Pharmacy Practice Innovation: Pharmacist Embeddedness as a Comprehensive Framework for Collaborative Practice

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Abstract
Pharmacy policy should conceptualize a practice that is both attainable and stable. To attain consistency, predictability, and effectiveness in development and implementation of pharmacy practice innovations, a framework is required. Pharmacist embeddedness (PE) supports the uptake of innovations, the creation of new roles, and guides practice innovation. As paradigm and benchmark of practice, PE is consistent with the concept of 'seven-star pharmacist'.PE is based on a broader definition of practice. PE will help policy makers and practitioners to engage in proactive, objective, and meaningful practice innovation.

Keywords: pharmacy practice; framework; collaborative practice; pharmaceutical care; models of practice; pharmacy innovation

INTRODUCTION

Pharmacy continues to evolve by expanding and consolidating its territory in response to internal and external factors. This paper holds that pharmacy could grow in 4 areas: medical product-related services, patient-related services, other occupations that can make use of the pharmacist's core professional skills, and any field that can use the pharmacist's transferable skills. Although attainable, this approach is occasionally problematic: practice innovation may give rise to policy concerns as pharmacists seek or take up new roles, and identities. Such concerns include the following:

1) What 'extended' roles should pharmacists pursue, embrace or decline? How far should pharmacy go in *its role expansion*?
2) What makes for good or effective integration?
3) How can we justify pharmaceutical policy that seeks to assimilate roles that are currently considered to be outside the ambit of pharmacy practice? How should we define practice? Who is a pharmacist?
4) What can accelerate effective uptake of new pharmacy roles?

In developing practice, one should ensure that professional roles are consistent with what is accepted as practice. Definition of practice is an integral part of the theory of practice: it sets out the values and boundaries of the profession. Thus, including an activity or responsibility within the scope of practice gives that activity or responsibility professional recognition and ''legitimacy''; the reverse is true.

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DISCUSSION

Collaborative practice: Collaborative practice (CP) seeks to alleviate the under-utilization of pharmacist skills in health care (Smith, Bates, and Bodenheimer;2013). CP results in interprofessional roles which are more prominent and meaningful (Erikson,2008). Pharmaceutical care (PC) is founded upon CP. CP helps pharmacists to contribute their unique expertise to patient care and other health-related processes. Collaborative practice can be extended to non-clinical settings.

Meriam Webster (https://www.merriam-webster.com/) defines the word ''embed' as' to enclose closely in or as if in a matrix'', and ''to make something an integral part of'. Thus, individuals embedded in an organization function (and see themselves) as an *indistinguishable part* of a system that supersedes their immediate role, skill set, and personal goals. The Oxford online dictionary (https://www.oed.com/) defines ''framework'' as '' a basic structure underlying a system, concept."

Pharmacy practice innovation: Practice innovation is about expanding, strengthening of current roles (or services and practice models), and developing new ones in current practice settings or others (Park et al,2022). This is driven by the mission of pharmacy, pharmacist identity and pharmacy culture as captured or dictated by the prevailing philosophy of practice.
Pharmacy practice innovation policy: Five case studies or scenarios can help us to understand current approaches to policy development for pharmacy practice**:**

Scenario 1: The World health organization (WHO) in 2006 published a policy document titled Developing pharmacy practice: a focus on patient care: handbook (No. WHO/PSM/PAR/2006.5). (Wiedenmayer et al ;2006). The policy recognized a broad range of pharmacy practice settings. It developed three concepts: Pharmacist Activity Classification, levels of practice, and the ''Seven Star Pharmacist''. The concept of ''Seven Star Pharmacist'' expands the pharmacist's role beyond medicine dispensing. Under this concept,

pharmacists are responsible for dispensing medicines and devices, appropriate therapy and treatment outcomes, health promotion and disease prevention, and health systems management.

Scenario 2: In 2017, the Government of Kenya released task sharing policy guidelines (2017-2030) which enumerated service activities in public health services than could competently be carried out by pharmacists and pharmacy technicians within a [collaborative] care team. The guidelines sought efficient use of the scarce human resources for health. The guidelines *allowed* the pharmacy professionals to share in provision of certain critical and non-critical services with other professionals. Examples of shared or assigned activities included health promotion, provision of information, patient counseling, adherence counseling, identification of drug adverse reactions, and pharmacovigilance. Aywak et al (2017) provide an extensive and current account of pharmacy practice in Kenya.

Scenario 3: In 2018, the American medical association (AMA) created a job-aide titled 'Embedding the pharmacist into the practice. Collaborate with pharmacists to improve patient outcomes." AMA states that, ''Embedding a pharmacist means fully integrating him or her within your care team and giving the same access to the medical record as other members of the team. Pharmacists will work closely with you and may see patients on their own clinic schedule for disease-specific management." The AMA job-aide was an initiative of the medical community-an openness to the possibility of collaboration with pharmacists and pharmacy technicians.

Scenario 4: In 2020, George Mackinnon II published his ''Concept for embedded primary-care pharmacist practitioners (PCPPs): a disruptive value-proposition.'' Mackinnon II (above) positioned clinical pharmacists in primary care. Just like the AMA job-aide, Mackinnon II advocated for, support, and attempted to *normalize* collaborations in which pharmacists and physicians share responsibility for clinical outcomes.

Scenario 5: In early 2022, proposed amendments to Kenya's Pharmacy and Poisons Act created 5 key pharmacist jobs in the Kenyan pharmaceutical industry: person responsible for batch release, qualified person for pharmacovigilance, head of production, head of quality control, and head of quality. The amendments also created a requirement for regulation of the transportation of pharmaceuticals-firms licensed to provide this service must employ a registered pharmacists or enrolled pharmacy technician. Lastly, the amendments anchored in law roles for pharmacists in clinical drug and vaccine trials.

The above scenarios exemplify the role of policy in pharmacy practice. The scenarios show a multiplicity of stakeholders, interests, approaches, and outcomes in policy development for pharmacy practice. There are inconsistencies: the definition of practice in scenario (5) stands in contrast to that in the other scenarios. Policy strategies are variable: scenarios 1 through 5 are examples of incrementalism, while scenario 5 illustrates consolidation. Certain approaches are more effective than

others: scenarios (1) and (2) are guidelines, 3 and 4 are advocacy tools, scenario 2 is anchored in public policy while scenario 5 is supported by law and regulation.

From the foregoing, it is uncertain what the next policy initiative might look like. Thus, a comprehensive approach to practice development should proactively analyze the practice design space (see figure 1 below) and plan or implement innovations on that basis. Accordingly, pharmacy leaders should maximize use of pharmacist skills within current practice, scope of practice and permissible activities.

Figure 1: practice design space

current practice

permissible activities

scope of practice

practice scope
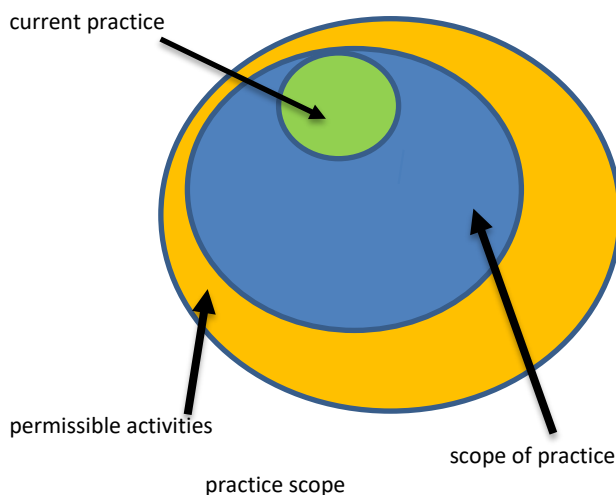
Gaps in pharmacy practice policy development: Pharmacy innovation has been hampered by 3 fundamental issues:

1. *Definition of pharmacy practice*: The International Pharmaceutical Federation (FIP) asserts, "Molecules become medicines when **pharmaceutical expertise** is added. In turn, pharmacists — through ensuring responsible use — optimise the effects of these medicines. The FIP is the global leader of pharmacy" (FIP,2022). Pharmacy practice is thus about the *medicine use process*. It would seem all *other activities* -before, during and after medicine use -belong to the ambit of pharmaceutical expertise and are outside the scope of pharmacy practice. This is clarified further by FIP's sector-specific mission statements:

    i. Hospital pharmacy: "to further hospital pharmacy in all its aspects".

    ii. Community pharmacy: "to assist pharmacists...to deliver... medicines, health products and services…to improve medicine use and advance patient care."

    iii. Clinical biology pharmacy: 'to develop [and support] all pharmacists engaged in clinical biology."

    iv. Industrial pharmacy: "to support innovation, advancement, competence and intelligence in...

industrial pharmacy to represent and serve pharmacists, and pharmaceutical scientists…to [professionalise pharmaceutical science]”.

2. *Scope of practice*: Contemporary thinking limits ‘’pharmacy practice’’ to ‘’patient-facing roles’’; professional activity in other settings is seen as transitional (Azhar et al., 2009). There is limited recognition (and appreciation) for pharmacy practice outside of community, ambulatory, and hospital settings (Anderson, 2002). The American pharmacists’ association (APhA) affirms the above definition of practice of pharmacy and recognizes that the patient-focus in the role of a pharmacist is work in progress: ‘’Pharmacists are trained to optimize medication use and improve population health outcomes. When pharmacists are a member of the health care team, they improve medication use and adherence, expand access to care, and reduce health care costs. Pharmacy practice is increasingly shifting from dispensing medications and counselling patients, to providing patient-centred… ’’(APhA,2022). It seems ill-advised for the profession to pursue the care provider role, which is still evolving, to the exclusion of several professional roles that are critical to both the profession and the practitioner. Pharmacy policy should conceptualize a practice that is readily attainable and stable. But scope of practice derives from the definition of professional practice; a restrictive definition and scope of pharmacy impose limits to practice innovation. To develop pharmacy practice, a broader definition of pharmacy practice is thus needed.

3. P*harmacist occupations*: To standardize pharmacy research terminology, Scahill, Atif and Babar (2017) proposed the term ‘’pharmaceutical practice’’ as a new conceptual model for the field of pharmacy. They posit: ‘...pharmaceutical practice encompasses everything ...related to [medicine] availability, access and use [and] encapsulates the research, development, formulation, distribution, access, and clinical use of medicines. It incorporates the human capital required to deliver pharmacy services and the impact on end users of pharmaceutical products and services.’’ Cordina, Lauri and Lauri (2012) discovered that not all pharmacists are suited to patient-facing roles. Further, pharmacy needs to seize every opportunity to become more visible. It is therefore counter-productive for pharmacy to disown these additional roles. A broader view of practice would bring most, if not all, pharmacist activities into the realm of professional practice. A framework that widens the scope of practice is lacking.

Need for a framework to guide innovation

1. Pharmacy has been undergoing evolution for the last 5 decades. Unlike other professions, pharmacy provides its practitioners with a wide range of jobs, and practice settings to choose from. Professional and career satisfaction are related to ‘’a conducive working environment, remuneration, and greater autonomy’’ (Meilinati, Matuluko, Ibrahim, Uzman, and Bates; 2022). Both practice innovation and policy for practice innovation should be guided and be fit-for-purpose with minimal undesirable side effects. In fact, the process by which policy on pharmacy is developed should be structured. We therefore need a framework to guide, benchmark, and *legitimatize* current and future developments in the role of the pharmacist.

2. Current innovation has been inadequate, ineffective and unsustainable:

   i. *Pharmaceutical care:* Pharmaceutical care is the contemporary philosophy of pharmacy practice. To implement this philosophy, innovative models of professional practice and services have been developed. Further, deliberate efforts are required to ensure effective implementation of current pharmaceutical care innovations and to evaluate their effectiveness in meeting the aspirations of the philosophy. “Pharmacy workforce capacity varies considerably between countries and regions and generally correlates with population- and country-level economic indicators,’’report Bates et al (2016). A framework would assure relevance, consistency, and predictability in the evolution of practice models.

   ii. *Levels of pharmacist integration:* Integration is a prerequisite for effective CP.CP leads to more efficient use of resources with superior patient outcomes. This paper holds that pharmacist integration is an incremental process of eight steps: (1) sharing of information, (2) consultation, (3) collaboration, (4) creation of team processes to support collaboration, (5) creation of organizational structures to support collaboration, (6) development of industry-wide policy to enhance collaboration, (7) reorientation of the education and training of other professionals to meet the requirements of collaboration with pharmacists, and (8) readjustment of societal expectations. A framework is needed to provide *industry-level* support to pharmacist integration from level six onwards.

   iii. *Theory-practice gap*: This refers to the difference in the status of practice between current practice and the scope of practice. There exists a wide theory-practice gap in pharmacist integration.

Barriers to collaborative practice or clinical pharmacy services have been documented around the world (El Hajj, Al-Saeed and Khaja,2016). It seems contemporary pharmacy integration is, mostly, at level 3 (see above). Despite the use of the words 'fully integrating', the AMA job-aide captures interprofessional work at level 4 or 5; level 5 integration within the health care team is what is conceived by Mackinnon II. At level 8, there is progress towards an enduring and sustainable demand for pharmacist integration. A study on the role of power and hierarchy in CP between pharmacists and physicians concluded that "institutional support for collaborative interprofessional practice is needed at the level of policy and accreditation in both health education and healthcare''(Id et al., 2021). A framework is needed to mitigate systemic challenges to sustainable pharmacist integration.

iv. *Employer- employee tension*: A professional employed by a bureaucracy has dual and simultaneous loyalty to both the profession and the bureaucracy (Hall,1968); some corporate organizations can generate new industry-specific knowledge that can rival or minimize professional knowledge (Matheson, 2008). Pharmacists increasingly work in large corporations where this tension is rife. This tension is distinct from the difficulties of collaborative practice. This tension needs to be managed to generate satisfactory outcomes for both the employer and the employee. A framework is needed to generate such win-win outcomes.

v. *Future pharmacy roles:* There is growing pharmacist underemployment in the global North (Lebovitz and Eddington, 2019). An impending challenge for pharmacy is to conceive practice roles beyond the pharmacy, the clinic and even the drug. Dipiro (2011) alludes to the need to create a ''unifying foundation of the pharmacy profession'' in anticipation of new pharmacist roles. Park et al (2022) restated this view: "Pharmacy graduates [should market] their skill sets to..employers beyond patient care.. [that] both pharmacy training institutions and faculty ...[help] students ... to develop and market their transferable and in-demand skills, and to [seek] future career paths in pharmacy.''A framework would ensure that future policy (for practice), whilst geared towards a more generalist role, remains aligned with the aspirations of pharmacy.

Pharmacist embeddedness (PE)
The policy scenarios (initiatives), the gaps cited and the questions above indicate an urgent need:

1) for a new way of looking at the mission and practice of pharmacy, pharmacist identity, extended pharmacist roles, and CP

2) to reduce the theory-practice gap in pharmacy, to scale-up uptake of best practice, to create new opportunities for growth of the profession, and to guide (future) innovation in pharmacy practice.

a) *Embeddedness as a concept:* The term 'embeddedness'' has been used in management literature in relation to an individual's attachment to a job (Heritage, Gilbert and Roberts,2016), career, occupation, organization, community, or country. Embeddedness is a construct that explains why an individual becomes enmeshed and 'stuck'' to the entity or state with which they are involved or affiliated. Embeddedness is more than personal commitment-it is based on *fit, links,* and *sacrifice*. Sacrifice means that the embedded employee would lose something of immense value(invaluable) if they relinquished or lost their position. Amongst other things, job embeddedness is positively associated with likelihood to initiate, share, and implement innovative ideas in organizations (Thomas and Feldman,2010). In this paper, professional embeddedness is based on a fit between employee capability and organizational need.

b) *Embeddedness as a framework:* It is suggested in this paper that both the individual and the organization create e*mbeddedness*. This means that both the employee and the organization (or professional role) become mutually interdependent. The fusion and symbiosis of employee and organization makes embeddedness much more than integration. Embeddedness looks at both the present and the future-It helps one to critically review *what is* against *what should be* and *what could be*. It is thus both a benchmark and a paradigm for practice development. Embeddedness helps us to identify and objectively define opportunities for growth.

c) *Pharmacist embeddedness (PE):*PE is about revisioning the structure of the workplace and new ways of working. Professional embeddedness is based on a fit between employee capability and organizational need.

d) *Elements of PE:*PE is made up of the following six elements (see Fig 2 below): (1) organization (organizational setting), (2) collaborative practice, (3) critical process- consumer welfare, regulatory compliance, critical to core business, prone to risk, risky to the organization, (4) role legitimacy, (5) industry-wide policy, and (6) the pharmacist (role).

The elements (components) of the framework are interdependent (see 'application of embeddedness' later).

Fig 2: Pharmaceutical embeddedness, PE as a framework of practice innovation
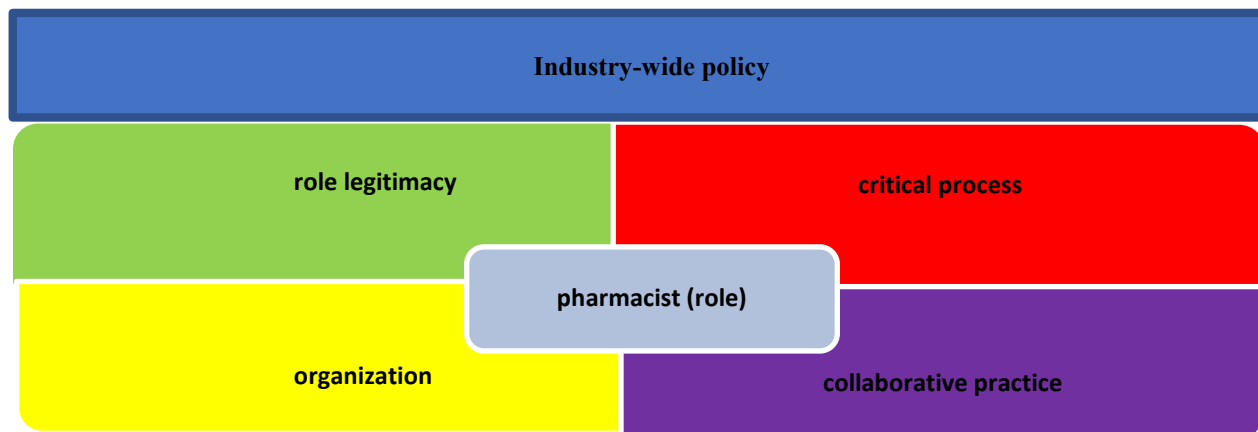
(i) *Pharmacist (role):* Scope of practice derives from the definition of pharmacy practice. Restrictive definition and scope of pharmacy impose limits to practice innovation. A broader definition of pharmacy is needed. The pharmacist (role) should have universal legitimacy (within the organization and industry), be critical, be part of CP, and situated within an organization. Practice innovation should preserve or result in such a pharmacist role. In this paper-building on Dipiro and Scahill et al- it is suggested that pharmacists should be defined as the health professionals who serve society and organizations by use of expert *pharmacal* skills in managing resources required for, and risks associated with the design, development, production, commercialization, quality assurance, improvement, distribution, and sale of health-related products and services associated with those products. This framework therefore accommodates a broader definition of practice.

(ii) *Collaborative practice*: sharing, between pharmacists and other professionals, of responsibility for decision-making and outcomes of decisions. *Embeddedness* requires pharmacists to commit themselves to work collaboratively as part of larger multi-disciplinary organizational teams in which they are continuously challenged to apply their pharmacal skills, knowledge, and judgment in the design, development and management of critical processes and resources that affect or contribute to organizational regulatory compliance, operational efficiency, and health-related consumer needs. The pharmacist (role), the critical process and the organization define the nature and scope of collaborative practice.

(iii) *Organization*: the entity responsible for delivery of products and services. The organization may be a physical or virtual entity, or a network of related systems within a given industry. The 'organization'' refers to the practice setting. Professionals in all settings take responsibility for work or organizational processes. Professionals and enterprises engage in mutual exchanges. Organizations influence how professionals within them enact their professional roles (Nelson and Nielsen,2000). Professional collaboration occurs in or requires an organization or organizational setting.

(iv) *Role legitimacy*: a role claimed by pharmacy (or considered to be a good fit for pharmacy), and that has a demonstrable value to society. It should be a good fit for pharmacy, use pharmacal capabilities, or be within the scope of practice. Role legitimacy derives from the mission of pharmacy and values espoused by practitioners and trainers. Role legitimacy depends on the pharmacist (role), critical process, industry-wide policy, and the organization. Conflicts between role legitimacy and process criticality may create employee-employer tensions (see above). In all cases, role legitimacy should be secondary to process criticality and the need for collaborative practice. This allows for greater flexibility in the assignment of functions to the pharmacist.

(v) *(v)Critical process*: a process that is integral to the core business of the organization / industry, is instrumental to consumer welfare or is key to regulatory compliance. A critical process is one that is critical to the delivery of the organization's mission. Within organizations, critical processes are associated with high-value work. This means that the individual's contribution would be along the critical path of organizational projects. Critical process and role legitimacy inform industry policy. Critical process is influenced by and influences policy, pharmacist (role), collaborative practice and role legitimacy. Further, the pharmacist role is aligned with the critical processes which are defined or prescribed by industry policy. CP within an organization flows from the designed role of the pharmacist.

(vi) *Policy*: may consist of laws, regulations, standards, or official directives. Policy may be temporal or long-term. Change in policy leads to changes in the embedded role.

e) *Application of PE (framework):* 'Pharmacist (role)' may also refer to a practice model. A pharmacist role is embedded if it has all the elements; roles that are legitimate but lack criticality are not considered to be embedded. Similarly, a role that does not require an organization for its existence or one that is not amenable to collaborative practice is not embedded. Accordingly, there will be no policy (official) support for such non-embedded roles.

f) *Potential critical processes*: By examining the training of pharmacists, one can identify [or imagine] alternative career pathways for pharmacists (Park et al;2022). The core of pharmacy education is the six *pharmacal* sciences: pharmaceutical chemistry, pharmaceutics, pharmacology, pharmacognosy, social and administrative pharmacy, and pharmacy law. A pharmacy degree therefore prepares the pharmacist for a wide range of potential careers. Table 1 sets out actual and potential critical processes in various pharmacy work sites. This listing is not intended to be exhaustive. Related lists have been suggested by Park et al as well as by Korberly, Mann, and Denisco (2016).

Table 1: A partial list of actual and potential critical processes grouped by pharmacy practice setting

Practice Setting	Critical Process
Health System	health policy making
	leadership, management
	quality assurance, development of standards
	health service research
	securing value for money; pharmaceutical benefits management
	patient safety and advocacy
Medicines regulatory bodies	board members, divisional heads,
	pharmaceutical scientists, reviewers, regulatory officers
	trainers, inspectors, and auditors.
Health commodity supply chai	pharmaceutical due diligence, supply chain quality risk management
	inspection of goods and services, testing of pharmaceuticals, monitoring performance of contracted parties, issuance of compliance certificates upon inspection of completed works
	developing specifications, developing terms of reference for vendors, vendor audits, selection of vendors, ensuring vendors uphold good medicines distribution practices
	ensure compliance of operations with law, regulations, standards, and good regulatory practices,
	pharmacovigilance
	planning of contract manufacturing,
	supervision of control, sale, transportation, warehousing, and handling of medical products,
Community and ambulatory pharmacy	dissemination of information on health promotion, disease prevention and control, chronic disease management, self-care, access treatments, clinical trials, new technologies, public health campaigns, and available health services
	provision of chronic disease management, self-care, access treatments,
	provision of medicines, point of care testing kits, contraceptives, diagnostic tests, and immunizations.
	patient referral to other health care professionals, facilities, and resources.
Hospital pharmacy	Quality management, customer care, business and new service development,
	data management, service planning and supervision; selection, deployment, training, and supervision of human resources for health,
	clinical toxicology, drug, and poison information services,
	patient safety, ethics review, standards, and compliance,
	drug testing, drug information, clinical research,

	dispensing, compounding, manufacturing, and drug preparation.
	chronic disease management, therapeutic drug monitoring, pharmacovigilance, non-medical prescribing, patient education, medicines use counseling, medication therapy management, medicine stewardship programs, health promotion,
	clinical audits, quality reviews, medicine use reviews, formulary development,
Industrial pharmacy	ensuring compliance with cGMP, enforcing GDP, development, review, approval and distribution of product information and packaging, ensuring regulatory compliance, approval of drug information released to patients and health care professionals
	training and supervision of production and quality staff, supervision of quality laboratories
	consumer education, supervision of marketing activities
	quality release of active pharmaceutical ingredients (drug substances) and finished pharmaceutical products, pharmacovigilance,
	pharmacoeconomic and pharmacoepidemiologic research
	coordination or facilitation of clinical drug development operations
	selection, approval, and audit of vendors and consultants.

Example of embeddedness: case of the comprehensive care clinics in Kenya: In 2002, multinational firms marketing antiretroviral drugs resolved to restrict the dispensing of these products to large private hospitals. In 2003, the Government of Kenya rolled out a donor funded national HIV Care programmes. Under this policy, hospitals set up what were called Comprehensive Care Clinics (CCCs). These clinics were run by a multidisciplinary healthcare team (read organization) consisting of physicians, physician associates, pharmacists, nurses, counsellors, laboratory technicians, and nutritionists. All team members were trained as a group on all aspects of HIV Care; used common guidelines for diagnosis, treatment, and care; and made joint decisions on antiretroviral treatment initiation and change (collaborative practice); and reported on treatment events and outcomes. Although each team-member was a distinct professional, the team had a common body of expertise, a singular mission, and a common approach to testing and referral (read embedded roles). Members paid little attention to professional boundaries (read role legitimacy) when responding to patient need (read critical process). Staff committed to knowledge sharing and shared continuous professional development.

The evolution of CCC was born out of the need to test as many people as possible, put HIV positive patients on highly active antiretroviral treatment (HAART), monitor outcomes of drug treatment, assure adherence, and thereby contain the spread of HIV/Aids. Pharmacists were needed to manage the logistics of drug distribution and dispensing, to conduct medicine use counseling, monitor adherence, detect/ report adverse drug reactions, and to undertake accountability for inventory in line with donor requirements. These were critical processes. The public medicines procurement agency, the public health system, hospital-based health care team and donors jointly formed the organization which sustained the programme and

hence the pharmacist role. The ministry of health developed industry-wide policy.

Overtime multidisciplinary supervisory teams (read collaborative practice) were set up to scale up the programme. Thanks to the guidelines, care decisions had become so routinized that it was possible, by 2021, to shift tasks from physicians to physician associates and nurses (Ministry of Health); pharmacist tasks were shifted to pharmacy technicians and nurses. To date the Programme has been so successful that virtually all testing and care for HIV/AIDs is done by public and not-for -profit hospitals and clinics. This programme, alongside the TB and malaria programme, reignited public interest in pharmacy. Today the public sector is the biggest employer of pharmacists in Kenya (Aywak et al).

Novelty of PE: PE is distinct from current paradigms, models of practice and practice innovations**.**

1) *PE vs pharmacy legislation:* PE is distinct from routine pharmacy practice legislation: -Legislation primarily seeks to protect the public, the profession of pharmacy or the public interest; PE is about optimizing the societal value of pharmacy and pharmacists. The concept is based on rational design while pharmacy legislation derives from political interests. The framework provides a transparent and incontrovertible basis for legislation. Policy is only one of the 6 elements of the framework. With PE, more stakeholders are involved: the pharmacy profession, the organization, collaborating professionals, on the one hand, and the consumer, Government, and other stakeholders, on the other hand.

2) *PE vs pharmacist integration:* PE is more than integration: -First, whereas integration is about creating space for the pharmacist; PE is about making the pharmacist an indispensable part of the health

care team and the economy. Second, whereas integration presupposes or even requires the prior existence of a team, PE takes a top-down approach in (re)designing the team or work site. PE is different from integration: whereas integration makes the pharmacist an *in-house subject specialist or consultant,* PE creates a deeper and broader role for pharmacists within organizations. PE gives prominence to pharmacy- under PE pharmacy practice and roles would be part of ''larger network audiences; and enjoy social prestige and networking power''(Erikson). Implementation of pharmacist integration depends on the initiative of the pharmacist and the goodwill of the physician or organization (Id, Kumar, and Chur-Hansen; 2021).); PE depends on a role that is pre-negotiated and designed. The pre-negotiation and design are undertaken, at the industry- level, between the profession and the industry. In PE there is opportunity for wider consensus building. The framework is an objective benchmark for any proposed new role. Both factors pre-empt resistance to new pharmacist roles.PE goes beyond the clinical environment. PE creates the possibility for collaborative practice in novel service and economic systems. Park et al classify pharmacist skills into technical and non-technical; conventional (clinician skills) and unconventional (innovator skills). An integrated role almost exclusively relies on the disciplinary skills of the pharmacist, an embedded role requires the pharmacist to be proficient in both disciplinary and *extra-disciplinary processes* (innovator skills and industry-specific skills) of the work-place.PE refers to *post- level 8* integration (see above). Breakdown in *lower-level* integration may not significantly impair organizational operations, failure of PE would disrupt operations. Both the pharmacist (or profession) and the organization (or industry) need PE to satisfy their needs. Due to this mutual inter-dependence, failure of PE would be catastrophic for both parties. This shared *sacrifice* sustains PE.PE thus adopts a broader view of pharmacy practice.

3) *Embedded pharmacist vs the 7-star pharmacist:* The 7-Star pharmacist (World Health Organization,1997) seeks to increase the variety of non-dispensing tasks that requiring a pharmacist's time. The concept seeks to maximize the value and contribution of the pharmacist to society in general. It also seeks to develop the capabilities of the pharmacist. It however is targeted primarily at the pharmacist as an autonomous individual. In contrast, PE addresses primarily the pharmacist work environment within organizations, and the role of pharmacists as an integral part of the organization. A 7-star pharmacist can take advantage of PE to realize his/her *seven-some* potential.

4) *Embeddedness vs the Basel Statements:* The 2008 Basel statements on hospital pharmacy serve as a benchmark for development of pharmacy services in a hospital. Beyond guiding the development of the pharmacist role in a hospital, the tool is a set of standards to which hospital pharmacy departments, and hospitals, should aspire. Of significance, the statements urge pharmacists *to seek to exercise influence* over critical processes that affect patient outcomes. PE is bolder: it seeks to *control* critical processes. Finally, PE extends this thinking to cover all practice settings, both present and future. All pharmacists should be *embedded* wherever they work. A professional is *embedded* if he or she is placed and works, alongside others, in a key role within a critical process of an organization.

5) *Goals of the framework (PE): Define good practice in collaborative practice (CP)*: framework is a tool to help both the profession and the practitioner to promptly identify and scale-up ''good'' practice innovations by defining the meaningfulness of a pharmacist role.

   (i) *Bridge the theory-practice gap*: In its mission statement, the APhA recognizes that pharmacist shift from technical to cognitive services is an ongoing process. Rosenthal, Breault, Austin, and Tsuyuki (2011) affirm that pharmacists, work best when their roles are structured. PE seeks such alignment.

   (ii) *Rationalize pharmacy jobs*: PE aims to rationalize pharmacist jobs. Processes that impact patient or consumer welfare are critical. A pharmacist whose professional contribution is non-critical is constructively not needed in the first place. This ensures that pharmacist contribution is valued.

   (iii) *Expand pharmacy*: Pharmacy needs new roles for its practitioners: growing automation and increased education of pharmacy technicians will lower the demand for pharmacists in traditional practice settings (DiPiro). A meaningful role meets customer needs and measures up to the aspirations of both the practitioner and the profession. This framework seeks to uncover unexploited potential in pharmacy.

   (iv) *Explore new possibilities*: In his seminal *The Fifth Discipline (1990)*, Peter Senge develops the concept of a ''learning organization' (LO). This is an organization in which ''people continually expand their capacity to create the results...where new and expansive patterns of thinking are nurtured, where collective aspiration is set free... and where people are continually learning to see the whole together.''The Fifth Discipline recognizes that organizations and their staff frequently work at cross-purposes. Amongst other things LOs are characterised by systems

thinking, building shared vision, and team learning. According to this theory, we do not know everything that we should know about how best to offer pharmacy and other pharmacist-delivered services. Further, we cannot anticipate all future needs of the health consumer. Therefore, we need the collective genius of pharmacists and other professionals *embedded* in health care systems and other organizations. Embeddedness thus makes it easier to visualize the future.PE is a benchmark for LOs*.*

Benefits of PE: PE is a systems approach to harnessing the productivity of the pharmacist and the pharmacy profession:

1. Embeddedness responds to the policy concerns highlighted introduction:
   - it delineates the nature and scope of 'extended' roles that pharmacists should aspire to.
   - objectively helps us to determine whether integration or a practice innovation in any setting or field of work is both good and effective.
   - is anchored on a broader definition of practice and thus aligns with a pharmaceutical policy that seeks to assimilate roles that are currently considered to be outside the ambit of pharmacy practice. This paradigm enhances professional adaptability and satisfaction for pharmacists
   - accelerates uptake of new pharmacy roles. The policy element allows for consultations and consensus building. Thus, this *top- down approach* of embeddedness overcomes most of the barriers reported for CP, including internal barriers.
   - enhances the effectiveness of continuous professional development for pharmacists; guides and entrenches pharmacy practice innovation.

2. This would harness the economic value of pharmacy:
   - it creates new opportunities
   - it would raise awareness about pharmacy and pharmacy services, and push pharmacy issues into health and economic policy agenda
   - increases the visibility of pharmacists within organizations.
   - challenges pharmacists to maximize use of their skills-this reduces pharmacist unemployment (and under-employment). This would increase pharmacist productivity and organizational efficiency.

Feasibility of Pharmacist Embeddedness: resistance to embeddedness should be anticipated (Braund et al ,2012). Pharmacists themselves may be unwilling to move into new work environments in which there are more interprofessional tensions and possibly greater uncertainty. PE will inevitably

obligate other professionals to redefine their own roles and/or adjust their own workflows. Policy makers may thus be unwilling to ''fix a system that is working fine''. Several factors would favor PE:

- professional collaboration is conceivable in all settings where pharmacists engage with core organizational processes. PE creates a long-term demand for CP.
- professionals in all settings can and should take responsibility for work or organizational processes. Embeddedness supports organizational objectives.
- the growth of pharmacy would benefit both the pharmacists, and the organizations.
- pharmacist contribution to team-based project work within an organization would be on the critical path of the project.
- it incrementally builds on the *status quo;* there is room for CP in non-traditional settings and new roles in existing and future industries.
- this paradigm would strengthen the professional responsibility of the pharmacist while optimizing the efficient use of his/her capabilities.
- this innovation is compatible with current practice-it would safeguard and enhance collaborative work.

Implementation of PE: The practice of pharmacy is governed by law. Both policy and legal reforms are needed to make changes in pharmacy sustainable.

- Profession of pharmacy, allied professionals, consumers, organizations, and other stakeholders to identify and promote critical processes and roles in organizations.
- Policy makers to anchor-in policy, law, regulations, and standards- work roles that are based on critical processes.
- Organizations to facilitate, support or ensure deployment of pharmacists to the *legitimate roles* and *critical processes*
- Educate pharmacists for embeddedness: training should confer to the graduate appreciation for and capacity for embeddedness (Park et al;2022).
- Discourage through policy the independent practice of pharmacy.

Role of the pharmacist in PE: pharmacists would be expected to:
- take full advantage of embedded roles as created.
- continually review their work and practice roles to identify *embeddedness gaps*. These gaps would be communicated to the profession for action.
- pharmacists would review their current extended roles with a view to discarding or redesigning those roles that fall short of the *principles of embeddedness.*
- would study and conduct pilot studies on possible embedded roles for pharmacists in other regulated or unregulated industries.

Implications of PE

- embeddedness confers, to the pharmacist, a secondary professional identity viz clinician, clinical research professional, quality professional, patient safety professional, health researcher, member of the primary care team, intensive care team member, infectious disease team associate, HIV-care professional etc.
- pharmacists will increasingly work in new environments making pharmacist work more generalist in character.
- policy makers will value pharmacists as an economic resource.
- pharmacists may have to abandon some of their current roles.
- Other professionals would eventually find it useful to evaluate their own *degree of embeddedness*. One may substitute the 'pharmacist' with any other professional role or title. This makes the framework adaptable to other professions and industries. The 'embeddedness-gap' will thus become an important metric of organizational effectiveness

CONCLUSION

All practice innovations need to be structured. This paper details the justification, purpose, elements, merits, and implications of PE, and how it can be achieved.PE is made up of 6 elements: policy, organization, collaborative practice, critical process, role legitimacy, and the pharmacist (role). PE is consistent with FIP's position on pharmacist activities. Anchored on a broader definition of practice, PE, will drive development of appropriate and sustainable pharmacy practice leading to organizational efficiency. All pharmacists should be *embedded* wherever they work. Research will be required to study the feasibility, effectiveness, and the internal dynamics of the framework.

Conflict of Interest: Jimmy Shangala Mwawaka RPh is a hospital & clinical research pharmacist based in Kenya, and a graduate student in Biotechnology, Innovation and Regulatory Sciences at Purdue University, College of Agricultural and Biological Engineering. He has no conflict of interest to declare.

The opinions expressed in this paper are those of the author(s).

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