems approach to health
- demonstrates clinical reasoning and decision making skills.

Competency Area 2: Evidenced based and informed practice

This competency focuses on the ability to identify and discuss appropriate, safe, effective and evidence-based treatments. This includes the ability to identify the most appropriate medicines; other non-pharmacological treatment alternatives and the possibility that prescribing may not be in the best interests of the patient.

Competencies

- identifies the most appropriate treatment consistent with the individual's needs
- avoids the overuse or misuse of resources
- maintains current knowledge of prescribing protocols or algorithms according to the healthcare system in which the healthcare professional is practicing.

Competency Area 3: Communication and Collaboration

Effective communication and collaboration are key to any nurse prescriber's practice. Nurse prescribers at any level should have required education preparing them to be competent in communication and collaboration with both patients and families, as well as with other healthcare providers. Skills fostering clear communication and therapeutic relationships are essential for nurse prescribers for accurate diagnosis and treatment of the patient, from the initial stages of information gathering to

planning pharmacologic and other treatments, as well as in patient education. Nurse prescribers also must communicate clearly with those dispensing, supplying or administering medications, and be able to effectively collaborate in decision-making with other health professionals and family members involved in the patient's care. This competency area includes the ability to appropriately document and safely store and secure information.

Competencies

- adapts communication to the goal(s), urgency, and sensitivity of the interaction
- listens actively and attentively
- conveys information purposefully
- manages information sharing including patient participation in decision making
- engages in collaborative practice
- builds and maintains trusting partnerships

Competency Area 4: Pharmacological Essentials

Nurse prescribers should receive preparation in pharmacologic essential principles appropriate to their level of prescribing and inclusive of the populations and specialty areas for which they will be prescribing. These pharmacological essentials include competency in basic pharmacologic principles including pharmacokinetics, pharmacodynamics, and pharmacotherapeutics to also include indications, adverse effects, interactions, and contraindications for all classes of medications prescribed. Competency in appropriate and rational drug selection and prescribing, as well as monitoring and re-evaluation would also be encompassed in this essential education and preparation. Also, preparation in documentation and measurement enabling accurate, clear, complete conveyance of prescription information in written or electronic form is a fundamental pharmacologic competency. Finally, nurse prescribers at all levels should be prepared to maintain competence in these pharmacologic essentials through the recognition and use of appropriate pharmacologic resources for prescribing, and continued preparation in the form of required continuing education.

Competencies

- has demonstrated knowledge of human anatomy and physiology
- applies knowledge of pharmacological actions in selected interventions (i.e. this includes potential drug interactions)
- maintains up to date knowledge about pharmacological agents according to scope of practice
- prepares prescriptions consistent with local pharmaceutical laws and policies

Competency Area 5: Monitors and reviews the person's response to treatment

This competency focuses on the need to monitor and review the person's response to treatment. This includes the ability to obtain and interpret information in order to review the effectiveness of the treatment plan and/or alternative approaches to treatment. The nurse prescriber needs to be able to effectively communicate this with the patient and other healthcare professionals. In addition, this area focuses on the monitoring of unwanted effects of the treatment plan, detecting and reporting suspected adverse drug reactions and the ability to adapt a management plan according to the patient's needs and response to treatment.

Competencies

- continuously monitors the individual's response to pharmacological agents
- shares response information with colleagues involved in care
- demonstrates a commitment to continual quality improvement in treatment protocols
- enabling person-centred and evidence informed practice
- reporting of suspected adverse reactions (pharmacovigilance)

Competency Area 6: Practices professionally

It is incumbent on any nurse prescriber at any level to practice with a fundamental understanding of their scope of practice. Nurse prescriber education and preparation, regardless of the level of prescriptive authority, should provide competency in each of the aforementioned areas. In addition to these proficiencies nurses

must demonstrate the elements of professionalism including the following competencies.

Competencies

- practising in accordance with relevant legislation, regulations, and scope of practice;
- adherence to policies and procedures
- takes responsibility for own decisions and their consequences
- practices according to the code of conduct, professional and ethical standards
- demonstrates a commitment to lifelong learning and reflective practice

(Adapted from Nursing and Midwifery Council 2018).

These competency areas and their components provide the cornerstones for the requisite education and preparation of nurse prescribers. It should be noted that they are interrelated and interdependent. Those developing the role of the nurse prescriber should consider incorporation, to some degree, of all of the areas with further requirements delineated by the nurse prescriber's level of autonomy in prescribing and the specific populations or specialty areas in which the nurse is practicing and prescribing. For the protection of both the nurse prescriber and the patient, a minimum educational standard and educational requirements for prescribing need to be set and met. In addition, educational programmes and mechanisms to provide access to meet these needs should be offered. These include not only formal preparation for prescribing, but also for continuing education.

2. Recognised by the appropriate regulatory authority of the competence to prescribe

1. Regulatory authorities play an essential role in the development, establishment, implementation and regulation of nursing roles. A core function of this body is to protect the public by making sure that only nurses who are appropriately educated, qualified, competent and ethical in practice are credentialed. In the case of nurse prescribing, the regulatory authority has two main functions: to set the standards for competence to prescribe; and to recognise the achievement of competence by the health professional to prescribe medicines consistent within their scope of practice.

(Scanlon et al. 2020)

To support nurse prescribing, it is important that the regulatory authority is able to identify nurses who are authorised to prescribe. This will ensure:

- employers can validate the competence of the employee
- ongoing validation of the quality of care provided
- research and development in prescriptive authority for nurses

3. Authorised to prescribe

Authorisation to prescribe is permitted by the relevant legislation, associated regulations and professional standard within countries, states, regions, or territories; and the policies and procedures of health service providers in

which the nurse works. These instruments will affect the medicines that nurses are authorised to prescribe and therefore it is imperative that nurses understand and practise according to these.

4. Prescriptive authority within scope of practice

A nurse who is authorised to prescribe, does so within their scope of practice. The scope of nursing practice is defined within a legislative and regulatory framework and describes the competencies (knowledge, skills, attitudes and judgement), professional accountabilities and responsibilities of the nurse prescriber. It provides the foundation for establishing a standard for nursing practice, nursing education, nursing roles and responsibilities. In addition, it also conveys to the public the characteristics of who is qualified to provide particular nursing services. A clearly defined scope of practice communicates to all stakeholders the competencies and accountabilities of the nurse (ICN 2013).

Nurse prescribing has gradually become included in the evolving definitions and descriptions of nursing's scope of practice (Ladd & Hoyt 2016; Schoer 2017). Prescriptive authority is most commonly associated with the increasing emergence of Advanced Practice Nursing (APN) and relevant scopes of practice for the APN roles/advanced levels of nursing. However, prescribing by nurses is not a new phenomenon. The prescribing of pharmaceuticals and therapeutics by nurses is a function that is increasingly aligned to both advanced and generalised nursing; however, the authority of nurses to prescribe is not standardised globally.

Variations in scope of practice for nurse prescribing can be attributed to:

- an individual's education, expertise and experience
- the clinical setting where nurse prescribing takes place
- the demand or need for nurses to prescribe
- nursing's defined scope of practice in the country, e.g. APN, generalised nurse, specialised nurse
- legislative support or restriction
- required or specified competencies
- population of nursing practice: women, children, elderly, palliative care, or disabled
- role development: level of prescribing may be linked to the capability of the nurse to do assessment and differential diagnosis
- associated with a country's defined model(s) of nurse prescribing
- flexibility and breadth of nursing scope of practice – support or opposition varies based on geographical location
- differences in structure and infrastructure of healthcare systems

Scope of practice of the profession versus that of the individual, (Adapted from Pharmaceutical Society of Australia 2016)



5. Continuing professional development to maintain and enhance competence to prescribe

Continuing professional development (CPD) is recognised as a means for maintaining up-to-date knowledge and skills that influence prescribing competence to ensure quality healthcare and patient safety. In addition, a study by Weglicki et al. (2015) found that personal anxiety undermined confidence for nurses to prescribe when prescriptive authority was included in their scope of prescriptive thus access to CPD serves to support nurse prescribers as they gain confidence while also increasing clinical experience.

Maintenance of professional competence for nursing practice as well as for the nurse prescriber is a continuous process. In some countries, mandatory demonstration of CPD is required for ongoing licensure and credentialing. The requirements and timeline for verification of competence maintenance is usually determined by credentialing bodies or authorities. It is thought that this type of assessment and reassessment ensures the credibility and legitimacy of nurses, including nurse prescribers (Hanson & Cahill 2019; Hanson & Hamric 2003; Schober 2019).

Continuing Professional Development can be achieved in a number of ways. This includes:

- E-learning
- professional journals
- prescribing forums
- individual study, e.g. courses or modules
- work-based learning
- formal CPD study days
- action learning sets

The means of obtaining CPD should be tailored to the learning style and abilities of the individual nurse prescriber. In addition, accessibility to learning options needs to align with their competency-based requirements.



CHAPTER SIX

MOTIVATION FOR NURSES TO SEEK PRESCRIPTIVE AUTHORITY

The authority for nurse prescribing may be a country requirement or could depend on the motivation of a nurse to seek prescriptive authority. Study findings by Zimmerman et al. (Zimmerman 2020) found that perceived benefits by nursing to consider prescribing included:

- greater professional autonomy
- higher professional status
- higher remuneration
- greater work satisfaction

Concerns study participants identified included:

- greater legal responsibility
- reduced time for patient care
- no additional remuneration
- increased workload
- inadequate preparation
- conflicts in the therapeutic team
- lack of substantive organisational and collegial support

A country seeking to support nurse prescribing and the nurse prescriber should take benefits and concerns into consideration when developing strategies and a framework guiding such an initiative.



CHAPTER SEVEN

CRITICAL ELEMENTS SUPPORTING THE DEVELOPMENT AND ENHANCEMENT OF NURSE PRESCRIBING

7.1 Clinical guidelines: A professional standard

Nurse prescribing under the auspices of a professional standard ensures that the nurse practices lawfully, safely and effectively (Schober 2017). Suggested clinical guidelines include the following:

- licensed/authorised/registration as a prescriber by a governmental authority
- nongovernmental authorities, such as nursing professional bodies to provide professional standards and guidance
- defined scope of nurse prescribing
- accountable for all prescribing decisions made within an agreed level of experience and competence
- assessment – able to conduct a comprehensive health assessment including medication history
- communication to other healthcare professionals and consent of the patient
- accurate record keeping
- evidence-based/evidence-informed prescribing
- continuing professional development to remain up to date with knowledge needed to prescribe and maintain competence
- monitor and review of patient outcomes

Whilst these are recommended, it is recognised that in some countries formal authorisation or regulatory mechanisms might not be in place despite the active practice of nurse prescribing. In these circumstances, and looking toward the future of nursing, ICN recommendations can be viewed as aspirational and thus able to be aligned with implementation strategies that meet a professional standard and scope of practice for nurse prescribing.

Clinical practice guidelines are determined by the country and the context in which the nurse practices. Defined requirements include the ability to:

- perform a physical examination and history
- assess the health status of a patient using clinical judgement
- assess the therapeutic indication for treatment: medicines, therapeutics
- assess potential contraindications/risk for adverse medication interaction
- provide health education to the patient monitoring patient for side-effects and response to management plans

CHAPTER EIGHT

CONCLUSION

Debate about nurse prescribing has focused on the appropriateness of prescriptive authority for nurses. Frequently this discussion is linked to the more general debate on advanced practice nursing (APN), however, literature confirms that nurse prescribing has been incremental, is increasing and exists independent of APN roles. Nurse prescribing is one aspect of the advances in nursing practice. The key question pointed out by Ball (ICN 2009) is not “Can nurses prescribe” in a country, but “To what extent is nurse prescribing established?” The level, extent, scope and prevalence of nurse prescribing vary from country to country and even within countries.

This guidance paper offers key elements to consider in the process of achieving and supporting nurse prescribing. The following should be considered:

- Is there a need for healthcare services that include nurse prescribing?
- What regulations and legislation are needed to support this practice?
- Are there identifiable professional organisations that support nurse prescribing?
- Is there a framework or model for nurses who have prescriptive authority?

ICN POSITION ON PRESCRIPTIVE AUTHORITY FOR NURSES

Prescriptive authority for nurses can play an important part in improving healthcare outcomes by enhancing effective and efficient healthcare service provision. Nurses with prescriptive authority can facilitate the provision of more integrated patient care thus enhancing the overall quality of healthcare services. In addition, nurses with prescriptive authority gain an increased sense of professional satisfaction.

Prescribing is a complex process. Realisation of the aforementioned improvements requires, as appropriate and applicable, a supportive regulatory and policy environment, governance structures, organisational culture, appropriate education and professional development. The ‘ICN guidelines on prescriptive authority for nurses’ intend to support the implementation and ongoing development of nurse prescribing to protect the patient as well as the healthcare professional and safeguard the healthcare system.

Nurse prescribing is sensitive to the country context and the healthcare culture in which it develops. Therefore, the approach to defining and implementing nurse prescribing follows a distinctive pattern in different countries.

There are multiple models for nurse prescribing. These models are generally differentiated by the levels of nurse competencies as well as the depth of decision making and accountability. Prescriptive authority should be seen as a continuum. As independence and accountability of prescriptive authority for the nurse increases, so too will the requirements for higher levels of education, continuing professional development and regulatory mechanisms to verify that a baseline level of competencies has been achieved.

ICN, therefore, calls on governments to ensure the appropriate levels of education and regulation of the profession are in place to lay the groundwork for expanding nurse prescribing throughout the world.

APPENDICES

Appendix 1: Differentiating between dependent/supplementary and independent prescribing

(Adapted from Stewart et al. 2017)

AREA	SUPPLEMENTARY/DEPENDENT PRESCRIBING	INDEPENDENT PRESCRIBING
Clinical conditions managed	Any, within their clinical competence	Any, within their clinical competence
Diagnosis responsibilities	An independent prescriber must diagnose the condition before enabling an authorised supplementary prescriber to commence	The independent prescriber can assess and manage patients with diagnosed or undiagnosed conditions
Need for a clinical management plan	A written or electronic patient specific 'clinical management plan' or protocol must be in place before supplementary prescribing can commence	No prearranged care plan required. The independent prescriber develops a management plan
Need for formal agreement	The 'clinical management plan' must be agreed with the independent prescriber and patient before supplementary prescribing can commence Often called a collaborative agreement	No need for any formal agreement
Drugs prescribed	Any, within their scope of practice and under supervisory agreement and consultation	Any, within their scope of practice

Appendix 2: Nurse prescribing: The global regulatory landscape – 2020

The growth of regulatory oversight of nurse prescribing around the world has evolved rapidly over the past several decades. During the 1980s and the 1990s, prescribing by nurses accelerated with the expansion of nurse practitioner scope of practice in the USA and the need to codify clinical practices that support the prescribing of medicines. In the UK, nurse prescribing by post-basic nurses was authorised with the Medicinal Products: Prescription by Nurses Act of 1992 (Royal College of Nursing 2014). The turn of the 21st Century brought further expansion of nurse prescribing in Canada, Europe, Australia and New Zealand, officially sanctioned by both regional (provincial or state) and national governments. This trend also expanded in Africa with the roll out of low cost, anti-retroviral therapy for the treatment of HIV/AIDS (Zuber et al. 2014). In Spain, nurse prescribing was incorporated into law by an Act of 2009.

Generally, the regulatory expansion of prescriptive authority for nurses has been predicated on the necessity to mitigate demands that are associated with health worker shortages, and in other cases it is simply based on a move toward the improvement of financial and organisational efficiencies of the healthcare delivery system.

The literature on the regulatory provisions of nurse prescribing has grown in recent years, however, it has largely focused on high-income countries. The purpose of this appendix is to provide a broader index of current global data on statutory and regulatory provisions that have been established to authorise nurse prescribing, based on the WHO designated world regions.

1) The Americas

a. North America

The USA has a long history of statutory authority for nurse prescribing, predominantly for nurse practitioners. Currently, all 50 states and the District of Columbia permit some level of independent prescribing by advanced practice nurses (nurse practitioners, clinical nurse specialists and nurse midwives), albeit with state-to-state variability in relation to scope of practice and physician oversight (American Nurses Association n.d.). Canada also has broad prescriptive authority for nurse practitioners which is authorised at the federal level (Canadian Nurses Association 2015; College of Nurses of Ontario; Government of Canada 2012). In addition, two provinces in Canada, Alberta and Ontario, have passed laws that permit nurse prescribing at the post-basic level (registered nurse) (College & Association of Registered Nurses of Alberta 2019). The Canadian provisions for nurse practitioners were established as federal regulations based on existent statutes. Post basic prescribing in Alberta and Ontario were written as provincial level statutes and are currently in the process of being implemented.

b. Latin America/Caribbean

In Latin America, nurses who have the authority to prescribe medications essentially function at the post-basic level. Brazil, Columbia and Mexico allow nurses to prescribe, mostly in the primary care and public health setting (Hernandez et al. 2015; Martiniano et al. 2015; Secretaría de Gobernación 2017). Nurse prescribers in the Caribbean work at the advanced practice level, primarily as Family Nurse Practitioners and most have the authority to prescribe most medications that are used in primary care (Ministry of Health 2012b). In Belize, only psychiatric nurse practitioners are able to prescribe, and that authority is limited to psychotropic drugs. However, nurse practitioners in Jamaica, the location of the largest nurse practitioner educational programme in the Caribbean (University of the West Indies), are still not legally able to prescribe medications.

2) Africa

Ten countries in Africa have been identified as having some type of regulatory or statutory authority for nurse prescribing, the majority of which permit prescribing at the post-basic level.

A phenomenon that has developed over the past two decades, Nurse Initiated and Managed Anti-Retroviral Therapy (NIMART) has been broadly adopted in countries with a high burden of disease of HIV and AIDS. This approach has supported post-basic nurses to manage HIV patients, especially in areas of health worker shortages (Zuber et al. 2014). Generally, most nurses that can legally prescribe drugs in Africa can do so at the post-basic level. Only two countries – Botswana and South Africa - recognise advanced practice nurses as legal prescribers (Dumas & Cariou 2014; Monyatsi et al. 2011; South African Nursing Council 2012a).

3) Europe

Prescribing by nurses developed approximately 30 years ago in the UK and has subsequently been legally established in 14 additional countries on the continent and Israel. The majority of this prescribing occurs by nurses at the post-basic level. More and more countries have granted or are developing the APN role with prescriptive authority (Maier, 2019). Generally, the extent and scope of prescribing is limited to varying degrees in most countries. Only three countries/regions in Western Europe have granted almost full prescriptive authority based on clinic focus: Ireland, the Netherlands and the UK (Maier 2019). In Spain, prescriptive authority for nurses has been incorporated into the undergraduate university education curriculum since 2008. Regulations to enact this process were finalised in 2009. Once employed as a nurse, students who have achieved the competencies and graduate from an undergraduate nursing programme are capable of prescribing.

The battle for the rights of nurses in Iceland to prescribe hormonal contraception has extended over more than two decades. In December 2018, the pharmaceutical laws and laws about the Directorate of Health were changed by the Icelandic parliament to include nurses and midwives as healthcare professionals to be allowed to prescribe hormonal contraception. In January 2021, the regulation regarding the prescription rights of nurses and midwives in Iceland took effect. The School of Nursing at the University of Iceland started to offer courses in January 2020, for master level students in primary health care nursing, graduated nurses, midwifery students and graduated midwives.

4) Southeast Asia

Thailand has had some level of prescribing by nurses over the past two decades. In 2002, the Thai government promoted nurse practitioners as strategic professionals, especially in community clinics. Their authority to prescribe medicines via a formulary has helped to expand their scope of practice (Hanucharumkul 2007; WHO 2016). The Indian Nursing Council has recently established a nurse practitioner in critical care role which allows prescribing in acute care settings via protocol (Indian Nursing Council 2016). India has also recently authorised a Mid-level Health Provider which is embedded in the community nursing role. This position also includes the authority to prescribe treatments via protocol (Indian Nursing Council 2018).

5) Western Pacific

There has been substantive and rapid movement on nurse prescribing in the Western Pacific region. Both Australia and New Zealand have established regulations that permit prescribing by post-basic nurses as well as nurse practitioners. Australia requires a structured prescribing agreement in the form of standing orders or protocols. Independent prescribing started in 2000 within the context of the nurse practitioner role (Australian Nursing & Midwifery Federation 2018). New Zealand initially permitted post-basic nurses to prescribe in the diabetes clinical area, however, this was expanded to include a broad scope of medicines, based on regulations that were promulgated in 2016 (Midcentral Health Nursing Department n.d.; Nursing Council of New Zealand n.d.).

Other high-income countries in the region, such as Singapore and South Korea allow nurse prescribing at the APN level only (Liew 2018; Oita University of Nursing & Health Services 2016; Schober & Green 2018). Vietnam, an emerging economy, also permits nurse prescribing

for the recently developed nurse practitioner role (The Voice of Vietnam Online 2016). Tonga and Papua New Guinea, both low-income countries with limited resources, permit nurses at the post basic level to prescribe medicines (Gregorio 2017; Matangi Tonga Online 2014).

Nurses are increasingly attaining the authority to prescribe medications, granted either by national or regional statute, or other governmental bodies (e.g. Ministry of Health). This expanding scope of practice reflects the ongoing evolution of nursing practice, primarily in response to national level needs based on improving efficiencies or to mitigate physician shortages.

This review has identified 44 countries in five WHO Regions that have formal laws or regulations that permit prescribing by nurses (Figure 1). Of these 44 countries, 70% (31 countries) formally permit nurse prescribing at the post-basic level. This is defined as prescribing by nurses who have completed their basic nursing education, either at the diploma or bachelor's degree level. Thirty percent (13 countries) permit prescribing by nurses at the advanced practice level exclusively. Twenty-five percent of the total authorise nurse prescribing at both the post-basic and advanced practice level (Figure 1).

The predominant model of nurse prescribing worldwide is prescribing that occurs at the post-basic level. When considering the potential cause of this trend, it is important to note the economic category of each country. Based on the World Bank economic classification (World Bank 2019), data indicates that 38% of low- to middle-income countries authorise prescribing at the post-basic level vs. 31% at the high-income level (Figure 2). This indicates that the difference between two country-based income levels is not large and suggests that the focus of nurse prescribing, even in disparate settings is the same, that is, to inject core efficiencies into systems that struggle with central healthcare system constraints. There is a greater difference between nurse prescribing authorised at the advanced practice level between low- to middle-income and high-income countries. High-income countries authorise nurse prescribing at the advanced practice level at higher rates than low-income countries (34% to 18% respectively) (Figure 2). This could be a result of educational and health system infrastructure (including high quality regulatory frameworks) in low-income countries that are not able to extensively support nursing education at the advanced practice or master's degree level.

The findings of this review significantly expand on existing literature by highlighting that statutory authority for nurse prescribing is not only expanding in high-income countries, but is concomitantly expanding in low- to middle-income countries as well. In particular, the expansion of nurse prescribing in Africa is noteworthy. Ten African nations have formal regulations that permit nurse prescribing. Six of these authorise focused prescribing by post basic nurses: five permit prescribing of antiretroviral medications and one permits prescribing for palliative care. Prescribing by nurses in the HIV/AIDS context is termed Nurse Initiated and Managed Antiretroviral Therapy (NIMART), an innovative global initiative that has been widely acknowledged to increase access to HIV treatment and to improve health services equity in Sub-Saharan Africa (Holmes et al. 2021; Zuber et al. 2014). NIMART, which represents the process of “task sharing” or “task shifting” of care from physicians to adequately educated nurses in environments with health workforce shortages, has been found to have clinical results that are comparable to physician care in terms of quality of care and better outcomes related to client retention and lower loss to follow up (Iwu & Holzemer 2014; Kredo et al. 2014). Also importantly, other low- to middle-income nations, such as Thailand, India, Tonga and Papua New Guinea have adopted regulations that permit nurse prescribing, likely to address the similar workforce shortages, especially in community and rural settings (WHO 2016).

In contrast to the exigencies of healthcare in low- to middle-income nations, high-income nations have also rapidly expanded their regulations around nurse prescribing. In the European region, nurse prescribing and associated regulations have expanded significantly over the past decade (Maier 2019). Whilst there are many reasons for the implementation of nurse prescribing, one

of the biggest drivers appears to be that countries are looking to innovative healthcare delivery models as they struggle with the burden of increasing chronic disease and an aging population.

Conclusion

While regulatory approval varies significantly by region and country, it is clear that prescribing by nurses is a growing phenomenon. And, importantly, as evidenced by this review, it is not limited to high-income nations. Governmental authority for prescribing by nurses has grown significantly in low- to middle-income countries, with models that rely largely on generalist nursing. Based on all identified countries in this analysis, the predominant model is that of prescribing by post-basic nurses. Future research should investigate the education and competency-based qualifications of nurse prescribers and the impact the prescribing has on nursing practice. In addition, these delivery models warrant further inquiry into patient outcomes around quality and satisfaction as well as value for money.

FIGURE 1: NURSE PRESCRIBING BY STATUTE/REGULATION/ECONOMIC CATEGORY					
	Statute/ Regulation	Broad	Focused	Level	World Bank Category
THE AMERICAS: NORTH AMERICA					
USA (NCSL Scope of Practice Policy 2019)	X	X		APN	H
Canada (Canadian Nurses Association 2015; Government of Canada 2012)	X	X		Post-basic, APN	H
THE AMERICAS: SOUTH AMERICA/CARIBBEAN					
Montserrat (Ministry of Health Montserrat 2012)	X	X		APN	LMI
Belize (PAHO, WHO, Belize Ministry of Health 2009)	X		X (Psychotropics only)	Post basic NP	LMI
Brazil (Martiniano et al. 2015)	X	X		Post basic	LMI
Columbia (Zamora, Londono & Palacios 2010)	X	X		Post basic	LMI
Mexico (Secretaría de Gobernación 2017)	X*	X		Post basic	LMI
St. Lucia (St. Lucia Ministry of Health 2012)	X	X		APN	LMI
Dominica (Commonwealth of Dominica 2014)	X	X		APN	LMI

FIGURE 1: NURSE PRESCRIBING BY STATUTE/REGULATION/ECONOMIC CATEGORY

	Statute/ Regulation	Broad	Focused	Level	World Bank Category
AFRICA					
Ghana (Ministry of Health Ghana 2004)	X	X		Post basic, APN	LMI
Kenya (Nursing Council of Kenya 2019)	X	X		Post basic	LMI
South Africa (South African Nursing Council 2012b)	X	X		Post basic, APN	LMI
Botswana (Duma et al. 2014)	X	X		Post basic, APN	LMI
Zambia (Zuber et al. 2014)	X		X (HIV)	Post basic	LMI
Namibia (Zuber et al. 2014)	X		X (HIV)	Post basic	LMI
Zimbabwe (Zuber et al. 2014)	X		X (HIV)	Post basic	LMI
Eswatini (Zuber et al. 2014)	X		X (HIV)	Post basic	LMI
Tanzania (Tanzania Nursing & Midwifery Council 2014)	X	X	X (HIV)	Post basic	LMI
Cameroon (Ngoasong & Groves 2015)	X	X		Post basic	LMI
Uganda (Downing et al. 2017)	X		X (Palliative Care)	Post basic	LMI
EUROPE					
Estonia (Habicht 2017; Maier 2019)	X	X		Post basic	H
Finland (Maier 2019; Merasto 2014)	X	X		Post basic, APN	H
Iceland	X		X	Post graduate	H

FIGURE 1: NURSE PRESCRIBING BY STATUTE/REGULATION/ECONOMIC CATEGORY

	Statute/ Regulation	Broad	Focused	Level	World Bank Category
EUROPE					
Ireland (Nursing & Midwifery Board of Ireland 2017; Office on Nursing Services Director: Ireland 2008)	X	X		Post basic, APN	H
Netherlands (Maier 2019); Kroezen et al. 2011a)	X	X		Post basic, APN	H
Norway (Skjeldestad 2012)	X		X (Contraception)	Post basic	H
Poland (Zarzeka et al. 2017)	X	X		Post basic (refills), specialist (Masters)	H
Sweden (Maier 2019)	X	X		Post basic	H
United Kingdom (Maier 2019)	X	X		Post basic, APN	H
France (Maier 2019)	X**			Post basic	H
Cyprus (Maier 2019)	X**			APN	H
Spain (Maier 2019)	X			Post basic	H
Denmark (Maier 2019)	X	X	X (Refill only)	Post basic	H
Switzerland (Maier 2019)				APN ****	H
Israel (Schober & Green 2018)	X***		X (Palliative care, geriatrics, DM, NICU, surgical ICU)	APN	H
SOUTHEAST ASIA					
Thailand (Hanucharunkui 2007; WHO 2016)	X	X		APN	LMI
India (Indian Nursing Council 2016 & 2018)	X	X		Post basic, APN	LMI

FIGURE 1: NURSE PRESCRIBING BY STATUTE/REGULATION/ECONOMIC CATEGORY					
	Statute/ Regulation	Broad	Focused	Level	World Bank Category
WESTERN PACIFIC					
Singapore (Liew 2018)	X	X		APN	H
South Korea (Schober & Green 2018)	X	X		APN	H
Taiwan (ibid)	X	X		APN	H
Vietnam (The Voice of Vietnam Online 2016)	X	X		APN	LMI
Australia (Australian Nursing and Midwifery Federation 2018)	X	X		Post basic, APN	H
New Zealand (Nursing Council of New Zealand n.d.)	X	X		Post basic, APN	H
Tonga (Matangi Tonga Online 2014)	X	X		Post basic	LMI
Papua New Guinea (Gregorio 2017; Joshua et al. 2014;	X			Post basic	LMI
<p>* legislation enacted, unclear if current practice ** legislation enacted, waiting implementation *** refill only **** nurse specialist with Master's degree ***** adjust medications, perform IV rehydration, limited to Canton Vaud H – High-income country per World Bank LMI – Low- to middle-income country per World Bank</p> <p>Broad – For the purposes of this paper, broad refers to comprehensive and wide range of pharmaceuticals and therapeutics.</p> <p>Focused - For the purposes of this paper, focused refers to the limitations of prescribing to a specific clinical condition (e.g. HIV) or pharmaceuticals.</p>					

Figure 2: Nurse Prescriber Level by Country Economic Level

	LOW- TO MIDDLE-INCOME	HIGH-INCOME
<i>Post Basic Nurse</i>	38%	31%
<i>Advanced Practice Nurse</i>	18%	34%

Appendix 3: WHO Strategic Framework of the Global Patient Safety Challenge

(WHO 2018)



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