Anglophone Africa Advanced Practice Nurse Coalition Project (AAAPNC): A Proposal to WHO (Africa) Health Systems Leadership Team

Compiled and Edited by Bongi Sibanda and Stacie C. Stender

"A Nurse Practitioner/Advanced Practice Nurse is a Registered Nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is credentialed to practice. A master's degree is recommended for entry level" (International Council of Nurses)

Submission date: 8 October 2018

Foreword

Dr Kathy Wheeler, PhD RN APRN NP-C FNAP FAANP
Co-Chair, American Association of Nurse Practitioners (AANP) International Committee
Assistant Professor, University of Kentucky College of Nursing

The chance to impact a significant part of any population in a meaningful, positive, yet comparatively simple way is rare. Many would say securing a workforce sufficient to safely, efficiently and cost-effectively manage the healthcare needs of a large population is beyond what is possible. Nonetheless, that is what this proposal seeks to do, and could do through providers found capable of meeting those standards but under-utilized in Africa, the advanced practice nurse (APN). Through the vision of one passionate nurse, this proposal seeks to build on a network of schools, systems, and stakeholders to create a workforce of APNs capable of providing much of the preventive and primary care needs across Africa. Bongi Sibanda is framing a proposal to define an expanded nursing role for the continent, bringing together numerous experts and regional stakeholders to outline what is possible and what is needed. She makes a case for defining critical fundamental underpinnings of the profession so that the role functions well locally going forward, assuring the investment yield is high. She emphasizes the need to do so in an Afrocentric manner through established programs in the region, via sound professional standards borne out of evidence.

I first met Ms. Sibanda when she put out a request, via a mutual friend, to come to the US to study advanced nursing practice here in the states. At the time she was an APN in her own right, had practiced for many years, was teaching physical assessment skills in London and was in the process of earning her Doctorate of Nursing Practice from Queen's University Belfast. She spent several days with me learning about the APN programs at my school, the University of Kentucky College of Nursing, a school that has been teaching APNs for decades.

When visiting with me we talked about the evolution of the role in the US and around the world. The International Council of Nurses (ICN) defines a nurse practitioner/advanced practice nurse as a "registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is credentialed to practice." The role developed out of tremendous need for care, largely out of a process of task shifting, where nurses were asked to provide care historically delivered by other professions—medicine, physical therapy, pharmacy, nutrition, respiratory care, etc. Eventually those nurses who performed these tasks went on to more formal education, followed by policies of credentialing and regulation. The role has grown exponentially, and been found favorable. APN was one of the earliest professions to adopt distance education as a means of education because it was successful, allowed the student to stay in their own community and utilized local clinicians for clinical experience and education. Given similar resources such as these, is there any reason to think the advanced practice role would not eventually be part of the healthcare solution in Africa? Indeed, it is already starting to happen.

However, where present, the evolution has not unfolded without struggles along the way, and with issues yet to be resolved. For instance, in the US, though first to truly embrace many of the advanced practice roles the world now defines, each state and region tends to vary enough in standards of local regulation, accreditation, certification and education so as

to make care provision challenging. With geography no longer the limiting factor for education, credentialing and care provision that it once was the stakeholders of APN in the US came together as a workgroup to define fundamental standards of legislation, accreditation, certification and education that mattered, regardless of geography. This is commonly referred to as the APRN Consensus Model, the impact of which is still unfolding in the US. It was this model I would point out to Ms. Sibanda as the best way to understand how the US now defined advanced practice nursing, a measure of standard setting intended to maintain quality and safety regardless of geography. This is not unlike what Ms. Sibanda, and this group of stakeholders, is seeking to do-define those fundamental standards regionally and bring together regional and global resources who understand those standards.

Through a review of the literature Ms. Sibanda and the members of this group present much of the global research about APN in anglophone settings, reviewing standards and presenting multiple exemplars of advanced practice. The mission of the project aligns well with the achievement of Sustainable Development Goals (SDGs), especially that of universal health coverage (UHC). Additionally, the mission of the project aligns well with the work of the ICN, the WHO, Nursing Now, Jhpiego, the ICN Nurse Practitioner/Advanced Practice Nursing Network, and numerous other regional and international initiatives..

This proposal makes a strong case that a coordinated consultancy for the advanced practice role be made a policy priority in Africa. May this proposal be the first step towards accomplishing that vision.

Executive Summary

The Anglophone Africa Advanced Practice Nurse Coalition Project (AAAPNC) was set up in 2018 to coordinate a global initiative for advanced practice nursing in Africa. This is a collaborative proposal, focused currently on anglophone countries, written by colleagues involved in the development of advanced nursing/midwifery practice in Africa. Through this proposal, we seek support from the World Health Organisation (WHO), AFRO Region by giving a compelling case for Advanced Practice Nursing (APN) development across the continent. We highlight the need for development of APN to be prioritised in policy and workforce planning within the region to address challenges in healthcare delivery. These challenges are further influenced by the SDGs and the quest for UHC.

For advanced roles to be effective and successfully implemented, we advocate that standardisation of education, scope of practice and regulation of APN be made a priority. We acknowledge that every nation within Africa is unique with different burdens of disease and human resources for health available to provide quality care; hence the preparation and scope of APNs may vary. However, we believe that lessons can be learnt from our colleagues who have implemented similar frameworks such in Family Medicine and the Africa Federation of Emergency Medicine including an Afrocentric Emergency Nursing Curriculum.[1] It is our anticipation that collaboration will extend across national and regional institutions such as National Nurses Associations (NNAs), the East, Central and Southern Africa College of Nursing (ECSACON), the West African College of Nursing (WACN), East Central Southern Africa College of Physicians, regulators and other networks to improve health of populations.

Our vision is a competent workforce providing safe, quality, integrated care. We advocate for an evidenced based model in setting minimum standards for APNs, as outlined in this proposal, utilising the APRN Consensus Model. As technology advances globally, it is important that relevant stakeholders look at viable options in the provision of learning opportunities both for APN students and faculty beyond the traditional lecture room. There is evidence supporting the effectiveness of online/distance education or synchronous delivery of programs.

Whilst we recommend the application of the APRN Consensus Model, we also advocate that nations cast their nets wider as they develop country-specific roles. A lot can be learnt on interprofessional learning and collaborative practice in advanced practice education, prescribing practice education standards and development of advanced practice educators. Within Africa, we can also build on the work already done in ‘task shifting’ to address needs of populations beginning at the primary healthcare level.

We have made every effort to apply our experience in relation to critical areas for consideration in developing advanced nursing roles, and we recommend a formal consultation by WHO, ICN country leaders and regional bodies to outline APN scopes of practice, educational needs, and minimum standards of care. This proposal does not aim to replace APN developments already in progress across Africa; instead our aim is to enhance current efforts and initiate others. We present examples from some of the work in progress in anglophone countries and advocate for further pilots and evaluation of APN roles as they develop, particularly in francophone and lusophone countries.

It is recommended that the following be implemented:

1. ICN and WHO facilitate regional platforms to co-ordinate advanced practice work across

the continent and act as a hub to build on existing examples and minimize duplication of efforts.
2. A robust clinical governance structure be developed, including structured clinical supervision and continuing professional development arrangements at organisational/country level in the development of APN roles.
3. Ensure strong leadership across relevant executive boards to align APN roles with policy priorities; partner with academic institutions, private sector, non-governmental organisations and policy makers
4. Develop APN roles and programs based on four pillars of advanced practice: clinical practice, education, research and leadership.
5. Adapt the Advanced Practice Registered Nurse (APRN) Consensus model to define APN roles across countries in Africa. Develop context-specific models across the continent, allowing for mobility and portability of skills and knowledge.
6. Ensure Interprofessional Education and Collaborative Practice (IPECP) in education and clinical practice, putting the patient at the centre. Apply principles of the WHO Framework on integrated people–centred health services (IPCHS).
7. Apply evidence-based frameworks in APN development e.g. the participatory, evidence-based, patient-focused process for advanced practice nursing (PEPPA) Framework[2] and the Conceptual Policy Framework for Advanced Practice Nursing.[3]

Possible implications for inaction

There has never been a better time to develop APN roles in Africa. Achieving the SDGs, ensuring UHC, and providing quality care for people living with non-communicable diseases (NCDs) requires nurses. Nurses constitute a majority of the health workforce in Africa and are essential to success. It would be impossible for governments to achieve these targets in the absence of enhanced nursing education and practice.

This is a great opportunity to align the initiatives of the ICN NP/APN Network, NursingNow and Jhpiego to raise the profile of nursing and midwifery in Africa. Failing to embrace this will be a missed opportunity for communities served. Development of advanced practice in Africa requires clear standards for education and practice. Patient safety is at the forefront; therefore, regulation is essential. Implications on lack of standardisation in advanced practice have been clearly articulated by Leary.[4]

Table of Contents

Acronyms

AAAPNC	Anglophone Africa Advanced Practice Nurse Coalition Project
AANP	American Academy of Nurse Practitioners
AAPEUK	Association of the Advanced Practice Educators
AfrIPEN	Africa Interprofessional Education Network
APN	Advanced Practice Nurse
APRN	Advanced Practice Registered Nurse
BNF	British National Formulary
CNS	Clinical Nurse Specialist
DNP	Doctorate of Nursing Practice
ECSACON	East, Central and Southern Africa College of Nursing
FNP	Family Nurse Practitioner
ICM	International Confederation of Midwives
ICN	International Council of Nurses
IFNA	International Federation of Nurse Anesthetists
IPCHS	Integrated people-centred health services
IPECP	Interprofessional Education and Collaborative Practice
KCH	Kamuzu Central Hospital
KCMUCo	Kilimanjaro Christian Medical University College
LANA	Liberian Association of Nurse Anesthetists
LBNM	Liberian Board of Nursing and Midwifery
NAPNAP	National Association of Pediatric Nurse Practitioners
NCD	Non-communicable Disease
NMP	Non-Medical Prescribing
NNA	National Nurses Association
NP	Nurse Practitioner
PACT	Prescribing Analysis and Cost Tabulation
PEPPA	Patient-focused process for advanced practice nursing
PHC	Primary health care
QECH	Queen Elizabeth Central Hospital
SDG	Sustainable Development Goals
TNMC	Tanzania Nurses and Midwifery Council
UHC	Universal Health Coverage
WACN	West African College of Nursing
WHO	World Health Organisation

Introduction

Bongi Sibanda

The Anglophone Africa APN Coalition Project is an interprofessional working and Collaborative approach. It is a coalition of individual healthcare professionals, institutions, organisations and networks across the globe working together to seek support for the advancement of nursing and midwifery practice in Africa. We are seeking support from WHO, ICN, Nursing Now and Jhpiego to be a resource for high level stakeholder engagement with the goal of co-ordination between countries as they develop advanced practice roles. The project is a result of several months of discussions with WHO Africa Health Systems Team Leadership and builds on the work being done by colleagues across the globe to advance nursing practice in Africa. ICN, the Centre for the Advancement of Interprofessional Education and AfrIPEN definitions have been adopted:

- A registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is credentialed to practice. A master's degree is recommended for entry level.[5]
- Interprofessional Education occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care.[6]
- The Africa Interprofessional education network further embrace patient centeredness and collaboration in its definition, asserting the need for two or more professionals to work together as a team with a common purpose, commitment and mutual respect in Interprofessional Education and Collaborative Practice.[7]

The purpose of this proposal is to define the future of advanced practice nursing and midwifery in Africa, with particular focus on standardisation of education, regulation and practice. We are advocating for the adaptation of the APRN Consensus Model, based upon country and sub-national health needs across the African continent.[8] We endeavor to develop APN models of care to meet the needs of individuals and communities, regardless of where they live or healthcare needs. In line with current regional priorities to achieve UHC, we propose to pilot Family Nurse practitioner (FNP) programs in least five African countries by 2020 with the support of ICN and WHO.

We aim to help governments in Africa create sustainable health delivery systems through advancing the nursing workforce and strengthen partnership working with academic/healthcare institutions globally. We are embedding the ethos of interprofessional working and collaborative practice through partnership working with independent, public, non-governmental and the voluntary sectors to meet our goals. We incorporate IPECP through advancing the mission of AFrIPEN as part of this work.

The primary objective is to outline how APNS can benefit African healthcare systems, especially primary care and to advocate for the development of a common framework in advanced practice that will help geographical mobility and portability of skills across the continent. We seek to promote the profile of the nursing and midwifery profession and to enhance educational standards in advanced nursing and midwifery practice.

Expected outcomes include strengthened health systems and decreased reliance on donors to support provision of essential primary and emergency health services. We hope that this proposal will be of assistance to individual countries in the development of advanced practice roles and will be a useful tool for stakeholder engagement in Africa.

We anticipate that with the assistance of ICN and WHO, five FNP programs can commence by 2020 at institutions / countries identified during this project. In the long term, we foresee a growth in doctoral level nursing programs that will contribute to strengthening nursing leadership from research to practice.

The following African universities have agreed to participate in the project:

- Aga Khan University has sites in Kenya, Uganda, and Tanzania and is already at advanced stages in the development of a MSc (APN) curriculum in collaboration with the Nursing Council of Kenya
- University of Botswana. Currently the only African institution with a Masters in Family Nurse Practitioner, matching international APN standards in education, accreditation and regulatory practice.
- School of Nursing and Midwifery, University of Ghana. Colleagues from Ghana are working on senior nursing leadership consultation.

Background overview - How we got here

After a series of discussions, meetings with WHO-AFRO systems on developing advanced practice in Africa, it was recommended that a proposal be written and submitted to WHO-AFRO Health Systems Leadership team. Together with colleagues, we then started this work to combine efforts being made by individual countries in Africa to improve health care access, especially in rural/primary care settings where healthcare is mostly nurse-led and reliance on NGOs and donor funding is high. We based our work on the evidence of the Triple impact report by the All-Party Parliamentary Group on Global Health[9], WHO Global Strategy on Human Resources for Health[10], Workforce 2030, ICN NP/APNN[11], AANP International Committee[12], the Africa Interprofessional Education Network[13], Jhpiego[14], NursingNow[15], and Association of the Advanced Practice Educators (AAPEUK).

Workforce Planning and Implementation of New Roles

Thenjiwe Ndiweni

A simple definition of workforce planning is “the process by which an organisation, system or agency determines the workforce it needs to deliver its services, both now and in the future, and develops strategies that balance those workforce needs with the available workforce supply”.[16] Workforce planning is a strategy to ensure that one has the right skills, in the right place at the right time. This is particularly relevant when introducing new roles or new ways of working, as the impact on existing roles and existing ways of working need to be understood and a clear strategy for how these well be addressed needs to be in place. Avoidance of duplication of effort and a drive to ensure that efficiency and quality of service go hand in hand.

Workforce planning for human resources for health is an integral part of provider services in both the acute and community settings. Individual organisations develop workforce plans as part of the business planning cycle, which detail the numbers of hours required to deliver particular services; the number of staff required to deliver the services; the different staff/professional groups required to deliver the service/patient pathways; and the cost of the human resource

Where new roles are developed, one must consider the funding required to develop the new roles; the source of the funding; how the new roles will integrate with existing roles;

what existing roles will cease to do as this is passed onto new roles; the training requirements for the new roles; the numbers of staff which will be required in the new role; and the cost of these new providers.

All of the above will need to be factored into the planning for the introduction of the APN roles. There is an additional element of understanding the landscape of each of the countries involved in the project and the regulation around workforce planning for human health resources to ensure that support is gained from the relevant stakeholders. Clinical engagement and support from staff who currently undertake the tasks/roles which will be passing onto the APN will need to sought and the team will need to identify champions within these professions to work with to ensure that introduction of the new roles is successful, the role is understood and that the APNs will be "allowed" to function in the new roles as part of the health teams in the target countries.[17]

Background of Advanced Practice Nursing

Christmal Christmals, Daniel Apau and Lydia Aziato

Nurses' roles within the health care delivery system has responded and widened in keeping up with advances in scientific knowledge and changes in the health care needs of the general population. Aging populations with comorbidities make it more compelling for nursing practice to embrace such challenges. In the African context, factors within healthcare delivery continuum such as urbanization of economically highly specialized services mean access to health within the rural landscape is disappearing. Countries that envisaged above the challenges and implemented a collaborative pathway from the APN perspective have benefited tremendously through quality care for populations. It is imperative that the African continent look at ways of advancing nursing practice to accomplish some of these goals.

Notwithstanding the enormous contribution of APN in improving access to high quality and cost-effective care as depicted in countries like the USA, Canada, Australia, and UK, the lack of consensus and inconsistencies in defining roles, standards, regulation, practice and credentialing continue to plague APN in some countries with public scrutiny on safety and risks. Most of the successful countries that have gained enormously from APN contribution to the healthcare delivery have invariably opted in setting clear standards and roles by way of models and pathways. The APRN Consensus Model is one example of such models which has ensured standardization of licensure, accreditation, certification, and education. The dynamic nature of the model allows bringing together an umbrella of specialists from the various areas of healthcare such as nurse anesthetists, nurse-midwifes, clinical nurse specialists, and nurse practitioners with specific population foci for each aspect of APN practice. Standardization of APN by the consensus model allows geographical mobility and transfer of skills within any defined region that upholds the model.

Evidence of Advanced Practice

APN programmes emerged as a result of the need for countries to improve access to quality and cost-effective healthcare services.[18,19,20,21,22] It is known that APN programmes all over the world meet the Primary Health Care needs of underserved populations. APNs have been trained and licensed in Canada, the USA, and the UK. Two major reports, the Boudreau report in 1972 in Canada and the Post Registration Education and Practice Project (PREP) in the UK stated that APNs demonstrated a higher level of thinking and clinical judgment in diagnosing and prescribing.[23] Many countries, including China, Korea,

Japan, Thailand, Singapore, Australia, and New Zealand, have drawn on the experiences and positive results from Canada, USA and UK to train and license APNs to provide care for their rural and the underserved communities.

The scope of practice of APNs is closely associated with that of the general medical practitioner- physical assessment, diagnosis, treatment (prescription, admission, monitoring of prognosis, discharge and referral). Many studies have shown that the care provided by the APN are of equal or higher quality than that of the general practitioner.[18,24,25,26]

Advanced Practice Nursing has been documented in South Africa, Kenya, Zambia, Malawi, Swaziland, Botswana, Uganda, and Rwanda but the scope of practice and legislation to formalise their respective practices are not explicit.[21,23,27,28,29,30] General nurses and specialist nurses alike are 'shifted tasks rather than being granted autonomy for practice through legislation.[31,32,33] The main opposition to the APN role is the medical profession, thinking that the ability to assess, diagnose, prescribe medication, monitor therapeutic regimen, admit and discharge is their 'birthright'.[34]

What is currently unknown?

The marked exclusion and increasing cost of healthcare to rural and underserved communities coupled with the needed primary health care (PHC) services that have necessitated the training, licensing and recruitment of APNs in other jurisdictions are much intense in SSA but have been much ignored due to lack of political will, opposition from the medical profession, lack of resources and lack of context-specific APN benchmark programs.[21,23,27-30] About 70% of SSA population live on less than $2.00 per day.[35,36] In SSA, major healthcare facilities are located in cities and small towns while three-quarters of the population live in rural settlements and urban slums where access to healthcare may be difficult.[21,37,38,39]

Nurses form a majority of the health workforce in sub-Saharan Africa.[40,41,42] They are the most reliable group of health professionals to advance PHC and UHC in sub-Saharan Africa.[43,44] Nurses have proven capacity to advance PHC through and expand access to essential services such as through offering HIV testing and initiating/managing clients on antiretroviral therapy.[31-33] Legally and functionally, APNs do not exist in many African countries. Where there are, nursing councils often do not develop the scope of practice for them to practice at full capacity.[38,39,45,46]

Whereas the western world is battling with non-communicable diseases and diseases of old age, sub-Saharan Africa is experiencing an inordinate amount of preventable, communicable disease which can easily be managed by the APNs. It is without doubt that the training and recruitment of APNs in SSA will improve access to quality PHC services and improve the healthcare indices of the countries and the continent as a whole. It is therefore very important for the nursing profession to advocate for government buy-in, piloting and implementation of APN programs in SSA.[21,28]

Prescribing education, prescribing authority/ legislation and practice

Gabatsene Kwadiba & Bongi Sibanda

Safe and timely access to appropriate and effective medication is a major concern across the globe. In sub-Saharan Africa, nurses have played a major role in improving health outcomes for people living with HIV through prescribing of antiretrovirals (ARVs) and

primary care nurses prescribe common medications such as antibiotics. African countries, such as South Africa, Botswana, Uganda and Zimbabwe, aim to embed prescribing in primary care nursing in order to meet local community healthcare needs and address shortages of medical workforce particularly in remote and rural areas.[47] Whilst most nurses carrying out this role have received targeted training for specific prescribing, in many cases, there is minimal evidence to support robust pharmacological and prescribing education for this group of practitioners nor clear legislation outlining scope of prescribing practice.

In the case of Botswana, there is no Family Nurse practitioners' prescriptive authority guideline. As indicated by Seitio,[48] there is still no legislation specific to FNP prescriptive authority. The existing guideline addresses general nurses' prescriptive limits and is generally applied to FNPs as well. Perhaps, the fact that most nurse practitioners are diploma holders makes the Ministry of Health not to see urgency in crafting FNP-specific prescriptive authority. Thus, it is important for institutions of learning in Africa to introduce APN qualifications, i.e. masters and doctoral level programs. It is critical that regulation on medicines and professional practice is central in the development of advanced nursing roles to protect the public and ensure the workforce can competently provide healthcare services.

Important lessons can be drawn from countries where the role is well established, and prescribing authority is clearly defined such as the USA, Canada and the United Kingdom. As an example, in the USA, the National Association of Pediatric Nurse Practitioners Professional Issues Committee (NAPNAP) recommend that all Nurse Practitioners must have full or independent prescriptive authority in line with their education, qualifications, certification and competencies.[49] This means that a Nurse Practitioner should be able to prescribe all legally scheduled drugs, including opioids for pain control, as long as they prescribe within their prescriptive limit. In other words, as an example, an ophthalmology Nurse Practitioner should be able to prescribe morphine if the prescription is related to ophthalmology. In the UK, Non-Medical Prescribing (NMP) among healthcare professionals has advanced considerably since its inception in 1999.[50] The modernisation of the healthcare system has made progress with regards to prescribing over the last 20 years, with the traditionally medical role of prescribing being practised by qualified Registered Nurses, pharmacists and other registered healthcare professionals in independent and supplementary prescribing.[51]

Nurse prescribers have been able to independently prescribe any medicine from the British National Formulary (BNF) withn their area of practice and competence, initially with the exclusion of some controlled drugs; however, in April 2012, the Misuse of Drugs Regulations 2012 (Amendment 2 in England, Wales and Scotland), restrictions on controlled were removed to allow both nurse and pharmacist independent prescribers to prescribe any controlled drug from schedules 2-5 of the Misuse of Drugs Regulations 2001 on condition that the drug falls within the prescriber's individual competence.[52] To our knowledge, the BNF is also used in pharmacy, medical and nursing education as well as applied in prescribing practice in some sub-Saharan countries, including Zimbabwe and Botswana; in addition to local prescribing guidelines. Due to the benefits of advanced nursing roles such as prescribing to patient care;;), other healthcare professionals such as paramedics are also now able to embrace the role following changes in legislation in April 2018.[53,54,55,56]

In the United Kingdom, independent prescribing (non-medical prescribing) is one of the essential courses within the MSc Advanced Clinical Practice pathway with stipulated and legislative requirements for training and a designated medical practitioner. All prescribers are required to demonstrate a common set of competencies regardless of their professional background, outlined in the *Single Competency Framework for all Prescribers*.[50] It is essential that clinical governance structures are in place both at local and national level to promote safe and effective prescribing. An example of this is the Prescribing Analysis and Cost Tabulation (PACT) system in the UK and application of local non-medical prescribing policies.

Terminology

Independent prescribing: the prescribing of medicines by an "appropriate practitioner", e.g., doctor, dentist, nurse, pharmacist who is responsible and accountable for assessing patients with undiagnosed or diagnosed conditions, and for decisions about the clinical management required, including prescribing.[57]

Non-medical prescribing: NMP is a term used to describe the extension of prescriptive authority to professional groups other than the medical profession, i.e. nurses, midwives and allied health professionals. The term encompasses supplementary and/or independent prescribing practice.

PACT data: This is the data on prescribing collected by the NHS Business Services authority which allows for an analysis of prescribing activity, providing a picture of prescribing both at individual and organizational level.[58]

Supplementary prescriber: a voluntary partnership between an independent prescriber (doctor or dentist) and a supplementary prescriber, to implement an agreed patient-specific clinical management plan with the patient's agreement.

Recommendations

APN programs need to include content in clinical skills assessment, pathophysiology, pharmacology, prescribing practice and clinical reasoning. It is critical that input of other healthcare professionals is sought by nursing academics delivering these programs, in particular, that of pharmacists and medical practitioners. Ideally, curriculum development and delivery of programs both in academic and clinical practice supervision should be done in collaboration with educators from these fields. Interprofessional mentoring and clinical supervision in practice and assessment of clinical competence should be considered.

Regulation of APN roles

Minna Miller, Samuel Wainaina Mwangi, Edna Tallam and Eunice Ndirangu

To achieve UHC in African countries, the role of APRN is critical as this will enhance quality of service delivery at the primary health care level. However, inadequacies exist in various key areas such as lack of well-defined roles, structured training and scope of practice for the APN within the health care systems.

The practices of nursing and midwifery are grounded in standards and ethical values supported by a system of professional regulation. It is the duty of the nursing profession, through its regulatory bodies or councils, to determine the scope of practice for every level of nursing; to identify desirable standards of practice and competencies; and to bring these

to the attention of every nurse. We call for clarification of specialty nursing and advanced practice to prevent role conflict and role overload. APN should be given a clear scope of practice that differentiates them from other types of nursing cadres' roles through a systematic, collaborative and evidenced based process. This will facilitate relevant regulation.

Overview of APN regulation

A plethora of evidence is available on effectiveness of primary care APN roles in improving patient access to services, improving health outcomes and their positive impact on health system effectiveness,[59,60,61] as well as describing the utility of APN roles in addressing country specific needs to achieve UHC.[62,63] APRN reading list summaries are available at https://www.ncsbn.org/APRNReadingList042616.pdf. Regulation of APN roles, with periodic review and updating of scopes of practice, supports the uptake of new advanced practice roles, improves patient access to services, enhances APN role clarity, and communicates to the public who is qualified to provide specific levels of nursing services.[64,65,66]

Definition of professional regulation, as defined by BusinessDictionary.com: "rule based on and meat to carry out a specific piece of legislation. Regulations are enforced by a regulatory agency formed or mandated to carry out the purpose or provisions of a legislation."

Purpose of professional regulation according to Schmitt and Shimberg[67] is to: "1) Ensure that the public is protected from unscrupulous, incompetent and unethical practitioners"; 2) Offer some assurance to the public that the regulated individual is competent to provide certain services in a safe and effective manner"; and 3) Provide a means by which individuals who fail to comply with the profession's standards can be disciplined, including the revocation of their licenses."

Without regulation, nurses do not have the legal authority to practice in advanced, independent roles beyond the scope of practice for general/registered nurse.[66]

Levels of regulation

1. Registration within a registry- name of the nurse on a regulatory body's membership list, is the broadest and possibly the weakest form of regulation[68]
2. Licensure is a more restrictive form of regulation as it both defines the requirements for those wanting to obtain a nursing/APN license, and it also puts forth the requirements for re-licensure/license renewal i.e. continuing education and measurement of continuing competence[69]
3. Certification is a professional recognition and refers to an earned credential after an individual has passed the certification exam that demonstrates the holder's knowledge, skills and experience and competence. It is typically awarded by a third party and is separate from but may be required for licensure[70]

Threats posed by lack of regulation include concerns for patient safety and threats to the profession of nursing[71,72]

WHO and ICN recommendations on nursing/APN regulation

1. WHO health work force 2030 strategy puts forth the importance of regulation of health professionals by way of registration[73]

2. ICN recommends that all advanced practice nursing roles are regulated with formal mechanisms for registration, licensure, certification and credentialing[74]
3. ICN has provided guidance on the role that governments, National Nursing Associations, profession-led nursing regulators, and employers play in nursing regulation[64,75]

Additional resources related to APN regulation

- APRN consensus model from the USA[76]
- Schober policy framework for the introduction of APN roles[77]
- PEPPA framework for evaluation of APN role readiness, role development, implementation, advancement and evaluation[78]
- APN Framework by Canadian Nurses Association[79]
- The Canadian Nurse Practitioner Initiative: A 10-year retrospective[80]

Conclusion and recommendation

Implementation of APN roles in Africa with appropriate regulation has the potential to address country specific health and healthcare needs and the realization of universal healthcare coverage. Further Research is needed to evaluate the current state of APN role implementation and regulation, or country specific readiness for such in Africa, while capitalizing on expertise and experience of those countries where APN role(s) are already thriving.

Radiology and Non-medical referrers: implications and recommendations for advanced practice development roles

Nick Woznitza

Across the globe diagnostic imaging is used to guide diagnostic and treatment decision of clinicians. Person-centred care, an aging population and new technology have resulted in an unprecedented growth in demand for healthcare. The delivery of healthcare is adapting to the current worldwide economic and political climate, whether in developing nations where resources are scarce or in the developed world where very different models exist.[81,82] Healthcare providers are being asked to deliver an increased volume of services while restricting budgets without compromising on quality. Healthcare environments where resources are scarce can benefit from increased the capacity provided by trained nurses, midwives and allied health professionals in order to deliver improved service to patients.

The use of trained advanced practitioner non-medical workforce to supplement limited medical resources is not a new phenomenon, and modernisation of the workforce is recognised as a mechanism for improved access and efficient healthcare. In the United Kingdom, for example, educating and expanding the scope of non-medical professions to include referral for medical imaging investigations has been a priority for 20 years.[83,84,85]

The X-ray is an excellent vehicle for assessing ‘health status’, for example the presence or absence of changes in lungs, heart/great vessels and bony structures demonstrated on an x-ray are useful judgments to make in terms of health.[86,87] It is essential that the justification for role expansion of non-medical referral for imaging must be that patient care will be improved. Evidence suggests that non-medical referral reduces time to treatment in an emergency care setting, improved service quality and increased patient satisfaction.[88]

Fundamental elements required for an effective, efficient and patient-focused referral for imaging are: clear requirement that the results of the investigation may influence patient care decisions; defined scope of practice; working within a strong clinical governance framework; and appropriate education, including radiation protection and preliminary clinical evaluation.

Cadres referring clients for radiological services are registered healthcare professionals who have undergone accredited postgraduate education. Training will ideally be incorporated into the advanced practitioner curriculum and includes: identification of which patients should be referred for imaging; obtaining informed consent from patients for imaging; knowledge of the effects of radiation (ionising and non-ionising) to provide patients with the information to make an informed decision; understanding of the requesting practitioner on the appropriateness, indications, contra-indications of imaging investigations; and the ability to perform preliminary clinical evaluation of imaging investigations to guide treatment decisions until a radiology report is available.

Preliminary clinical evaluation of imaging is essential to ensure prompt and appropriate treatment is initiated without delay and not dependent on the time taken to obtain a radiology report. A team-based approach, using the skills of APRNs and the radiographers who undertake the imaging, is the most effective and pragmatic. This approach harnesses the unique skills and knowledge of a range of healthcare professionals and builds collaboration.[89] Distance learning, often online, is an effective method to deliver image interpretation education with a range of existing resources available. For example, the e-Learning for Health (https://www.e-lfh.org.uk/programmes/image-interpretation/) could be supplemented with face to face teaching and case-based discussions.

Clinical governance structures are fundamental to ensure patient safety and to maximise the benefits of non-medical referral for imaging. Close collaboration with radiology is essential when designing and implementing non-medical referral for imaging. Common elements of effective referral protocols include: named non-medical practitioners who are registered healthcare practitioners with appropriate accredited postgraduate education in clinical assessment/diagnosis with named medical mentors/supervisors; defined scope of practice for initiating referral, i.e. specific modalities such as ultrasound and plain radiographic imaging for defined anatomical regions; and audit of quality of imaging referrals as well as patient note review to ensure appropriate action has been performed.

Advancing practice nursing in emergency care in Africa and recommendation for FNP programs

Tricia Scott & Dean Whiting

Emergency care systems need to be strengthened to address the global burden of disease.[90] Organised emergency care systems are often deficient in low income countries which experience high injury rates, maternal deaths, and acute medical complications of communicable diseases.[91] Acute surgical emergencies inevitably add to this health burden. One hundred million people sustain injuries annually; 5 million people die from violence and injury; and 90% of the global burden of violence and injury mortality occurs in low to middle income countries.[92] The Institute of Health Metrics predicted that by 2030 road accidents will be the fifth leading cause of death in the developing world, with violent crime and conflict contributing significantly to this public health emergency.[93] This situation requires

functional pre-hospital, emergency, trauma and rehabilitation services infrastructure.

There are, for every trauma death, many thousands more who suffer significant injuries, many of which have permanent sequelae with a resultant social and economic burden. Reducing death and injury burden is therefore one of the main challenges for healthcare in this century. All injured people will derive benefit from early, appropriate trauma care and rehabilitations services. Training in the management and care of people suffering medical and surgical emergencies should span the whole range of possible conditions presenting to emergency practitioners, including those affecting children. The needs of pregnant women should also be addressed in the emergency context. In addition, training in trauma management should span the spectrum of disease from minor injury through to major multi-system complex trauma. Severely injured patients often have an unpredictable course of injury progression, are physiologically unstable and are at risk of developing adverse outcomes. These patients are therefore dependent upon a highly skilled and appropriately educated healthcare team to meet their complex and changing physiological and psychological needs. The APN is uniquely placed to deliver this essential life, limb and eyesight saving emergency and trauma care.

Great strides have already been made in response to WHA Resolution 60:22. Scott and Brysiewicz published the African Emergency Nursing Curriculum[94] as a collective approach to curriculum development for emergency practitioners by the African Federation of Emergency Medicine.[95] These curricula address the theory and practice-based education and training guidelines for emergency nurses across sub-Saharan Africa and the Global Emergency Nursing Mentorship Scheme supports emergency nurses to cope with the increasing trauma burden.[96] Further work is envisaged to address the WHA Resolution 68:15 '*Strengthening emergency and essential surgical care and anesthesia as a component of UHC*'.[97]

Recommendations related to trauma:
APN's should be educated in the advanced theoretical and practical skills required to deliver high quality trauma care based upon the recommendations of the Essential Trauma Care Project.[98,99] Ideally this would be delivered in a multi-disciplinary setting so as to encourage a commonality of trauma language, skills and management practices.

Regional centres may be developed to deliver higher levels of trauma education and provision of continuous professional development. This may include the establishment of virtual education portals.

Training should be tailored to local resources including equipment and supplies and should ideally be supported by a functioning trauma system with programmes for performance improvement to achieve successful outcomes.
This may vary across the region from minimally equipped and staffed village health posts, general practitioner-staffed hospitals to specialist tertiary centres. Training should develop the ANP to care for the patient holistically.

Training in general concepts across both minor and major trauma should include history taking and clinical examination; secifics across the age spectrum; rehabilitation; pain control and medicine use; diagnosis and monitoring; imaging modalities; safety for health care personnel; quality monitoring and performance improvement; and public health approaches to trauma minimisation

Training in minor Injury Care should include: musculoskeletal injury to the neck and back; musculoskeletal injury to the upper limbs; musculoskeletal injury to the lower limbs; minor wounds and burns; minor head injuries; and minor injuries to the face

Training in Major Trauma Care should include airway management; breathing—management of respiratory distress; circulation—management of shock; management of head injury; management of neck injury; management of chest injury; management of abdominal injury; management of extremity injury; management of spinal injury; management of burns and wounds

It is proposed that to deliver this syllabus 10 contact days would be required within an existing educational programme for AP's. Equipment and simulated facilities based on local resources would be required. Pedagogy should be consistent with the overall educational programme.

Family Nurse Practitioners in Botswana: Training and Practice

Mabedi Kgositau & Deborah Gray

In 1981, Botswana established the first FNP Program in Africa as a one-year post-basic program at the National Health Institute (now Institute of Health Sciences) in Gaborone to prepare nurses to provide comprehensive primary health care services to the rural community. This program was the result of a collaborative effort between the Ministry of Health of the Government of Botswana and the United States Agency for International Development. The one-year post-basic nursing programme evolved from a national commitment to expand and upgrade primary health care services.

There were several factors leading to the program development. The first was the implementation of the Rural Development Policy of 1973 which stimulated the rapid expansion in the health care infrastructure.[100] The policy outlined the training of nurses to serve in the rural area because of the limited number of medical providers in the rural communities, the need for a primary care approach to equip nurses (who made up 70% of the health care work force and were client first-contact in these health facilities) with client assessment and management skills. Developments in provision of health care services as a result of societal needs and demands, in particular a shift of emphasis from hospital based care to primary health care in the late 1970s, led to establishment of the FNP programme.[48]

The curriculum based on service needs and reflecting national development priorities, was designed to provide nurses with the opportunity to acquire advanced skills in assessment, diagnosis and management of common health problems in PHC settings. Over the following 10 years, the curriculum was subsequently revised and expanded to 18 months. A mission school, Kanye Seventh Day Adventist College, started FNP training in 2003. The two diploma programs have an output of 20 and 10 graduates respectively every two years. There are some ongoing discussions regarding upgrading the level of diploma programs. The country currently has around 440 diploma prepared NPs.

The country has put a lot of effort in support of training NPs by sending nurses to the United States for training in the area at master's level. This has helped a lot in human resources for training NPs in the country. In 1996, the University of Botswana started the first and currently only Master of Nursing Science program in Botswana offering APN education with

Clinical Nurse Specialists and Midwives. The mission of the Master of Nursing Science Programme is to prepare nurse leaders in the advanced practice role of a clinical nurse specialist.[101] FNP training came later in 2001, with the first graduates in 2007. Training is offered on both full- and part-time basis with most of the students being part-time and self-sponsored. As a result, the school of nursing admits about four to ten nurses for training annually. The masters program at the University of Botswana remains the only program educating masters prepared FNPs in Botswana. There are currently approximately eighteen masters-prepared NPs in Botswana. The school has also had FNP graduates from Swaziland, Nigeria and Tanzania.

The Nursing and Midwifery Council of Botswana has initiated protection of nursing specialty areas through inclusion into the register. Standards of Family Nurse Practice, Family Nurse Practitioner job description and the Drug and related Substance use are some of the documents that guide FNP practice in the country.[102,103] Nurse practitioners in Botswana work mainly in clinics, outpatient departments of hospitals, industry and schools where they perform assessment and management of clients across the life span. In hospitals, these practitioners also manage staff, hypertension and diabetes clinics. This is meant to provide for appropriate care to the common non-communicable diseases which are a threat to the population. The country is also benefiting from the skills of these practitioners in the management of people living with HIV/AIDS.

Liberia, Malawi and the Kingdom of Eswatini

Aaron Sonah, Colile Dlamini; Eileen Stuart-Shor, Etienne Nsereko, Janet Dewan, Linda Robinson, Louise Kaplan, Mabel Chinkhata, Medan Coe, Ursula Kafulafula, Wilmot Fassah, Laura Foradori, and Julie Anathan

The Liberian National Nurse Anesthesia Curriculum

Context/Background: The Nurse Anesthetist is a vital contributor to the Liberian Health Care System, a system determined to recover from years of civil strife and the ravages of Ebola. Liberia suffers from a high burden of disease and high morbidity and mortality for all types of surgery. The work of an anesthetist contributes significantly to the care of any condition that requires surgery and/or intensive perioperative care and key to increasing the safety and availability of surgery. In 2016, for its 4.5 million citizens, there were approximately 73 actively practicing Nurse Anesthetists working in 30 hospitals and one anesthesiologist; three hospitals did not have any formally trained Anesthetists.

There is one Nurse Anesthesia Training Program at the Phebe Paramedical Training Program and School of Nursing (Phebe). When this project started in 2016, the curriculum had been created by a non-Liberian physician group who no longer supported the program and the curriculum was difficult for the faculty to sustain. Only 2-6 students were being trained annually. The primary barriers to educating more Nurse Anesthetists at Phebe are threefold; 1) insufficient number of qualified permanent faculty, 2) inadequate clinical opportunities to develop competence and 3) facility restrictions of Phebe to physically and financially support more students. In addition, once trained, the retention of the country's practicing Nurse Anesthetists is challenged by a number of factors including: lack of salary incentive for the increased responsibility and educational requirement of this advanced practice role, the lack of a clear career advancement pathway, difficult working conditions as many are the only anesthesia providers for their hospital and a lack of facility infrastructure which provides basic anesthetic tools.

In 2016, the Phebe anesthetist faculty, with the support of a Global Health Service Partnership visiting faculty, Seed Global Health and Northeastern University Nurse Anesthesia Program (Boston, MA), undertook the development of a competency-based nurse anesthesia training curriculum that was responsive to local context and needs but also met international standards for educating Nurse Anesthetists. An essential element of the curriculum re-design was the fact that Phebe faculty assumed the lead role in the process with collaboration with the Liberian Association of Nurse Anesthetists (LANA), the Liberian Board of Nursing and Midwifery (LBNM), the Ministry of Health and international partners. This country-led, multisector approach is critical to sustainability and to advancing the competence and confidence of Liberian educators to better support students to reach graduation successfully.

Progress to date. During the 2016-2017 academic year, a two-year competency based curriculum based on the International Federation of Nurse Anesthetists (IFNA) standards and core competencies was developed. Applicants are required to be a Registered Nurse in Liberia with at least two years of acute care experience. Consensus from the literature, international experience and current practicing anesthetists in Liberia set the benchmark of 250 cases of varying complexity as the minimum number of cases to graduate. Existing courses were enhanced to include/reflect the IFNA standards/competencies and expand the clinical training opportunities/requirements. The number of students enrolled per year has been increased to 10 with an eventual goal of admitting and training 40 per year. In December 2017 the completed curriculum was submitted to the LBNM and approved as the national curriculum in June 2018. Upon graduation students take an examination administered by the LBNM and if successful become Registered Nurse Anesthetists in Liberia. Phebe is now in the process of applying for accreditation for their training program from IFNA.

In order to fully implement this curriculum and to meet the need to train more anesthetists, Phebe needed the support of LANA, the LBNM and the ministry as well as support from visiting faculty who are experienced nurse anesthesia providers. IFNA has also been responsive to guiding Phebe faculty and their training program as they advance to a professional advanced practice nursing model. In addition to the curriculum re-design, other factors that are being addressed include increasing the number of nurse anesthesia faculty (visiting faculty, developing a pipeline of Liberian nurse anesthesia faculty), enhancing the quality of clinical instruction (support for preceptors), increasing the number and acuity of clinical placements (4 new placements were created with MOH support) and enhanced support for faculty development (2 faculty travelled to Boston for a 1 month intensive in nurse anesthesia practice and education; Northeastern University and Beth Israel Deaconess Medical Center).

Implementing the Clinical Nurse Specialist Role in Malawi

Context/Background:

The severe shortages of nurses, in addition to challenges in clinical education, are factors associated with Malawi's high morbidity and mortality. Kamuzu Central Hospital (KCH) is one of four tertiary hospitals of the Malawi Ministry of Health. It is a large hospital with 1200 beds. The paediatric ward has 250 beds, (the occupancy often doubling during peak seasons) and a staff of 56 Registered Nurses. KCH is a clinical placement site for large numbers of nursing students, however clinical and faculty staff shortages impact student learning. The hospital has as its mission to provide excellent clinical care and to become a Center of Excellence for quality health care services in the country.

To support the hospital's goal to become an accredited center of excellence in quality tertiary care a pilot was undertaken by KCH in collaboration with Seed Global Health to implement the Clinical Nurse Specialist (CNS) role in the paediatric ward. The pilot was based on evidence linking the CNS-APN role to improved quality and safety of patient care outcomes, improved translation of theory to practice and improved student learning.

The nursing structure at KCH consisted of multiple levels of nursing administrative support (Deputy Director Hospital Services, Chief Nursing Officer, Principal Nursing Officer, Senior Nursing Officers, Nursing Officers), but did not include a clinical expert whose sole responsibility was to support nursing practice and education. The CNS role as implemented in the pilot did not have formal authority and sat alongside the Senior Nursing Officers and Nursing Officers on the organizational chart. Of note, currently there are masters prepared pediatric nurses educated in Malawi but with the current organizational structure they have few opportunities to obtain an APN job.

Progress to date:
The pilot CNS role in the paediatric ward ran for 18 months: from August 2016 to March 2018. Rapid Cycle Change methods were used to guide and monitor the project throughout. The agreed upon CNS role components for the pilot included: clinical activities (e.g. rounds, consultation on complex patients, etc), staff development (e.g. orientation for new hires, training in new policies and procedures, etc), student precepting (e.g. working with preceptors to guide student learning), and evidence-based practice and practice improvement (e.g. supports the translation of evidence to practice). For quality assurance purposes an evaluation of the role was completed in February 2018 including focus groups with various staff cadres. Eighteen months and 5 plan-do-study-act cycles into this project, several themes have arisen: 1) priority activities have changed over time, suggesting a need for flexibility in the role to support the ward needs; 2) challenges and successes emerged related to the integration and acceptance of the role within the Malawian nursing cadre organizational structure; and 3) value added by the CNS role.

There are several notable areas where key stakeholders noted the value added of the CNS including interdisciplinary and interdepartmental collaboration, equipment function and use (procurement, management, staff training), managing complex clinical procedures (e.g. emergencies, peritoneal dialysis), implementing nursing rounds, holding staff trainings, and improved student teaching and coaching. There were also challenges noted including the impact of staff shortages on implementing CNS recommendations, the fact that involving staff in any meetings or training often resulted in additional shortages on the ward, the integration and acceptance of the role, the lack of understanding of the role and the fact that the CNS scope of work was close to the matron scope of work which created the potential for conflict.

This project adds to understanding the feasibility of implementing the CNS role KCHI, an environment with a dire shortage of nurses. The CNS role evolved in the US and the process of integrating this role within an African context is complex. In addition, change takes time and requires multiple improvement cycles. Going forward KCH plans to develop understanding of the role among the nursing staff as part of the next phase of pilot and to work with the Ministry of Health and Nurses Council on how the CNS role can fit with the current nursing and midwifery structure. Of note, the Nurses Council has developed core competencies for the APN role which is important to the uptake of the role in Malawi.

Midwifery-Led Model of Care in Malawi

Context/Background**:**

Maternal mortality is high in Malawi - 439 deaths per 100,000 mothers compared to 25 deaths per 100,000 mothers worldwide. Contributing to the high maternal mortality is the dire shortage of qualified midwives which has a significant impact on practice and mother/child outcomes, and creates a poor learning environment for midwifery students. The WHO recommends a ratio of 1 midwife for every 175 patients; in Malawi the ratio is one midwife to every 1,208 patients. Evidence supports the efficacy of midwifery practice in improving outcomes for mothers and neonates, however effective midwifery training programs, especially in low-resource settings, suffer from the limited access to resources, student exposure to unsafe practices, shortage of midwives and midwifery faculty, as well as lack of faculty control of the practice environment.

Historically, midwives in Malawi practiced autonomously, calling for medical intervention after they had carried out a clinical assessment and deemed it necessary. Recent advances in obstetrical training for medical doctors have sometimes had the effect of reconfiguring maternity wards in the medical model. Queen Elizabeth Central Hospital (QECH), a major referral hospital for complicated maternity cases, serves as a major training site for nurses/midwives from Kamuzu College of Nursing and medical students from the College of Medicine. At QECH, as the number of medical doctors being trained increased, midwifery practice was curtailed and the midwives were not able to practice to the highest extent of their education. Most clinical decisions, including those related to normal and low risk pregnancy and delivery are now referred to the medical doctors when in the past these situations would have been managed independently by the midwives. One result of this medically-oriented practice/ learning environment is that it does not promote midwifery students learning to use critical thinking skills and the midwifery faculty cannot model these skills. This presents a dilemma for the production of qualified midwives, the majority of who will go out to rural areas where they will need to be able to practice independently.

Although QECH is intended to care for complicated maternity cases, low risk cases are often referred to the hospital for reasons other than pregnancy complications such as a lack of staff at health centers, lack of supplies, and inadequate clinical assessments. This results in overcrowding with patients who are low risk in a setting that is highly medicalized and increases the potential for low risk patients to have caesarean sections strictly due to environment. This also creates a missed opportunity for the midwives on the unit to practice in the advanced practice role and to model this role for students. To address these issues, QECH and Kamuzu College, with support from the Global Health Service Partnership and Seed Global Health, proposed a pilot project to implement a midwifery-led ward within QECH where women who fall within the midwives scope of practice deliver their child under the care of midwives.

Progress to date:

The pilot will empower advanced practice midwifery at KECH. Safe, high quality care for pregnant women and neonates, a positive student learning environment and sustainability are primary goals. The setting will be a six bed labor/delivery and postnatal ward collaboratively managed by midwifery faculty and QECH Ministry of Health staff midwives. They will be guided by International Confederation of Midwives (ICM) protocols and standards of care, incorporating the Safe Motherhood Initiative and Respectful Care models. Based on the midwife's clinical judgement, medical doctors will be utilized for

interventions outside the midwifery scope of practice. Postnatal care will be provided in devoted beds linked to the midwifery ward. Rapid cycle change methods (plan-do-study-act) will be used to evaluate the development and implementation of the project. Priority areas of emphasis on the ward will include: respectful care of women, safe clinical judgement, and professional identity as independent practitioners and the promotion of childbirth as a normal physiological process.

As of September 2018 the midwifery-led ward has been approved by QECH and Kamuzu Colleges. A physical space has been identified, plans for renovation are in progress and committees have been formed to work on specific aspects of the project. Patient level outcomes including newborn and maternal morbidity and mortality, c-section rates, and overall complications will be tracked and compared to pre-implementation ward statistics. Student level competences will be evaluated by KCN.

Developing and Implementing the FNP Role in The Kingdom of Eswatini

Context/Background:

The Kingdom of Eswatini (formerly Swaziland) is a small, landlocked country in southern Africa with approximately 1.3 million people, 80% of whom live in rural areas. Shortages of human resources for health, a high burden of disease, the increasing complexity of population health problems, the emerging epidemic of NCDs, and systems issues make access to health care a challenge for the Eswatini population. To address these needs The Second National Health Sector Strategic Plan 2014-2018 identified human resource development to strengthen the skills and competencies of the healthcare professionals to prevent and mitigate the effects of infectious and NCDs as essential components of the country plan. The overarching outcome expected from the introduction of the FNP role in Eswatini is the improved health of the population through high quality, safe, comprehensive care at the point of service. To that end the University of Eswatini, in collaboration with Global Health Service Partnership program faculty and Seed Global Health implemented a masters level FNP program and undertook an assessment of the readiness to implement the role in Eswatini.

Progress to date

The FNP program evolved over time. An early FNP certificate program was implemented (1975-1995) but the nurses did not function in the advanced practice role. By the year 2000 there was general consensus that the role needed to be upgraded to include more emphasis on critical thinking and advanced practice (APN). From an initial stakeholder assessment (2005-2007) to determine priority health sector needs and the potential value that the FNP role could contribute, agreement emerged that it should be at the masters level to meet the country's needs. In 2010, University of Swaziland (now eSwatini) included this program in their strategic plan and curriculum development ensued. The program was officially approved by the university in 2017 and the eSwatini Nursing Council approved the expanded scope of practice for the FNP graduate that same year. The first cohort enrolled in August 2017 with BSc in Nursing as the entry requirement.

Currently the program is part time over three years. The curriculum includes pharmacology, pathophysiology, health assessment, clinically relevant coursework and courses intended to support the development of health-care leaders who can engage in policy, practice improvement and research. Initial outreach to medical doctors who can serve as preceptors has begun and students had their first clinical experiences in a variety of settings including palliative care. Since this is a new role for the country, the program will need to rely on

doctors as preceptors as there are no practicing NPs. This is a challenge in that the doctors are not expert in the nursing aspects of the role, but it also presents an opportunity for strong inter-professional collaboration going forward.

Providing appropriate clinical mentoring is also a challenge for faculty since few of the university faculty are prepared as APNs. To address this gap, partnering with institutions and/or faculty from other countries who are experienced APNs can provide important clinical support for the university during the early phase of introducing this role into the academic and clinical settings.

With the academic program established, the university, in collaboration with Seed, undertook a second round of stakeholder interviews to assess readiness to implement the role once students graduated. PEPPA guided the stakeholder assessment. Stakeholder meetings with health professionals and community members were carried out in all four regions of the country. Key informant interviews were conducted with policy makers, regulators, representatives of non-governmental organizations and the nurses association. Health centers, clinics, public health units and hospitals were included. Key themes that emerged from the stakeholder assessment included recommendations for education, policy and practice. Key recommended areas to optimizing APN education included a focus on emphasizing clinical practice, decision making and collaborative care. Key areas related to facilitating the successful deployment and integration of FNP graduates in to the eSwatini health care system included improving stakeholder awareness of the role, strengthening administrative support and essential resources needed to function in the role, assuring that regulatory mechanisms (credentialing etc), policies and procedures are developed that support the new graduate, assuring long term professional development to support the integration of these new clinicians and evaluating the impact of the role with the integration of real-time changes as needed.

Perspectives on Advanced Practice development in Tanzania

Scholastica Chibehe & Mwidini Ndosi

Background

Tanzania has a total population of 55 million, a maternal mortality rate of 556 per 100,000 live births, an under-five mortality rate of 67 per 1,000 live births, an infant mortality rate of 43 per 1,000 live births and a neonatal mortality rate of 25 per 1,000 live births. Perinatal mortality is 39 per 1,000 pregnancies.[104] The top ten causes of death are HIV (17%), lower respiratory infections (11%), malaria (7%), diarrheal diseases (6%), tuberculosis (5%), cancer (5%), ischemic heart disease (3%), stroke (3%), sexually transmitted infections (3%) and sepsis (2%).

Health services are provided by the government, non-governmental organisations, private practitioners and traditional practitioners. The referral system works in a pyramidal structure, where patients would first be seen in primary health care, then they would be referred to a district hospital, regional hospitals and finally to either of the 4 large referral/consultant hospitals.

The need for APNs

The quality of health service delivery in Tanzania is hampered by critical shortage of skilled health workers at all levels. The Task Sharing Policy Guidelines for Health Sector Services

was therefore introduced to address the shortage of skilled health workers .Task sharing is currently implemented from dispensary to district hospital levels, mainly in rural areas where there are no doctors and/or nurses/midwives to undertake extended roles including assessment, diagnosis, prescribing and referring patients.

Tanzania Nurses and Midwifery Council (TNMC) allows extended roles: '*in the absence or shortage of a medical clinician, the nurse shall prescribe medicines, perform minor surgical procedures, and carry out other complex tasks requiring special knowledge (as per relevant protocols and according to the providers' knowledge, skill, and judgement)"*

Nurses and midwives constitute the majority of workforce in Tanzania and investment in advancing nursing and midwifery has the potential to significantly strengthen the provision of maternal and child healthcare services. With appropriate training, APNs will be involved in provision of high quality direct care as well as training and clinical leadership. This has the potential to ensure equity of care between rural and urban populations. Advanced roles will increase the efficiency of the valuable workforce.

In the context of Tanzania, APNs will be a cadre of highly experienced professionals who have undergone further training and education in their respective fields, to enable them to practice autonomously. The proposed level of training is Master of Science in Advanced Practice. Currently, out of 5 universities offering degree level nursing education, there is only one (Muhimbili University of Health Sciences) that is offering nursing education at Master's level. This programme could be hosted in partnership with this or another university.

Advancing Nursing Practice in Rural Tanzania

Jane Blood-Siegfried

Kilimanjaro Christian Medical University College (KCMUCo) faculty of nursing in Tanzania and Duke University School of Nursing, USA identified a deficit of primary care providers in rural areas of Tanzania through collaborative research. Nurses are providing health care without the advanced training necessary to be safe and effective. This is most prevalent at the dispensary level where 95% of nurses prescribe medication and treatment for patients. The majority (93%) of these rural nurses are educated at certificate or diploma levels.[105] With 70% of the population living in rural areas, these nurses are an important work force for the country. Most of them live in the areas where they serve and have deep roots that will keep them there. The consensus of nurses, consumers of health care, health managers, and non-nursing providers alike was that nurses should receive training in skills to provide comprehensive primary care as a solution to the lack of providers. Empowering these providers will improve rural health care.[106]

In order to gather information about the role and acceptance from politicians, providers and educational stakeholders in Tanzania we convened a national consensus meeting in Arusha,Tanzania in February 2015. The group of politicians and policy makers under the Minister of Health and Social Welfare helped us define the NP role and outline a path forward.[107] The proposed program is consistent with the standards in Nursing and Midwifery Act and Scope of Practice developed by Tanzania Nurses and Midwifery Council.[108,109] This program will run per stipulated guideline of professional bodies and meets the competencies of practice defined by the ICN.[110]

In 2018 the Ministry of Health approved KCMUCo as a pilot site for NP education in Tanzania. The NP role is integral for providing preventative services and the care of people presenting with common acute and chronic illnesses in collaboration with other health professionals. NPs are specifically trained to improve individual and community health needs important for meeting the SDG's.
Training will involve a 3-year program of study at the BSc level with integration of the medical school basic science core: a blended program with both face-to-face and online teaching modules for diploma nurses that will enable them to continue working in their communities. Training providers within their communities encourages them to stay once they are finished.

Advanced practice for nurses has developed differently in every country around the world. As we work on developing this role across Africa, we must focus on the needs of individual countries and communities rather than forcing a "one size fits all" international agenda. The goal is to provide high quality care based on the assessment of need and guided by ICN core competencies. This is no small task, we need all of us working together to achieve the goal for better health care in Africa. Our colleagues in Botswana, Ghana, and other countries with a fully functional NP role have the experience to guide this complex process.

APN in Uganda

Dr. Lori Spies

There is a long history of nurses being utilized in advanced practice roles in Uganda. Due to the lack of adequate numbers of physicians, nurses have provided primary and specialist health care through formal and informal task-shifting for decades.[111,112,113] The number of nurses who have assumed an advanced practice type of role increased as a result of the HIV/AIDS epidemic.[114] The HIV nurse-prescriber model continues to improve population access to HIV care and enhances outcomes. However, the preparation and regulatory support for the implementation of task shifting is inconsistent and often inadequate.[115,116,117,118] Nurses provide more than 80% of healthcare in Uganda but often are expected to work beyond their level of preparation.[119,120] Task-shifting meets a need but falls short of what a robust APN model would contribute to meeting population health needs.

HIV, malaria, and tuberculosis are leading contributors to morbidity and mortality in Uganda and non-communicable diseases are rapidly increasing. The dual burden creates a significant need for integrative primary care to meet episodic and chronic population health issues. It is both efficient and effective to prepare nurses to assume an expanded role within formal and accepted parameters. Advance practice nurses who have been formally trained and operate within a regulated scope of practice can better meet the needs filled by task shifting.

The APN role does not exist in Uganda but there are several nursing programs in Uganda that offer master's degrees. There is infrastructure in place for graduate education and the increasing number of doctorally prepared nurses in Uganda developing, and implementing an APN program is feasible. Additionally the Ugandan Nursing Council has recently added a requirement of sixty hours of continuing professional development. That requirement will allow the cultivation of capacity building programs that can target primary care issues and lend support to the need for the APN role. Currently being created is a program that will

prepare nurses to provide comprehensive non-communicable disease care following the HIV nurse prescriber model. The nursing education expertise in Uganda, coupled with the significant need to upscale comprehensive PHC has created an ideal time for the formal NP role. Reaching the SDGs and achieving UHC will be more readily achieved in Uganda if the work nurses are doing through task shifting is transitioned to the advanced practice nursing role.

Developing a sustainable NP workforce: lessons from the UK

Jeshni Amblum-Almér

Healthcare is under increasing pressure to meet the needs of an ageing population with increased chronic diseases and co-morbidities. Nursing has adapted to this challenge since the 1890s, and become more formally recognized in the 1960s, in response to the needs of patients with chronic and complex conditions and the growing shortage of medically trained doctors, especially in rural areas, to meet this demand. Despite formal legislation and regulation, patient needs have driven the development of this role. The NP has emerged as a workforce of skilled nurses who are trained at advanced level and working in extended roles to meet these demands.

The unique selling point of advanced practice roles is not only the ability to manage complex care, but also to promote self-management. Far from being a simple physician substitute, a new kind of worker has evolved to meet patient needs often working well as part of a multidisciplinary team. Specialist nurses are attributed with adding value to the quality of care, being valued by both patients and other healthcare providers as the “key accessible professional.[121,122] Literature suggests that speciality and community NPs are invaluable in sustaining service development, patient safety and quality of care in chronic diseases.[123]

The NP role shares many common features as well as aspects unique to the county and it's authorising bodies that regulate nursing.[124] Revised scope of practice over the last decade in different countries has resulted in variations in the implementation of NP roles in different country contexts.[125,126] Findings are largely in line with a report by the American College of Physicians, suggesting that 60–90% of primary care can be provided by NPs.[127] The study showed that this increasing workforce should be more closely monitored to expand capacity and access to healthcare services.

In the UK, the role has been applied widely in both primary and secondary care. However, there has been a lack of consistency in scope of practice, training and regulation. APNs are regulated by one of three different bodies: nationally by central government or a professional body, or locally by employers. In the UK, the role is regulated by local procedures, relying on employers to make decisions about the scope and preparation for practice. Some of the challenges in the UK in relation to ANP regulation are discussed, including variations in scope, organisational constraints and lack of support. These challenges are exacerbated by a lack of role clarity, thereby indicating there is a need to improve regulation of ANPs. It is therefore imperative to develop a comprehensive, culturally tailored approach to healthcare and caring for patients with chronic or complex conditions. In order for nurses to work in extended or advanced roles, urgent reforms are needed to ensure adequate numbers of well-trained nurses to provide high-quality nursing care, while paving the way for them to assume the role of NP.

The NP role requires close regulation to ensure patient safety and public protection. The introduction of a standardised global programme will encourage robust governance, increased international transferability and provide additional layers of monitoring of competencies, education and evidence based practice. Nurse leaders and educators need access to critically appraised and best evidence in a form that is relevant, practical and adapted to the local setting.[128] Nursing is evolving around the globe, and nursing in Africa should be on a comparable platform with international counterparts.[129,130]

The NP is dynamic, evolving and should be research-driven to meet local needs, hence curricula for NP programmes across Africa should be supported by stakeholders that will form a policy that will enhance NP programme development and be informed by leading clinicians and academics from around the world to ensure a curriculum that maps global standards and is designed with a consideration of local needs. Ideally programmes should be at ,asters Level, with streamlined postgraduate training to support continued evidence based practice that reflects the health strategies of the WHO. This growing workforce has become integral to sustaining healthcare needs, especially in rural and underserved areas. This growth needs close monitoring and supervision to ensure a robust curriculum design structured to align to the needs of Africa but sustainable and transferable globally.

APN Examples from Francophone Countries beyond Africa

Dr. Madrean Schober

Advanced nursing roles in France have evolved incrementally and slowly over the past due to numerous barriers, such as a restrictive legal framework on nurses' scope-of-practice and a strong opposition by medical associations. However, the legal context has changed in France recently. In January 2016, a new Act on modernising health care was adopted, establishing so-called « medical auxiliaries » in advanced roles.[131] This new law opens up the way for more legal autonomy of paramedical professionals including nurses, especially for the routine follow-up of patients with chronic conditions. The law authorises the possibility to adapt medical prescriptions and to renew medical prescriptions. This expanded clinical practice applies to approximately 3% of the nursing profession.

The legal change has been made possible due to various factors, including the evolution of the National Council of French physicians' position toward a more favourable opinion and the general support of the French authorities. Moreover, pilot projects experimenting with new roles for nurses in primary care in collaboration with general practitioners, such as ASALEE4 or SOPHIA5, showed the positive impact that more APN could play in the management of chronic conditions, such as for diabetes. The ASALEE model has multiplied since 2012 and is now covering 14 regions, whereas the SOPHIA model covers all of France for patients with diabetes and 18 regions for patients with asthma.

The models have demonstrated positive results in expanding access to patients, and improving the effectiveness and quality of care.[132] This year, in 2018, a decree & articles were announced for role implementation and educational program development. There is a lot of tension and conflict as to how this should proceed, as the medical schools are taking a dominant role but, although somewhat restrictive, the documents look acceptable to start another phase of the initiative.

There has been interest in Switzerland and Belgium, but lagging far behind anglophone counterparts. French speaking universities in Montreal & Quebec are offering assistance to francophone countries in Europe.

Conclusion

The integration of APN roles into the skill mix of healthcare delivery is complex but the concept of strategic planning is essential in workforce planning and role development. Regulation of APN roles is key for public and patient protection as well as promotion of nursing professional standards (Leary *et al* 2017). The application of validated advanced nursing practice models and frameworks, clear scope of practice and education standards embedding interprofessional education/collaborative practice is essential in APN development in delivery of high quality, safe, efficient and effective health services to patients and populations. This is a time for African nurses and midwives to lead together with other healthcare professionals in making this a reality for their communities.

Authors and contributors

Jeshni Amblum-Almér
MA Health Law and Ethics, Pg Cert Education, FHEA
Member of Council and Senior Associate GP and Primary care Section at the Royal Society of Medicine, Member International Medical Ethics, External Examiner Glyndwrr University
Course Director - Belmatt Healthcare Training

Daniel Apau RN MSc (ANP-UK) PGDip (Academic Practice) FHEA
Adjunct Faculty – Nursing (LSCS Houston Texas)

Lydia Aziato PhD RN
Ag. Dean, School of Nursing and Midwifery
University of Ghana

Jane Blood-Siegfried PhD CPNP
Director of Global Educational Programs and Initiatives
Duke University School of Nursing

Sharon Brownie
Dean of Nursing & Midwifery East Africa
Aga Khan University

Petra Brysiewicz
School of Nursing & Public Health
University of KwaZulu-Natal, South Africa

Cynthia Chaibva PhD RN RM
Chairperson and Senior Lecturer
Department of Nursing and Midwifery
National University of Science & Technology (NUST)
Zimbabwe

Scholastica Chibehe
Nurse-Midwife Technical Advisor, Jhpiego Tanzania
International Ambassador - AANP

Mabel Chinkhata, MPH, RN. Malawi

Megan Coe, RN, MSN. Malawi

Christmal Dela Christmals
Centre for Health Policy, School of Public Health, University of Witwatersrand

Janet Dewan, PhD, CRNA. USA

Colile Dlamini, PhD, RN. Eswatini

Nelouise Geyer, RN PhD
Nursing Education Association

Louise Kaplan, PhD, ARNP, FAANP, FAAN. US

Ursula Kafulafula, PhD, MSN, BSN, RN, CNM. Malawi

Mabedi Kgositau, MSN (FNP) RM, RN
University of Botswana
International Ambassador-AANP

Gabatsene Kwadiba, Pharm-D, MSc Diabetes
Clinical Pharmacist-Orapa Mine Hospital, Orapa, Botswana
Honorary Lecturer (Post-graduate Diploma in Diabetes)-University of South Wales, United Kingdom

Wilmot M. Fassah, RN, RNA, BSc. Liberia

Deborah C. Gray, DNP, MSc, ANP-BC, FNP-C, FAANP
Visiting Professor, US Fulbright Scholar, University of Botswana
FNP Graduate Program Director, Old Dominion University, Norfolk VA USA
International Council of Nurses NP/APNN Network Research Subgroup Co-Chair

Mmule Magama, DNP MEd (Counselling and Human Services); BEd (Nursing Administration); Family Nurse Practitioner (Dip); Midwifery (Dip); General Nursing (Dip.)
University of Botswana

Minna Miller, DNP MSN BA NP(F) FNP-BC FAANP
ICN NP/APN Network Health Policy Subgroup Co-Chair
Family Nurse Practitioner, BC Children's Hospital
NP Collaborative Practice Lead, Provincial Health Services Authority
Adjunct Professor, University of British Columbia

Heather Henry-McGrath MSN FNP
President of the Jamaica Association of Nurse Practitioners, Jamaica
International Ambassador-AANP

Idah Moyo, PhD MScN BA RGN RMN FHEA ; Area Manager (Bulawayo/Mat South Provinces), PSI -Zimbabwe

Hon. Senator Dr. Bekithemba Mpofu, Zimbabwe

Lozithelo Mpofu, LLB (Hons) MBA Exec. Diploma in NGO Governance
Lawyer in Private Practice
Zimbabwe

Hon. Daniel Molokele, MP for Whange, Zimbabwe

Eunice Ndirangu PhD MSc –ANP
Academic Head, Aga Khan University School of Nursing & Midwifery
Kenya

Thenjiwe Ndiweni CIPD RGN, BSc, MA (Human Resources Management)

Mwidini Ndosi PhD MSc BSc(Hon) PgCert(Clin Ed) RN FHEA
Senior Lecturer in Rheumatology Nursing
University of the West of England

Thembi Nkala MSc BSc (Hons) RN
Senior Healthcare Manager & Clinical Nurse Specialist (Cardiology)

Etienne Nsereko, RNA, BNE, MSc CCN, MSc-Epidemiology. Liberia

Linda Robinson, RN, MSN, CNM. Malawi

Madrean Schober, PhD, MSN, ANP, FAANP
President, Schober Global Healthcare Consulting
International Healthcare Consultants

Patricia Scott PhD RN
Programme Director, Doctorate in Health Research
Centre for Research in Public Health and Community Care
University of Herforshire, UK

Bongi (Sibonginkosi) Sibanda, RN BSc(Hons) MSc-ANP PgCert FHEA
DNP(c) Queen's University Belfast
Advanced Nurse Practitioner (Emergency and Primary Care)
Nurse Consultant in Advanced Practice / Educator
International Ambassador-AANP

Thabani Sibanda, MBCHB MRCOG FRANZCOG MSc in Statistics PGDip Quality Systems
Specialist in OBS &GYNAE, Honorary Senior Lecturer in Obs &Gynae (University of Aukland), Expert in Healthcare Quality Improvement

Aaron K. Sonah, RN, RNA, BSc, MS-Epidemiology. Liberia

Stefanus Snyman
Occupational Medicine Practitioner | Health Professions Educationist | mHealth Instigator | Partnership Facilitator
MB, ChB; MPhil (HealthScEd); DOM
Facilitator: International *m*ICF Partnership
Chairperson: Africa Interprofessional Education Network (AfrIPEN)

Lori A. Spies PhD RN NP-C
Assistant Professor
Baylor University
Louise Herrington School of Nursing

Stacie C. Stender, MSN, MSc Infectious Disease, FNP, RN
Sr. Technical Advisor, Jhpiego – an affiliate of Johns Hopkins University
Associate, Johns Hopkins University Bloomberg School of Public Health

Eileen Stuart-Shor, PhD, ANP-BC, FAHA, FAAN. US

Edna Tallam-Kimaiyo BSN MPH
Registrar and Chief Executive Officer
Nursing Council of Kenya

Samuel Wainaina Mwangi RN
Global Nurses Leadership Institute Scholar
Certified TB in HIV and FP mentor; Lead nurse Africa: East Africa coordinator,
Chairperson: journal and publicity committee-national nurses association of Kenya

Neslyn-Watson-Druee CBE FRCN FCGI
Professional International Public Speaker and Executive Coach
Beacon Organisational Development Ltd

Dean Whiting, RN BN(Hons) BSc(Hons) PgCert PgCAP MSc FHEA

Nick Woznitza, PhD PgDip PgCert BSc FBIR MASMIRT(AP)
Consultant Radiographer, Homerton University Hospital, UK
Clinical Academic, Canterbury Christ Church University, UK
Clinical Advisor, University College London Hospital, UK

Acknowledgements

We greatly appreciate the opportunity to formally write our case for Advanced Practice Nursing in Africa in the form of a proposal. Our gratitude goes to the WHO-AFRO Health systems leadership over the last year, Dr Delanyo Dovlo and Dr Prosper Tumusiime for their willingness to listen to our request, providing invaluable time for discussions and meetings towards this work.

This Project has been initiated and coordinated by Sibonginkosi Sibanda, an Advanced Nurse Practitioner in Emergency & Primary Care; registered and practicing in Zimbabwe and the United Kingdom. Bongi has a distinguished nursing career and extensive healthcare experience across clinical, education, leadership and research practice. Bongi has supported students from various disciplines in clinical practice and higher educational

settings including nurses, pharmacists, medical students and junior medical doctors. She is an OSCE Examiner for medical students (MBBS) for Barts and the London School of Medicine, Queen Mary University of London and a freelance lecturer in advanced practice. She practices clinically in Unscheduled Care (urgent and primary care) and is an expert Research Ethics Committee member (Health Research Authority). A former Senior Lecturer in Advanced Practice at London South Bank University; Academic Tutor (University of Sunderland –London) with expertise and experience in international education and advanced practice. Formerly Practice Subgroup Co-Chair - International Council of Nurses (ICN) Nurse Practitioner/Advanced Practice Nurse (NP/APN) Network and a Core Steering Group member. Bongi is one of the four International Ambassadors of the American Association of Nurse Practitioners (AANP) and a board member of Africa Interprofessional Education Network (AfrIPEN).

Bongi Sibanda is grateful for the support of the ICN NP/APN Network and Chair Dr. Melanie Rogers; Dr. Kathy Wheeler and the AANP International Committee; Ms. Stacie C. Stender and her colleagues at Jhpiego; NursingNow leadership; Dr. Stefanus Snyman and AfrIPEN colleagues; Dr. Henry Lawson, Dr. Cherifa Sururu and Daniel Apau; DNP faculty at Queen's University Belfast, in particular her supervisors Drs. Kevin Gormley and Jennifer McGaughey.

And to all global colleagues who contributed towards the Anglophone Africa APN project, directly and indirectly – thank you. Your dedication, time and effort is greatly appreciated. I look forward to more collaborations in this cause.

Bongi Sibanda –DNPc, MSc-ANP FHEA RN

Proposal Endorsement

Edna Tallam-Kimaiyo MPH BSCN RN; Registrar and CEO, Nursing Council of Kenya

Dr Lydia Aziato PhD RN; Dean School of Nursing and Midwifery, University of Ghana

References

[1] & 94 Scott T. & Brysiewicz P (2016). 'African emergency nursing curriculum: Development of a curriculum model'. *International Emergency Nursing*, July 27: 60-63. Open Access.

[2] &78 Bryant-Lukosius D, & DiCenso A. (2004). A framework for the introduction and evaluation of advanced practice nurse roles. *Journal of Advanced Nursing, 48*(5), 530-540.

[3] Schober *et al* 2016

4 &72Leary, A., Maclaine, K., Trevatt, P, Radford, M., & Punshon, G. (2017). Variation in job titles within the nursing workforce. Journal of clinical nursing. Doi:10.1111/jocn.13985

[5] International Council of Nurses (2008) *Scope of Practice, Standards and Competencies of the Advanced Practice Nurse*. ICN: Geneva.

[6] Centre for the Advancement of Interprofessional Education (2002) Interprofessional educaion-Today, yesterday and tomorrow. Available at:

https://www.caipe.org/resources/publications/caipe-publications/caipe-2002-interprofessional-education-today-yesterday-tomorrow-barr-h (Accessed 2 October 2018)

[7] Africa Interprofessional Education Network (2017) What is AfriPEN? Available at: https://afripen.org/what-is-afripen/ (Accessed 2 October 2018)
[8] https://www.ncsbn.org/aprn-consensus.htm
[9] APPG 2016
[10] http://www.who.int/hrh/com-heeg/digital-APPG_triple-impact.pdf
[11] http://www.icn-apnetwork.org/
[12] https://www.aanp.org/
[13] http://afripen.org/people/
[14] https://nursing.jhpiego.org/
[15] http://www.nursingnow.org/
[16] World Health Organisation (2010). Nursing and Midwifery Unit Regional Office for South East Asia. *Guidelines: Nursing and Midwifery Workforce Planning*.
[17] Ibid
[18] Swan M, Ferguson S, Chang A, et al. Quality of primary care by advanced practice nurses: A systematic review. *Int J Qual Heal Care* 2015; 27: 396–404.
[19] Canadian Nurses Association. *Advanced Nursing Practice A National Framework*. Ottawa, 2008
[20] Currie J, Chiarella M, Currie J. An investigation of the international literature on nurse practitioner private practice models. *Int Nurs Rev* 2013; 435–447.
[21] East LA, Arudo J, Loefler M, et al. Exploring the potential for advanced nursing practice role development in Kenya: a qualitative study. *BMC Nurs* 2014; 13: 33.
[22] Duffield C, Gardner G, Chang A, et al. Advanced nursing practice: a global perspective. *Collegian* 2009; 16: 55–62.
[23] Sheer B, Wong YKF. The Development of Advanced Nursing Practice Globally. *J Nurs Scholarsh* 2008; 40: 204–211.
[24] Hutt JS, Bc A, Newhouse RP, et al. The Quality and Effectiveness of Care Provided by Nurse Practitioners. *J Nurse Pract* 2013; 1–21.
[25] Pirret AM, Neville SJ, La Grow SJ. Nurse practitioners versus doctors diagnostic reasoning in a complex case presentation to an acute tertiary hospital: A comparative study. *Int J Nurs Stud* 2015; 52: 716–726.
[26] Seale C, Anderson E, Kinnersley P. Comparison of GP and nurse practitioner consultations: An observational study. *Br J Gen Pract* 2005; 55: 938–943.
[27] Chang AM, Gardner GE, Duffield C, et al. A Delphi study to validate an Advanced Practice Nursing tool. *J Adv Nurs* 2010; 66: 2320–2330.
[28] INEPEA. *Advanced Nursing Practice Competence/ Capability in East Africa*, https://www.building-leadership-for-health.org.uk/app/download/3727593/01+INEPEA+Competence+and+Capability+course+framework.pdf (2008).
[29] Kaasalainen S, Martin-Misener R, Kilpatrick K, et al. A historical overview of the development of advanced practice nursing roles in Canada. *Nurs Leadersh* 2010; 23: 35–60.
[30] Sastre-Fullana P, Morales-Asencio JM, Sesé-Abad A, et al. Advanced Practice Nursing Competency Assessment Instrument (APNCAI): clinimetric validation. *BMJ Open* 2017; 7: e013659.

[31] Collaghan M, Ford N, Schneider H. A systematic review of task- shifting for HIV treatment and care in Africa Review. *Hum Resour Heal* 2010; 8: 1–9.
[32] Fairall L, Bachmann MO, Lombard C, et al. Task shifting of antiretroviral treatment from doctors to primary-care nurses in South Africa (STRETCH): A pragmatic, parallel, cluster-randomised trial. *Lancet* 2012; 380: 889–898.
[33] Nyasulu JCY, Muchiri E, Mazwi SL, et al. NIMART rollout to primary healthcare facilities increases access to antiretrovirals in Johannesburg: An interrupted time series analysis. *South African Med J* 2013; 103: 232–236.
[34] Frenk J, Chen L, Bhutta ZA, et al. Health professionals for a new century : transforming education to strengthen health systems in an. *Lancet* 2010; 376: 1923–1958.
[35] ECOSOC. *Progress towards the Sustainable Development Goals: Report of the Secretary General*. Epub ahead of print 2017. DOI: 10.1017/S0020818300006640.
[36] Liu L, Oza S, Hogan D, et al. Global , regional , and national causes of under-5 mortality in 2000 – 15 : an updated systematic analysis with implications for the Sustainable Development Goals. *Lancet 2016* 2016; 388: 3027–35.
[37] Ahmed M, Vellani CW, Awiti AO, et al. Medical education: meeting the challenge of implementing primary health care in sub-saharan Africa. *Infect Dis Clin North Am* 2011; 25: 411–420.
[38] Tong B. *Describing The Health Care Needs Of School-Age Children In Sub-Saharan Africa In Order To Develop A Model Of A Nurse-Run School-Based Health Clinic*. Yale University, http://elischolar.library.yale.edu/ysndt/1044 (2015, accessed 26 June 2017).
[39] Mwangi SW. *How International Council Of Nurses Can Export Advanced Registered Nurse Practitioner Policies To Africa .* Geneva, http://www.icn.ch/forum/viewtopic.php?f=47&t=780&sid=10aef347f40dc3f4be5a329b712a1a55 (2017).
[40] Asuquo EF, Etowa J, John M, et al. Assessing Nurses' Capacity for Health Research and Policy Engagement in Nigeria. *J Appl Med Sci* 2013; 2: 35–51.
[41] Rispel LC, Blaauw D, Chirwa T, et al. Factors influencing agency nursing and moonlighting among nurses in South Africa. *Glob Health Action*; 7. Epub ahead of print 2014. DOI: 10.3402/gha.v7.23585.
[42] Rispel LC. Transforming nursing policy, practice and management in South Africa. 2015; 1: 8–11.
[43] International Council of Nurses. *Nurses: A Force for Change*. Geneva, http://www.denosa.org.za/DAdmin/upload/news/IND_2015-Eng1.pdf (2015, accessed 12 July 2018).
[44] International Council of Nurses. Nursing and Health Policy Perspectives. *Int Nurs Rev* 2015; 283–284.
[45] Adjapon-Yamoah GT. *Possibilities For Advanced Practice Nursing Through The Eyes Of Physicians : A Descriptive Qualitative Study In*. Yale University, http://elischolar.library.yale.edu/ysndt/1021/ (2015).
[46] Mccarthy CF. *Description of Nursing Regulation and Nursing Regulatory Bodies in East, Central, and Southern Africa*. University of Washington, 2012.
[47] Bhanbhro S, Dennan VM and Harriss, R (2011) Assessing the contribution of prescribing in primary care by nurses and professionals allied to medicine: a systematic review of literature. *BMC Health Services Research*, 11:330
[48] Seitio OS (2000) *The Family Nurse Practitioner in Botswana: Issues and Challenges: The 8th International Nurse Practitioner Conference*. San Diego, California, USA, September 28- October 1.USA: International Nurse Practitioner Conference.

[49] Association of Pediatric Nurse Practitioners Professional Issues Committee (2016) 'Position Statement on Nurse Practitioner Prescriptive Privileges', *Journal of Pediatric Health Care*,30(3),pp. A15-A16 [Online].Available at: https://www.jpedhc.org/article/S0891-5245(16)00046-8/fulltext (Accessed:25 September 2018)
[50] Department of Health (1999) *Review of Prescribing, Supply and Administration of Medicines.* Dept of Health, London.
[51] National Prescribing Centre (2016) *A single competency framework for all prescribers.* Available at: https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Professional%20standards/Prescribing%20competency%20framework/prescribing-competency-framework.pdf
[52] Misuse of Drugs Regulations 2001 Availble at: http://www.legislation.gov.uk/uksi/2001/3998/contents/made (Accessed 20 September 2018)
[53] Jones K, Edwards M, and While A. (2011) 'Nurse prescribing roles in acute care: an evaluative case study.' *Journal of Advanced Nursing*, 67**,** pp. 117-126.
[54] Carey N and Stenner (2011) Does non- medical prescribing make a difference to patients*? Nursing times*, 107, (26), 14-16.
[55] Royal College of Nursing (2012) RCN Competencies: Advanced nurse practitioners. An RCN guide to advanced nursing practice, advanced nurse practitioners and programme accreditation. RCN, London.
[56] Health and Care Professions Council HCPC (2018) Medicines and Prescribing Available at**:** http://www.hpc-uk.org/aboutregistration/medicinesandprescribing/?dm_i=2NJF,OPHA,36FM37,2IZP0,1 (Accessed 20 September 2018)
[57] Nuttal D and Rutt-Howard J. (2011) *The textbook of non- medical prescribing*. John Wiley &Sons Ltd: Chichester.
[58] https://www.nhsbsa.nhs.uk/prescription-data/dispensing-data/prescription-cost-analysis-pca-data
[59] Kleinpell R. (Ed.) (2017). Outcome assessment in advanced practice nursing. New York, New York: Springer Publishing Company.
[60] Martin-Misener R, Harbman P, Donald F, Kilpatrick K, & Carter N. (2015). Cost effectiveness of nurse practitioners in primary and specialized ambulatory care: a systematic review. BMJ Open, 5(6). Doi:10.1136/bmjopen-2014-007167
[61] Swan M, Ferguson S, Chang A, Larson E, & Smaldone A. (2015). Quality of primary care by advanced practice nurses: A systematic review. *International Journal for Quality in Healthcare: Journal of the International Society of Quality in Healthcare/ Isqua, 27*(5), 396-404. Doi: doi:10.1093/intqhc/mzv054
[62] Bryant-Lukosius, D., & Martin-Misener, R. (2016). *ICN Policy Brief Advanced Practice Nursing: An essential component of country level human resources for health*. ICN. Geneva, Switzerland. Retrieved from: http://www.who.int/workforcealliance/knowledge/resources/ICN_PolicyBrief6AdvancedPracticeNursing.pdf
[63] Bryant-Lukosius, D., Valaitis, R., Martin-Misener, R., Donald, F., Moran-Pena, L., & Brousseau, L. (2017). Advanced practice nursing: A strategy for achieving universal health coverage and universal access. *Revista Latino-Americana de Enfermagem, 25.* Doi 10.1590/1518-8345.1677.2826 Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5288863/

[64] International Council of Nurses. (2013a). Position statement: Nursing regulation. Geneva, Switzerland. Retrieved from https://www.icn.ch/sites/default/files/inline-files/B04_Nsg_Regulation.pdf

[65] Lowe, G., Plummer, V., O'Brien, A.P., and Boyd, L. (2011). Time to clarify-the value of advanced practice nursing roles in health care. *Journal of Advanced Practice Nursing, 68(*3), 677-685. Doi: 10.1111/j.1365-2648.2011.05790.x

[66] Maier, C.B., Aiken, L.H., & Busse, R. (2017). Health Working Paper No. 98: Nurses in advanced roles in primary care. Organization for economic co-operation and development (OECD). Retrieved from http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DELSA/HEA/WD/HWP(2017)8&docLanguage=En

[67] Schmitt, K. and Shimberg, B. (1996). *Demystifying Occupational and Professional Regulation: Answers to Questions You May Have Been Afraid to Ask, Council on Licensure, Enforcement and Regulation*. As quoted in National Council of State Boards (2006): Changes in Health professions scope of practice: legislative consideration. Retrieved from: https://www.ncsbn.org/Scope_of_Practice_2012.pdf

[68] Miller L. (2016). Understanding regulatory, legislative, and credentialing requirements. In E. Staples, S. Ray, and R. Hannon (Eds.) *Canadian perspectives on advanced practice nursing* (pp.37-53). Toronto, ON: Canadian Scholars' Press Inc.

[69] Heale, R., & Buckley, R. (2015). An international perspective of advanced practice nursing regulation. *International Nursing Review, 62*, 421-429. doi: 10.1111/inr.12193 Retrieved from: https://www.researchgate.net/profile/Roberta_Heale/publication/278045776_An_international_perspective_of_advanced_practice_nursing_regulation_APN_regulation/links/564c6b1808aeab8ed5e92a12/An-international-perspective-of-advanced-practice-nursing-regulation-APN-regulation.pdf

[70] Chornick, N. (2008). NCSBN Focus: APRN licensure versus APRN certification: What is the difference? *JONA's Healthcare law, ethics, and regulation, 10*(4), 90-93. Retrieved from https://www.nursingcenter.com/journalarticle?Article_ID=830919&Journal_ID=260876&Issue_ID=830914

[71] Carney, M. (2016). Regulation of advanced nurse practice: Its existence and regulatory dimensions from an international perspective. Journal of Nursing Management, 24, 105-114. Doi:10.1111/jonm.12278

[72] Leary, A., Maclaine, K., Trevatt, P, Radford, M., & Punshon, G. (2017). Variation in job titles within the nursing workforce. Journal of clinical nursing. Doi:10.1111/jocn.13985

[73] World Health Organization. (2016). *Global strategy on human resources for health: Workforce 2030*. Available at: http://www.who.int/hrh/resources/global_strategy_workforce2030_14_print.pdf?ua=1

[74] International Council of Nurses. (2001-2018). Definitions and characteristics of the role. Retrieved from https://international.aanp.org/Practice/APNRoles

[75] International Council of Nurses. (2013b). Position statement: Scope of nursing practice. Geneva, Switzerland. Retrieved from https://www.icn.ch/sites/default/files/inline-files/B07_Scope_Nsg_Practice.pdf

[76] APRN Joint Dialogue Group. (2008). *APRN Consensus Model for APRN Regulation: Licensure, accreditation, education, certification*. Retrieved from https://www.ncsbn.org/Consensus_Model_for_APRN_Regulation_July_2008.pdf

[77] Schober M. (2017). *Strategic planning for advanced nursing practice*. Geneva, Switzerland: Springer International Publishing. doi: 10.1007/978-3-319-48526-3

[78] Bryant-Lukosius D, & DiCenso A. (2004). A framework for the introduction and evaluation of advanced practice nurse roles. *Journal of Advanced Nursing, 48*(5), 530-540.
[79] Canadian Nurses Association. (2008). Advanced nursing practice: A National framework. Retrieved from https:///www.cna-aiic.ca/-/media/cna/page-content/pdf-en/anp_national_framework_e.pdf
[80] Canadian Nurses Association. (2016). The Canadian nurse practitioner initiative: A 10-year retrospective. Ottawa, Canada: Canadian Nurses Association. Retrieved from https://cna-aiic.ca/-/media/cna/page-content/pdf-en/canadian-nurse-practitioner-initiative-a-10-year-retrospective.pdf?la=en&hash=406D8F34F947CFD94DA04AE0CF56A739514D01B7
[81] Siddiqi K, Newell JN. Putting evidence into practice in low-resource settings. *Bulletin of the World Health Organization* 2005;83(12):881-968.
[82] Radiographers Co. Code of Professional Conduct. London: College of Radiographers, 2013.
[83] Department of Health. The NHS Plan. Norwich, 2000.
[84] Parris W, McCarthy S, Kelly AM, et al. Do triage nurse-initiated X-rays for limb injuries reduce patient transit time? *Accident and Emergency Nursing* 1997;5(1):14-15. doi: 10.1016/s0965-2302(97)90056-4
[85] Ward W. Key issues in nurse requested X-rays. *Emerg Nurse* 1999;6(9):19-23. doi: 10.7748/en1999.02.6.9.19.c1256 [published Online First: 1999/11/05]
[86] World Health Organzation. What are the key health dangers for children? Geneva: World Health Organization; 2013 [updated September 2012. Available from: http://www.who.int/features/qa/13/en/index.html accessed 18/06/2013 2013.
[87] Department of Essential Health Technologies. Essential Diagnostic Imaging. Geneva: World Health Organisation, 2016.
[88] Allerston J, Justham D. Nurse practitioners and the Ottawa Ankle Rules: comparisons with medical staff in requesting X-rays for ankle injured patients. *Accid Emerg Nurs* 2000;8(2):110-5. doi: 10.1054/aaen.2000.0103 [published Online First: 2000/05/20]
[89] Thompson N, Murphy M, Robinson J, et al. Improving nurse initiated X-ray practice through action research. *J Med Radiat Sci* 2016;63(4):203-08. doi: 10.1002/jmrs.197 [published Online First: 2016/10/18]
[90] Wolf, L., Brysiewicz, P., LoBue, N., Heyns, T., Bell, S., Coetzee, I., et al., 2012. Developing a framework for emergency nursing practice in Africa. African Journal of Emergency Medicine. 2, 174–181.
[91] Reynolds, T.A., Calvello, E.J.B., Broccoli, M., Sawe, H.R., Nee-Kofi, M., Teklu, S., et al., 2014. AFEM consensus conference 2013 summary: emergency care in Africa – where are we now? African Journal of Emergency Medicine. 4, 158–163.
[92] World Health Organization (2007). World Health Assembly, Sixtieth World Health Assembly Resolution WHA 60.22: Emergency Care Systems. World Health Organization, Geneva. http://apps.who.int/gb/ebwha/pdf_files/WHA60/A60_R22-en.pdf accessed 30/09/2018.
[93] Institute for Health Metrics and Evaluation (2010). Global burden of diseases, injuries, and risk factors study 2010, http://www.healthmetricsandevaluation.org/gbd/publications/policy-report/global-burden-disease-sub-saharan-africa accessed 30/09/2018.
[94] Scott T. & Brysiewicz P (2016). 'African emergency nursing curriculum: Development of a curriculum model'. *International Emergency Nursing*, July 27: 60-63. Open Access.
[95] https://www.afem.info/

[96] Scott, T. and Brysiewicz, P. 2017 'Piloting a global mentorship scheme to support African emergency nurses'. International Emergency Nursing. 34, 7-10. Open Access.
[97] World Health Organization (2015) Sixty-eighth World Health Assembly Resolution WHA 68:15 Strengthening emergency and essential surgical care and anesthesia as a component of UHC accessed 30/09/2018. http://www.who.int/surgery/wha-eb/en/ accessed 30/09/18.
[98] http://www.who.int/violence_injury_prevention/publications/services/en/guidelines_traumacare.pdf
[99] http://www.who.int/emergencycare/publications/trauma-care-checklist.pdf
[100] Chambers, R. and Feldman, D. (1973). Government Paper No 3 of National Policy on Rural Development. Republic of Botswana
[101] University of Botswana, (1996) Master of Nursing Science curriculum
[102] Ministry of Health, (2002). Standards of Family Nurse Practice
[103] Ministry of Health, (1988) Family Nurse Practitioner job description
[104] Tanzania Demographic Health Survey, 2015-16
[105] Msuya, M., et al., *Descriptive study of nursing scope of practice in rural medically underserved areas of Africa, South of the Sahara.* International Journal of Africa Nursing Sciences, 2017. **6**: p. 74-82.
[106] Talib, Z.M., et al., *Investing in community-based education to improve the quality, quantity, and retention of physicians in three African countries.* Educ Health (Abingdon), 2013. **26**(2): p. 109-14.
[107] Msuya, M. and J. Blood-Siegfried. *Partnership for a Healthy Tanzania*. in *Report on Consensus Building Conference: Family Nurse Practitioner for Rural Tanzania*. 2015. Arusha, Tanzania.
[108] The United Republic of Tanzania, Parliament of Tanzania, *The Nursing and Midwifery Act, 2010. Act Supplement N. 2, 26th March, 2010*. 2010, Ministry of Health: Dar es Salaam.
[109] Tanzania Nursing and Midwifery Council, *Scope of Practice for Nurses and Midwives in Tanzania*. 2014, Tanzania Nursing and Midwifery Council: Dar es Salaam.
[110] International Council of Nurses (ICN), *ICN Framework of Competencies for the Nurse Specialist*, in *ICN Regulation Series*, F. Affara, Editor. 2009, ICN: Geneva, Switzerland.
[111] Mullan F, Frehywot S. Non-physician clinicians in 47 sub-saharan african countries. *The Lancet*. 2008;370(9605):2158-2163.
[112] Dambisya YM, Matinhure S. Policy and programmatic implications of task shifting in uganda: A case study. *BMC Health Services Research*. 2012;12(1):61.
[113] Crisp N, Chen L. Global supply of health professionals. *N Engl J Med*. 2014;370(10):950-957.
[114] Crowley T, Mayers P. Trends in task shifting in HIV treatment in africa: Effectiveness, challenges and acceptability to the health professions. *African Journal of Primary Health Care & Family Medicine*. 2015;7(1):9 pages.
[115] Spies LA. An exploratory descriptive study on task shifting in east africa. *ANS Adv Nurs Sci*. 2016;39(2):44. doi: 10.1097/ANS.0000000000000112 [doi].
[116] Spies LA, Gray J, Opollo J, Mbalinda S. HIV and nurses: A focus group on task shifting in uganda. *Journal of the Association of Nurses in AIDS Care*. 2015.
[117] Baine SO, Kasangaki A, Baine EMM. Task shifting in health service delivery from a decision and policy makers' perspective: A case of uganda. *Human resources for health*. 2018;16(1):20.

[118] Zuber A, McCarthy CF, Verani AR, Msidi E, Johnson C. A survey of nurse-initiated and-managed antiretroviral therapy (NIMART) in practice, education, policy, and regulation in east, central, and southern africa. *Journal of the Association of Nurses in AIDS Care*. 2014;25(6):520-531.
[119] Feringa MM, De Swardt HC, Havenga Y. Registered nurses' knowledge, attitude, practice and regulation regarding their scope of practice: A literature review. *International Journal of Africa Nursing Sciences*. 2018.
[120] Gross JM, McCarthy CF, Verani AR, et al. Evaluation of the impact of the ARC program on national nursing and midwifery regulations, leadership, and organizational capacity in east, central, and southern africa. *BMC health services research*. 2018;18(1):406.
[121] Oliver S, Leary A. (2012) Return on investment: workload, complexity and value of the CNS. *British Journal of Nursing* 21:32, 4-7.
[122] Mynors GP, S. Morse, M. (2012) Defining the Value of MS Specialist Nurses
[123] COI Prime Minister's Commission on the Future of Nursing and Midwifery in England. Front Line Care(2010)Report by the Prime Minister's Commission on the Future of Nursing and Midwifery in England. London
[124] Kleinpell R, Scanlon A, Hibbert D, et al. Addressing Issues Impacting Advanced Nursing Practice Worldwide. Online J Issues Nurs 2014;19:5
[125] Laurant, M. (2013) Out of Hours primary care. International Innovation (cited December 2015) http://rcpsc.medical.org/publicpolicy/imwc/out_of_hours_primary_care_interview_miranda_laurant.pdf
[126] Phillips SJ (2015) 27th Annual APRN legislative update: advancements continue for APRN practice. *Nurse Practice* 40:16–42. Doi: 10.1097/01.NPR.0000457433.04789.ec
[127] American College of Physicians (2009) *Nurse practitioners in primary care*. Philadelphia: American College of Physicians
[128] Saunders, H. & Vehvilainen-Julkunen, K. (2016). The state of readiness for evidence-based practice among nurses: An integrative review. *International Journal of Nursing Studies*, *56*, 128–140. doi:10.1016/j.ijnurstu.2015.10.018
[129] Omolola A. O (2014). Nurse Practitioner : An untapped Area of Specialization in Nigeria. www.Omololaadams.blogspot.com Retrieved 22/4/2016
[130] Maier, C.B et al (2016) Descriptive, cross country analysis of the nurse practitioner workforce in six countries, size, growth, and physician substitution. September 01. *Nursing Research.*
[131] French Government, 2016
[132] Mousques et al., 2010