Title: The Scope and Standards of Practice for Patient Blood Management Nurses

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ABSTRACT

The Patient Blood Management Nursing: Scope and Standards of Practice is to describe and define the registered nurse's role in the specialty of patient blood management (PBM). PBM is a patient-centered, systematic, evidence-based approach to improve patient outcomes by managing and preserving a patient's own blood, while promoting patient safety and empowerment. In collaboration with the American Nurses Association (ANA), the authors have outlined the scope and standards of practice, standards of professional performance, and professional role competencies specific to PBM. A definition for PBM as a nursing specialty has emerged: "Nurses who lead multimodal, multidisciplinary, and ethically grounded efforts in anemia management, blood conservation modalities, coagulation optimization, and patient-centered decision-making. PBM nurses optimize a patient's own blood health through the utilization of systematic, evidence-based modalities and interventions, improving patient outcomes, safety, and promoting empowerment across the healthcare continuum." The foundations, research, and implications of PBM in nursing are addressed.

Keywords

Patient blood management, nursing specialty, PBM nursing specialty, blood health, PBM global definition, blood conservation, anemia management, patient-centered, diversity and inclusion

INTRODUCTION: Patient Blood Management Nurse Specialty

Patient Blood Management (PBM) is a patient centered, evidence-based approach to care aimed at optimizing, preserving, and protecting a patient's own blood, which contributes to reduction of unnecessary blood transfusions and the improvement of patient outcomes. The specialty practice of PBM nursing offers profound benefits and significance for patients, practicing nurses, healthcare institutions, and the health of all populations. By formal recognition of PBM as a nursing specialty, opportunities abound to elevate quality of care and enhance the healthcare system in several meaningful ways.

First and foremost, patients stand to gain immensely from the recognition of this practice as a nursing specialty due to the reduction of the risks associated with blood transfusions. Reduction of these risks results in the achievement of key performance indicators, such as reduced length of stay and decreased morbidity & mortality [ref]. Nurses skilled and knowledgeable in this specialty are well-equipped to implement strategies that preserve, protect, and optimize a patient’s blood health, resulting in improved safety and outcomes. This personalized care approach enhances patient empowerment and satisfaction, ultimately contributing to improved overall health for individual patients.

This specialty offers multiple benefits to practicing nurses, including enriched professional growth and enhanced roles within healthcare teams. Nurses are provided the opportunity to expand their knowledge, perspectives, and expertise, fostering a deeper understanding of the intricacies of anemia management, blood conservation modalities, and patient-centered care. Moreover, this specialty naturally calls for nurses to actively engage in

multidisciplinary teams, fostering collaboration with both patients and healthcare professionals to optimize patient outcomes.

PBM nurses champion ethical and evidence-based practices, ensuring patients receive care that is clinically effective. This underscores the ethical principles of nursing practice - elevating the specialty's commitment to patient welfare. As strong advocates and experts, PBM nurses are positioned for leadership roles within initiatives to develop and implement programs, policies, guidelines, research initiatives, and more. These leadership positions enable nurses to drive positive change in their institutions and contribute to the same culture of evidence-based, patient-centered care.

Healthcare institutions also stand to gain significantly from recognizing PBM as a nursing specialty. Hospitals that prioritize anemia management, interdisciplinary care, and optimization of blood health will experience improved patient outcomes, lower costs, and a reduced burden on their blood supply resources (ref). Those skilled in the discipline can facilitate the development and implementation of programs, ultimately helping institutions maintain high-quality care while optimizing resource allocation.

Nursing leaders convened to develop a comprehensive scope and standards of practice specific to PBM, to ensure high-quality care and consistency in practice across healthcare settings. This document aims to define the scope and standards of practice for nurses practicing in the PBM specialty and demonstrate its contribution to the field as a whole. Formal recognition and promotion of PBM as a practice specialty helps nurses continue to advance patient safety, enhance professional expertise, improve healthcare efficiencies, and contribute to the overall well-being of communities. This recognition will have a positive impact toward more patient-centered, cost-effective, and sustainable healthcare systems across the globe.

BACKGROUND:

Blood transfusion emerged as a medical practice following World War I,[ref] and has since become one of the most commonly used interventions in modern medicine [ref]. Widespread adoption of blood transfusion therapy, as well as public perceptions of its safety, was aided by public awareness campaigns promoting the notion that it represented a "lifesaving" medical practice. In reality, the introduction of transfusion therapy did not coincide with safety validation or evidence-based outcome measures of its risk profile and effectiveness, respectively. Indications for utilization of the various components, including red blood cells (RBCs), plasma, and platelets, were often developed based on opinion and conjecture, as opposed to evidence, and over time, the scientific community has called these unproven indications into question. Safety of blood transfusion has indeed increased over time due to quality improvements in transfusion medicine and blood procurement procedures (e.g.: donor screening, collection, testing, processing, storage, etc.). However,[ref] increasing numbers of scientific publications demonstrate that long-held perceptions of the safety and effectiveness of blood transfusion are not fully aligned with the actual associated risks and adverse outcomes.

[ref]Amid its empirical acceptance as a standard medical procedure, mounting concerns emerged within the medical and public community regarding allogeneic blood transfusions. Since its introduction, practitioners have questioned the safety of blood transfusion and called for blood conservation efforts that would reduce the incidence and volume of use. Early pioneers in blood conservation included Dr. Denton Cooley, who was among the first to contribute to and utilize conservatory methods with surgical blood use in the 1960s. After fifteen years of performing open-heart surgery on patients who declined blood transfusion, Dr. Cooley and his colleagues published their results, showing that this approach could be done safely and with

positive outcomes. In the 1980s, the unforeseen contamination of the donor blood supply with transmissible diseases provided compelling evidence and rationale for reevaluation of the conventional approach to transfusion.[ref]

In contemporary healthcare, the focus has shifted from solely monitoring laboratory values to prioritizing patient safety and improving outcomes. Blood transfusion orders have culturally been rooted in routine and tradition-based practice (e.g.: automatic ordering of 2 RBC units for low Hgb lab result), current best practices include a restrictive approach to ordering blood (e.g.: one red blood cell (RBC) unit per order), patient-specific indications (e.g.: individual clinical evaluation versus Hgb threshold alone), and a critical examination of the necessity for any transfusion. As practice around the use of blood continues to evolve, there is increased use of blood conservation as a concept to minimize transfusion use through the adoption of multimodal interventions to conserve, optimize and protect personal blood health. The World Health Organization (WHO) has officially endorsed PBM as a global standard of care, rectifying and validating its value for all patients. [ref]

In addition to these key points, the WHO has also spoken to the global burden of anemia as a major reason for implementing PBM, highlighting: “the multiple missed opportunities to appropriately manage and preserve the patient’s own blood as the main driver for transfusion.” [ref] Approximately 30% of the world's population is affected by anemia and the incidence is higher in certain groups including prenatal and lactating females, children, those facing food insecurity, as well as patients with chronic kidney disease or oncological conditions. Anemia is associated with negative outcomes for patients, independent of those associated with blood loss and blood transfusion, making it a significant public health concern with far-reaching

consequences for individuals and healthcare systems, affecting people of all age groups due to its wide prevalence.

Hospitalized patients are particularly vulnerable to development of iatrogenic anemia. Even when not admitted for invasive procedures or surgery, hospitalized patients often experience daily and repeated lab phlebotomy which can result in blood loss that exceeds normal daily production [ref]. Research estimates that iatrogenic anemia caused by frequent laboratory sampling will occur in 35%-75% of patients during their hospital admission and incidence increases to 100% in patients admitted to the ICU for seven day duration. (Warner, Hanson, et al., 2020.)

Certain groups of patients are at higher risk of development and complications from anemia. Pregnant women with IDA experience a variety of anemia-related symptoms but are also at increased risk of maternal complications in the peripartum. Anemia places the mother at increased risk of hypovolemic shock, risk of transfusion, dilutional coagulopathy, surgical intervention, fluid overload, and morbidity & mortality [ref]. Anemia in neonates is linked to risk of blood transfusion and increased mortality. Even when treatment is initiated immediately after birth, infants born with IDA demonstrate cognitive deficits that extend into late adolescence and later in life [ref].

Anemia is commonly associated with chronic health conditions such as cancer, cardiovascular disease, kidney disease, diabetes, and autoimmune illnesses. When paired with underlying comorbidities, patients experience increased complications associated with their disease resulting in poorer quality of life and function with increased mortality. (Cite)

Surgical patients face significant risks to their blood health throughout the perioperative stay. Preoperative anemia is associated with increased incidence and volume of perioperative

blood transfusion, which is likewise associated with increased critical care requirements and length of stay. In the post-operative phase of care, 80-90% of patients are anemic [ref]. Patients can also experience medically induced coagulopathy, related to anticoagulant and antiplatelet therapy, and hypothermia during surgical procedures, which also contributes to blood loss and perioperative anemia.

The compelling scientific evidence, proven cost-effectiveness, and ethical imperative to responsibly manage a patient's own blood, emphasize the pressing necessity to establish PBM as the standard of care. (Hofmann A, et al, 2021). The "PBM Clover" (Figure 1) illustrates the scope of PBM as a specialty, which includes management of anemia, use of blood conservation modalities, optimization of coagulation, and a focus on patient-centered decision-making. The end-goal of these listed interventions is ultimately improved patient outcomes.[ref] PBM nurses assume a pivotal role in implementing these multidisciplinary strategies.

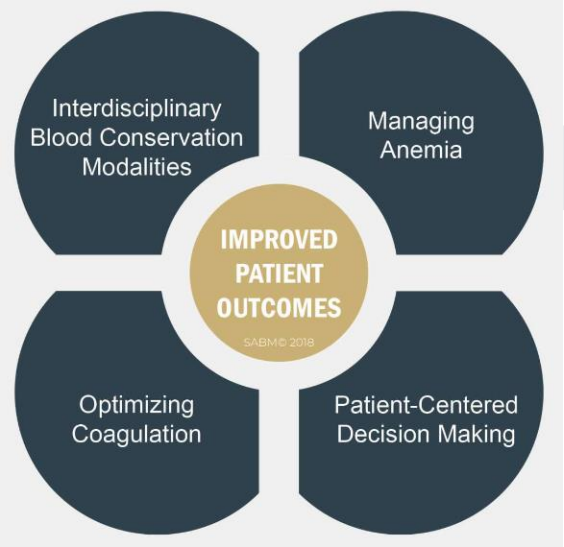


Figure 1: The "PBM Clover"

DEFINITION: PATIENT BLOOD MANAGEMENT

The term "Patient Blood Management" was coined by Dr. James Isbister in 1998, marking a transformative shift in practice that emphasized the importance of patient well-being over the mere utilization of blood components. In 2021, an international consensus panel of experts convened to develop a globally accepted definition supported by the healthcare community [ref]. The results from the consensus panel included clarification that PBM is patient-centered rather than transfusion-centered, and it encompasses a bundle of care that includes attention to patient safety and empowerment.

Patient Blood Management Global Definition:

"Patient Blood Management is a patient-centered, systematic, evidence-based approach to improve patient outcomes by managing and preserving a patient's own blood, while promoting patient safety and empowerment." [ref]

THE SCOPE OF PBM THROUGH BLOOD HEALTH

The development of related concepts has led to further changes in how the healthcare community regards and values the patient's own blood. The concept of 'blood health' considers human blood as a unique organ system. In congruence with the oversight of organ systems, the preservation of optimal blood health necessitates a comprehensive strategy encompassing protection, preservation, and therapeutic measures to uphold its optimal functionality. Consequently, prioritizing low-risk interventions, such as strategies for managing anemia, is advisable prior to resorting to higher-risk procedures like blood transfusions. This sequential approach not only enhances safety, but also diminishes the likelihood of unnecessary interventions. Ultimately, the maintenance of blood health aligns with a preventative care paradigm that systematically addresses each tier (primary, secondary, tertiary) of intervention.

URGENCY AND IMPORTANCE OF PBM

PBM is a critical and urgent component of healthcare today. The importance of PBM cannot be overstated, as it addresses several key issues within the current healthcare system, including improving patient outcomes, reducing healthcare costs, and ensuring the efficient and responsible use of limited resources.

The WHO recognizes the significance of PBM within global healthcare. In fact, results from the *2011 WHO Global Forum for Patient Safety: Patient Blood Management* actively promoted the adoption of PBM principles as an integral part of ensuring patient safety in health care systems worldwide. This forum brought together experts, healthcare professionals, and policymakers from around the world to discuss and advocate for PBM strategies that prioritize the well-being of patients. Through this forum, a collaborative effort was made to disseminate best practices and promote PBM implementation across healthcare systems worldwide.

The urgency of implementing PBM has been further underscored by the WHO's 2021 policy brief entitled, *The Urgent Need to Implement PBM*. In this policy brief, the WHO identified three key rationales for the implementation of PBM care including: strong scientific evidence through cohort studies and randomized controlled trials, clear cost-effectiveness to medical organizations, and the ethical obligation to not withhold a medical model such as PBM from the healthcare industry. Each of these rationales align strongly with nursing foundations, particularly the goal of providing ethically-grounded care.

Over recent years, publications have explored the broader perspective of PBM, focusing on optimizing patient care not only during the transfusion process, but also throughout their entire healthcare journey (ref). These publications highlight that PBM goes beyond the component (blood) and emphasizes a holistic approach to patient care, ensuring that blood

transfusions are administered only when necessary and with utmost consideration for the patient's overall well-being.

Vulnerabilities in global blood inventories have been identified in recent years, most notably during the COVID-19 pandemic, in which routine blood collection practice was significantly impaired resulting in critical shortages of inventory. Many leading organizations, including the American Nurses Association, participated in issuing alerts to the public to highlight the blood shortages and urge for blood donation. While these and other initiatives were instrumental in supporting a reliable and sustainable blood supply, worldwide experts also worked to address the issue of blood demand by implementing a call to action highlighting the essential role of PBM in a global pandemic [ref].

RESPONSE TO PBM URGENCY GLOBALLY

After publication of the WHO's policy brief in 2021, countries around the world, including the United States, Australia, Canada, Turkey, Mexico, and Brazil (among others) responded by implementing PBM in their respective healthcare systems, implicating PBM's importance on an international scale.

Within the United States, numerous hospitals and health systems have developing PBM programs that employ nurses in specific roles (e.g., coordinator, clinician, etc.) to support various aspects of delivery, such as administration, patient and provider education, quality and safety initiatives, blood conservation strategies, and anemia management. Australia has emerged as a global leader in PBM implementation after adopting the WHO's recommendations into their national health guidelines; nurses and other providers help to implement PBM practice standards required for hospital accreditation.[1]

Within Canada, PBM practice is similarly implemented by nurses and other providers in formats ranging from individual initiatives to comprehensive programming, and from local health regions or zones to broad provincial jurisdictions. The Ontario Transfusion Coordinators (ONTraC) are an example of a province-wide network of dedicated nurses, who promote blood health and implement care strategies within an overarching blood-coordinating program. Other countries have made major strides in development, implementation, and research involving PBM, including but not limited to Turkey, Mexico, Brazil, and Korea. The scale of PBM implementation across these examples alone help demonstrate the global recognition of the importance of blood health, effectiveness of the strategies contained within its management, and the value of nurses within multidisciplinary care teams to implement this care.

THE PBM NURSE

The PBM nurse specialty defines its mission, vision, and goals in parallel to the Society for the Advancement of Patient Blood Management (SABM), as follows:

- "Mission: To improve health, increase safety and reduce healthcare costs through the advancement of scientific knowledge and practice in PBM.
- Vision: Comprehensive PBM will be the global standard of care.
- Goals: Research, educate professionals, educate the public" (ref).

The "PBM Nurse" is defined as:

Nurses who lead multimodal, multidisciplinary, and ethically grounded efforts in anemia management, blood conservation modalities, coagulation optimization, and patient-centered decision-making. PBM nurses optimize a patient's own blood health through the

utilization of systematic, evidence-based modalities and interventions, improving patient outcomes, safety, and promoting empowerment across the healthcare continuum.

Using advanced knowledge and practical experience, the PBM nurse applies the science of PBM in compliance with their level of education and accreditation. The science of the PBM specialty is practiced anytime the function of the patient's own blood is used, compromised, or at risk.

As PBM has advanced, the role of nurses within this field has evolved into the specialization it is today. Traditional nursing contributions to blood management have centered on bedside care, for example: administration of blood transfusion, monitoring post-operative wound drainage, among other interventions. However, PBM nurses leverage their specialized training and expertise to enhance patient blood health through both direct and systematic application of PBM strategies. Through this application of evidence-based modalities and interventions, nurses within these teams contribute to improvement of clinical outcomes, safety, and patient empowerment across the entire healthcare continuum.

PBM nurses support a broad range of initiatives related to blood health, commensurate with their education, training, and scope of practice. Responsibilities may include:

- Assessment, recognition, and diagnosis of anemia, identification of its causes, and coordination of treatment
- Identifying patients at risk of bleeding and blood loss, risk of blood transfusions, and potential for transfusion-related complications
- Coordinating and implementing a variety of strategies aimed at optimizing, preserving, and safeguarding the patient's blood.

One profound advantage arising from nursing focus in PBM is the significant reduction in non-clinically indicated blood transfusions. Nurses help discern the individualized requisites of each patient, facilitating the exploration of all strategies available to optimize, preserve and protect blood, rather than default to routine transfusion practice. These strategies encompass the optimization of oxygen delivery, augmentation of iron levels, and the strategic application of pharmacological therapies. By minimizing the reliance on transfusions, patients can avoid potential adverse effects such as reactions, infections, and immunological complications. Additionally, this judicious approach contributes to good stewardship of limited blood resources.

The science of the PBM nurse specialty is a patient-centered and evidenced-based approach practiced in various healthcare settings and any time the functionality of the patient's blood is at risk or compromised. These practice areas include, but are not limited to, inpatient settings, ambulatory settings, emergency or urgent care departments, specialty clinics, and primary care centers. The nurse's scope of practice varies depending on their education, training, and role within the healthcare setting. The nurse focuses on timely and appropriate PBM strategies and is instrumental in the care of perioperative patients in whom blood loss from surgical procedures is a common risk. The PBM nurse is a resolute leader who guides, implements, and promotes initiatives to improve patient outcomes, advocacy, and safety.

PBM nurses drive safer practice through education, preventive measures, early diagnosis, and tailored interventions which help reduce prevalence and severity of anemia within populations. This leads to more efficient and effective healthcare delivery, improving health outcomes for entire patient populations. PBM as a practice provides a pathway to achieving optimal blood health, the greater goal of implementing these methods on a large-scale basis (ref).

In the collective authors' experiences, PBM nurses often take the lead in educating healthcare teams about new evidence and guidelines for care following best practices.

Methodology of Change

When considering the implementation of change with a model that supports PBM, one must consider the frequented Lewin's model for change (Figure 3). The steps of this model for change include the actions of unfreezing, implementing change, and refreezing. Unfreezing occurs when prior methods or behaviors are stopped or broken, change is the action where new methods or behaviors are introduced, and re-freezing occurs when the new methods or behaviors are reinforced and supported to become the norm.

Due to PBM's novelty in most hospitals, concepts may be new to providers or organizations. To apply this model, the implementation must occur with a champion, most commonly a nurse champion, to unfreeze existing non-evidence-based approaches (e.g., transfusion as first-line therapy), teach and lead change to adopt scientifically-supported PBM strategies, offer reinforcement and support to solidify changes in care, and subsequently identify areas for improvement and develop change strategies. This model of change can be supported during the "change stage" using the knowledge to action framework.

Knowledge-to-Action Framework (K2A)

Background

The time-delay for research findings to become fully implemented in clinical practice can exceed fifteen years. This lengthy time frame can be due to patient complexity, workflow disruption, inability for healthcare providers and systems to adapt, and staff resistance to change

(Campione, 2021). Many interchangeable words describe the uptake of evidence into practice: knowledge transfer, knowledge exchange, knowledge translation, knowledge utilization, research uptake, dissemination and implementation, and implementation science (CIHR, 2016).

The knowledge-to-action (K2A) framework (Figure 2), illustrates the establishment and development of knowledge followed by an action cycle. Within the creation of knowledge is a component that aims to develop tools such as guidelines, protocols, toolkits, strategies, or formal education. Forming knowledge is accomplished through aggregation of evidence and synthesis into a format amenable to knowledge transfer. An action cycle is designed to change the current format of practice and is a process in which knowledge is applied.

Application to PBM

The K2A framework has universal application to physicians, advanced practice providers, nurses, patients, family members, and the general public, making it appealing within the context of a patient-centered blood management program. PBM is currently not taught as part of a healthcare curriculum; it has been estimated that medical students receive approximately one hour of blood transfusion education. Nurses, however, do not receive specific didactic training, but may have exposure to transfusion therapy during clinical rotations. Blood transfusion alone is a high-risk, tradition-based treatment modality akin to organ transplant, which should only be considered as a final option when all previous low-risk interventions are exhausted. When considering the overarching topic of blood health, PBM-related content and education should be paramount in healthcare curricula, emphasizing an evidence-based workflow approach to caring for blood.

Implementation of PBM utilizing the K2A approach requires following several steps as described by Ozawa et al., in 2021. These include: the building and recognition of foundational governance structures and the need for change respectively, adaptation of guidelines to specific institutions, identification and overcoming of barriers, actual implementation of practice changes, monitoring implementation at each stage, evaluating outcomes with different metrics, and long-term sustainment of the change. Implementation of PBM requires a high-level and multidisciplinary approach in order to effectively change practice at every level, and nurses can serve as a large proponent of this implementation as they serve at these various levels and in different roles. Nurses can support positive change and implementation as bedside nurses, data specialists, clinical nurse specialists, nurse practitioners, or doctoral nurses, all of which have a role in the culture shifts.

Summary:

The K2A framework is generalizable to all members of the healthcare team, patients, families, and the general public which makes it suitable for PBM. It consists of a systematic approach similar to the nursing process and scientific method. In current practice, improvement of nursing metrics is not always achieved through nursing education alone; resistance to practice changes may contribute to other factors aside from knowledge deficits. The K2A framework goes beyond "knowing" and allows for identification and attention to these barriers that impede action. This framework encompasses the ability to customize based on setting which is important when implementing PBM in complex healthcare systems and diverse patient populations.

Knowledge to Action Framework

Glossary of Terms

Decision to translate - decision to create an actionable product based upon existing science-based knowledge.

Facilitators - factors that increase the likelihood of success.

Knowledge into products - a systematic process of turning scientific evidence into programs, policies, interventions, guidelines, tool kits, strategies, and messages that assist and support putting science into clinical practice.

Knowledge translation - a dynamic and iterative process comprising synthesis, dissemination, exchange and ethically-sound application of knowledge to improve health.

Knowledge user - is an individual that is able to utilize knowledge generated through research to make informed decisions.

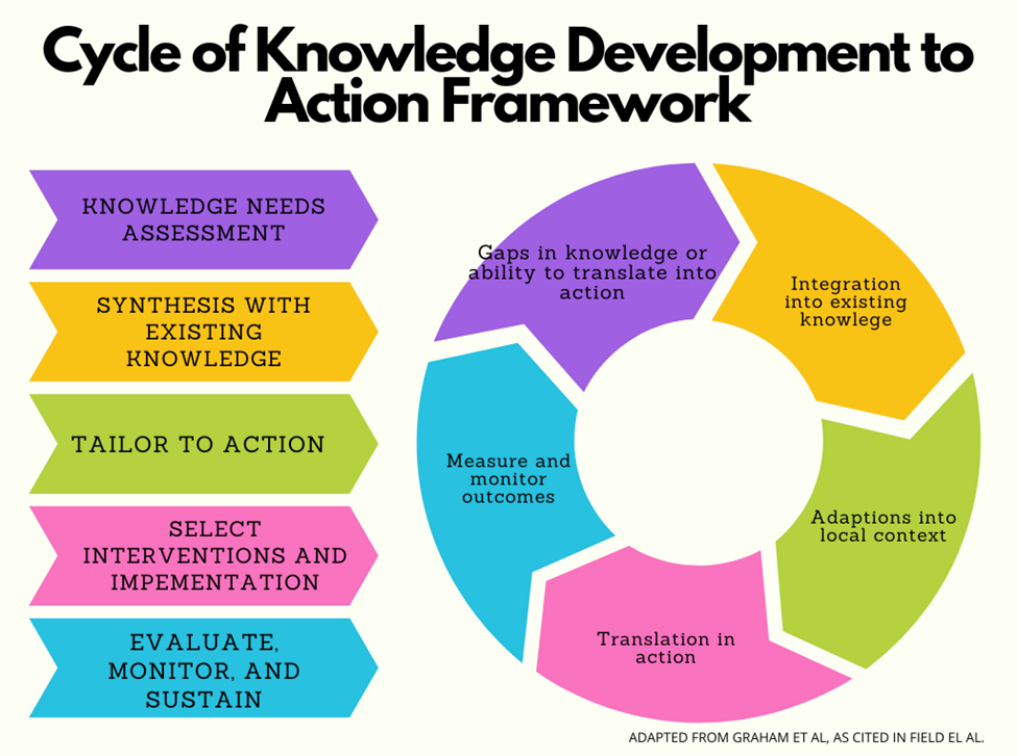
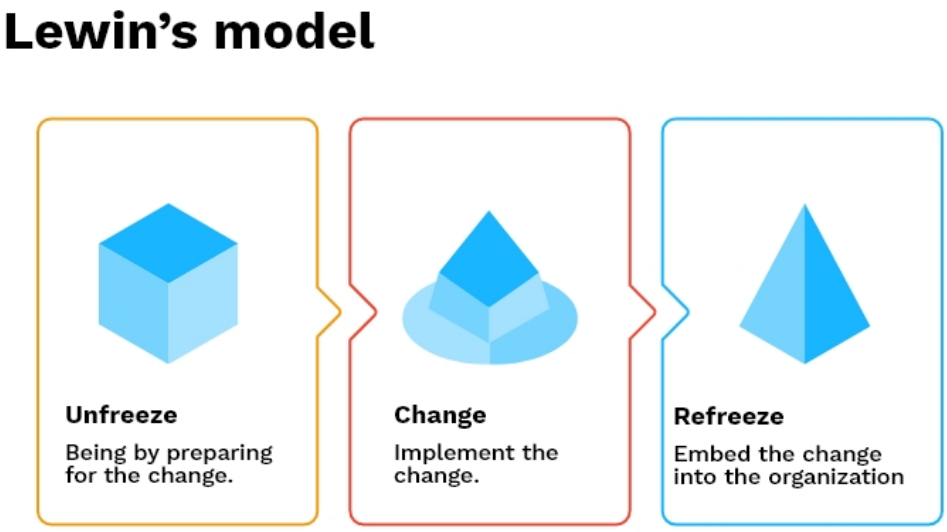


Figure 2.

Figure 3



Nursing Through PBM

Nursing as a profession has an assumed and applied obligation to provide care to patients in many different settings through a variety of care models. Nurses specializing in PBM take a leading role in promoting optimal health and managing diseases or complications, by promoting blood health. Through a patient-centered approach, PBM as a specialty aims to highlight the nurses role in management of anemia, promotion of blood conservation, and coagulation optimization. In this context, nurses serve as vital advocates for a holistic approach, integrating cultural competence, patient-centered principles, informed choice, and evidence-based practices to ensure the best possible outcomes for their patients.

Health Promotion and Disease Prevention:

PBM nurses have a key role in health promotion. Activities can include developing and leading programs that promote blood health, and ensuring preventative strategies are used in

patient care. These strategies help to empower patients as they offer long term benefits, including improvement of quality of life and lower healthcare costs. Blood health incorporates three levels of disease prevention: primary, secondary, and tertiary, through risk reduction methods.

In primary prevention, PBM nurses provide education and evidence-based recommendations on ways to prevent blood related illnesses. To prevent incidence of anemia related to nutritional deficiencies, teaching would include instructions for optimal dietary intake of foods high in iron, folate, and vitamin B12, as well as how to maximize absorption of these nutrients through optimal preparation and combination with foods high in ascorbic acid. PBM nurses likewise work to reduce risks of perioperative coagulopathy by addressing intake of medications and nutritional supplements that affect hemostasis; instructions would include appropriate timing to stop or bridge antiplatelet or anticoagulant drugs, as well as to stop intake of non-prescribed supplements, particularly those associated with increased bleeding time (e.g.: garlic oil, Vitamin E oil, fish oils, etc.).

In secondary prevention, PBM nurses empower individuals to proactively manage their blood health through regular assessment and diagnostic screening, to enable early detection of problems such as anemia, iron deficiency, and blood loss. Health interviews can identify patients with substantial risk factors for anemia and blood loss, and help determine appropriate laboratory testing to perform, such as complete blood count, iron panel, coagulation testing, and more. If evidence of abnormal blood loss is identified, PBM nurses can either directly facilitate or recommend referral to specialty providers for expert assessment.

In tertiary prevention, or treatment and management of active disease, the practice of PBM considers a broad range of strategies to address the individual needs of the patient. PBM nurses coordinate care orders to optimize preoperative Hgb, manage anemia, and treat iron

deficiency through the use of iron replacement, other hematinics, and epoetin-stimulating agents (ESA). Management of blood loss from varying sources (e.g.: gastrointestinal, menstrual, etc.) can include supporting medical and surgical interventions, perioperative care support, and addressing excess in-hospital phlebotomy draws. PBM nurses also help minimize incidence and volume of allogeneic transfusion by helping optimize a patient's physiological tolerance of anemia through improvement of oxygen reserves (e.g.: supplementary oxygen) and reduction of oxygen demand (e.g.: ensuring adequate rest and recovery).

Holism and Patient-Centered Care: The practice of PBM emphasizes focus on the patient, as opposed to the transfusion 'product', and nurses who specialize in this area are well-attuned to holistic practice that accounts for the broader perspectives and well-being of the patient. Tradition-based practice has often included use of laboratory values alone to determine a patient's need for blood transfusion, and these do not allow consideration of factors that might increase or decrease an individual's tolerance of anemia, such as body mass and corresponding blood volume, age, prevalence of ongoing bleeding, comorbid disease, and others. PBM nurses and the multidisciplinary care team use a holistic and patient-centered approach to manage blood health by evaluating individual physiological, psycho-social, and cultural factors, as well as patient preference.

Cultural Competence and Informed Choice: Cultural competence is a cornerstone of PBM nursing practice when managing and optimizing the patient's own blood. PBM nurses understand that patients come from diverse cultural backgrounds, often with unique beliefs and values pertaining to healthcare; they respect and integrate these cultural perspectives into their care, ensuring that patients feel comfortable with their treatment plans and that their values are upheld. Furthermore, nurses enable informed choice by providing patients with essential

information to make decisions about their blood management options. Commitment to PBM nursing promotes informed choices and respects patient values, which ultimately results in true patient-centered care.

Application to Social Determinants of Health

PBM nurses can serve as advocates for patients, ensuring that their voices are heard in the healthcare system; thus various social determinants of health can be addressed. These social determinants are related to disparities in healthcare delivery and advocating for equitable care.

PBM nurses advocate for improved access to healthcare services, especially for vulnerable populations. Populations that may be vulnerable to health inequity can include specific racial and ethnic groups, those with low socioeconomic status or financial burden, and those with low health education or health literacy. Supporting vulnerable groups involves collaborating with healthcare institutions, community organizations, and policymakers to address barriers to healthcare access.

PBM nurses can enhance the care of blood health amid patients with diverse racial and ethnic backgrounds by promoting culturally sensitive practices that aim to understand the unique perspectives and preferences related to blood care within different communities. By fostering open communication, addressing cultural beliefs, and tailoring PBM strategies to individual cultural contexts, these nurses contribute to more personalized and inclusive care.

Addressing financial barriers can significantly impact healthcare decisions. PBM nurses seek to provide resources, linking patients to financial assistance; PBM nurses do this by helping patients navigate health care costs, explore insurance options, and participate in financial

assistance programs for various pharmaceutical products that may be financially unobtainable. Collaborating with social services and case managers can help PBM nurses identify and address other social determinants affecting patients. This may involve connecting patients with community resources such as food programs, and transportation services.

Improving health literacy in blood health improves patient understanding of their treatment plans. PBM nurses can create educational materials in multiple languages and formats to accommodate diverse literacy levels. These nurses can educate patients about the importance of maintaining good blood health practices and managing chronic conditions that have a direct impact on blood function.

Adopting a patient-centered care approach involves considering the social, economic, and cultural context of each patient. PBM nurses can tailor care plans to individual needs, considering the unique circumstances that may impact overall health. Recognizing the psychosocial aspects of blood health is essential. PBM nurses can offer emotional support, connect patients with counseling services, and or their cultural community.

By integrating these strategies into their practice, PBM nurses can contribute to a more comprehensive and patient-centered approach that addresses social determinants of health, ultimately enhancing patient outcomes and promoting health equity.

ETHICS OF PBM IN PRACTICE

Utilization of PBM in the clinical setting by nurses exemplifies ethical principles in the following ways:

Provision 1. The PBM nurse practices with compassion and respect for the inherent dignity, worth, and unique attributes of every person.

PBM nurses practice compassion by providing honest and transparent communication with patients. They deliver comprehensive information about the benefits and risks of various blood management options, allowing patients to make informed decisions about their care in line with their own value system.

Provision 2. The PBM nurses' primary commitment is to the patient, whether an individual, family group, community, or population.

Nurses uphold the principle of autonomy by empowering patients to make informed choices about their blood management. In PBM, patients are provided with thorough information about their options, including the benefits and risks, allowing them to make decisions that align with their values and preferences.

Provision 3. The PBM nurse advocates for and protects the rights, health, and safety of the patient.

PBM aligns with the principle of beneficence as nurses focus on promoting the patient's well-being and safety. By proactively recommending interventions to address declining blood function as it is occurring, nurses ensure patients receive care that is in their best interests. Proactive management of a patient's own blood avoids risks and complications, and prevents development and progression of negative symptoms.

Provision 4. The PBM nurse has the authority, accountability, and responsibility for nursing practice, makes decisions, and takes action consistent with the obligation to promote health and provide optimal care.

PBM nurses wield authority in their specialized domain of PBM. This involves a comprehensive understanding of evidence-based practices in blood management and a commitment to promoting blood health. PBM nursing includes active involvement in decision-making processes related to blood conservation strategies. For example, PBM nurses must be well-informed about the latest advancements in transfusion medicine, monitoring patient hemodynamics, implementing protocols that promote patient blood heath, minimize blood loss and the risks associated with blood transfusions, all while championing alternatives to blood transfusions when appropriate.

Provision 5. The PBM nurse owes the same duties to themselves as to others, including the responsibility to promote health and safety, preserve wholeness of character and integrity, maintain competence, and continue personal and professional growth.

The PBM nurse's duty to oneself aligns with the understanding that maintaining personal health and well-being is essential for providing optimal care to patients. PBM nurses must also prioritize their own well-being to ensure they can deliver effective and compassionate care consistently. This involves adhering to safety protocols, staying updated on best practices in blood management, and actively participating in initiatives to enhance patient safety.

Provision 6. The PBM nurse, through individual and collective effort, establishes, maintains, and improves the ethical environment of the work setting and conditions of employment that are conducive to safe, high-quality health care.

The principle of non-maleficence guides nurses to minimize harm to patients, which PBM supports by reducing the potential harm associated with blood transfusions. By carefully managing and protecting a patient's own blood, nurses work to ensure that patients face minimal risk.

Provision 7. The PBM nurse, in all roles and settings, advances the profession through research and scholarly inquiry, professional standards development, and the generation of both nursing and health policy.

PBM nurses must engage in ongoing education, stay informed about the latest research, and participate in professional development opportunities to ensure their knowledge and skills remain current and relevant.

Provision 8. The PBM nurse collaborates with other health professionals and the public to protect human rights, promote health diplomacy, and reduce health disparities.

PBM nurses practice justice by ensuring equitable access to optimized blood management based on medical necessity aligned with the goals related to social determinants of health. They advocate for blood optimization for all patients regardless of economic, social, religious, or cultural status, and the patient’s willingness to accept blood transfusion in their care.

Provision 9. The profession of nursing, collectively through its professional organizations, must articulate nursing values, maintain the integrity of the profession, and integrate the principles of social justice into nursing and health policy. (ANA, 2015a)

In PBM, nurses demonstrate fidelity by staying true to their commitment to delivering the highest quality care to patients. They adhere to established protocols and guidelines to ensure the responsible and ethical management of a patient's own blood.

By integrating these ethical provisions into their practice, PBM, nurses ensure that they are providing care that is both medically sound and ethically responsible. This approach allows nurses to promote patient autonomy, safeguard well-being, minimize harm, uphold justice, maintain transparency, and remain faithful to their commitment to ethical nursing practice.

COMPONENTS OF PBM KNOWLEDGE

The PBM nurse has a strong knowledge base regarding the care and optimization of blood health, which exceeds the standards required of general nursing professionals. This knowledge base is comprised of advanced understanding of:

- Hematology: including the physiology of hematopoiesis and oxygen delivery;
- Anemia and coagulopathy: including the pathophysiology, laboratory and clinical diagnosis, treatment modalities, etc., of both;
- Perioperative blood conservation strategies, such as medical strategies and devices, surgical and anesthesia techniques, pharmacological interventions, etc.;
- Ethics and patient rights pertaining to informed consent and the care of blood health, including declination of transfusion;
- Patient safety and quality of care implications related to blood health and,
- Allogeneic and autologous blood transfusion–treatment indications, benefits, risks, adverse reactions and safety implications.

CURRENT AND ONGOING RESEARCH IN PBM

The PBM nurse helps to advance the specialty of PBM practice by participating in research & quality assurance projects.The PBM nurse utilizes scientific evidence to support the development of PBM-related resources and tools (e.g.: anemia algorithms, etc.) in order to optimize quality of care and safety for patients.

Resources and tools to advance PBM practice may include:

- Development of policy and procedures, treatment algorithms, safety standards, clinical practice guidelines, patient treatment pathways, etc.;
- Development and implementation of education programs and resources for healthcare personnel, patients, families, and other members of multidisciplinary team;
- Programming and practice collaborations between hospital departments, healthcare disciplines, and other stakeholders in order to address blood health issues and implement PBM strategies;
- Utilization of PBM metrics related to blood health (e.g.: incidence of preoperative anemia, surgical blood loss, transfusion utilization, etc.) to demonstrate need and urgency for or display the results of PBM initiatives;
- Evaluation of previous assessments to promote positive change to existing PBM implementation practices with a transitive goal of improving patient outcomes

STANDARDS OF PBM NURSING PRACTICE

The specialty practice of a PBM nurse is informed and guided by the *Administrative and Clinical Practice Standards for Patient Blood Management Programs–5th Edition*, as published by the Society for the Advancement of Patient Blood Management (SABM). These clinical practice standards are also supported by the *Quality Guide–3rd Edition*, also published by SABM, which provides further descriptions of clinical practice standards that PBM practitioners meet, as well as quality indicators to assess practice and program development**.**

The PBM nursing role is dynamic and integral in improving the patient's overall blood health and clinical outcomes. The nurse works collaboratively with all healthcare providers to promote safe and appropriate blood management for all patients in accordance with standards, policies, and guidelines. The nurse demonstrates a strong understanding of blood health to effectively coordinate and assist in patient advocacy and health promotion. Graduate-level PBM nurses (or advanced practice nurses (APN)) are highly specialized and provide additional interventions at the provider level that would not be within the scope of practice of a registered nurse.

The following competencies are adapted from SABM's *Administrative and Clinical Practice Standards for Patient Blood Management Programs* and are applied to the American Nurses Association's current *Standards of Nursing Practice*.

STANDARDS OF PRACTICE

Standard 1. Assessment

The PBM nurse assesses, collects, and applies appropriate data to enable the development of an individualized plan of care related to blood health.

The PBM nurse:

- Performs assessment of patient blood health through the use of clinical evaluation, interviews, review of data, and other methods; including risk assessment (e.g.: perioperative or procedural needs, medical issues, etc.)
- Assesses the patient's clinical presentation for evidence of tissue ischemia, presence of anemia, and potential need for therapeutic interventions to correct anemia.
- Conducts interviews with patients and their families to confirm and clarify care choices related to blood health (e.g.: acceptance of blood transfusion, etc.), that includes attention to personal, cultural values, faith-based values, etc. in an appropriate and respectful environment.
    - Includes assessment of the patient's competency to make health care choices
    - Reviews advance directives outlining patient choices with respect to blood health
- Assesses the patient's level of understanding regarding their blood health and related care options

Additional competencies for the graduate level-prepared registered nurse, including the advanced-practice registered nurse:

- Uses advanced techniques to complete comprehensive assessment for development of a history and physical within identified population foci to maintain, correct, and improve blood health
    - Includes patient interview, physical examination, and assessment of psychosocial, cultural, ethnic, and other factors affecting patient needs.
- Demonstrates decision making skills to complete comprehensive assessment, diagnosis, and management plan for patients with respect to blood health

Standard 2. Diagnosis

PBM nurses identify specific nursing diagnoses and subsequently prioritize them so that planning and intervention can take place. Diagnoses are tailored to the individual or community, with the purpose of creating goals to improve blood health.

The PBM nurse:

- Uses clinical data such as laboratory findings including: CBC, iron screening, reticulocyte count, B12, folate, hepcidin, inflammatory markers, among other indicated tests to identify abnormalities in blood health.
- Reviews medication list, and identifies risks to blood production, coagulation or function.
- Reviews provider notes to obtain comprehensive understanding of acute and chronic conditions and potential or current problems to the vascular system.
- Utilizes technology, classification systems, and clinical decision tools such as Ganzoni equation to calculate iron deficiency requirements.
- Documents blood-health related diagnoses tailored to the individual patient.

Additional competencies for the graduate level-prepared registered nurse, including the advanced-practice registered nurse:

- Initiates diagnostic tests relevant to the patient's condition.
- Interprets multiple sources of data such as laboratory findings, to diagnose conditions relating to blood health.
- Incorporates standard terminologies and coding methodologies to ensure correct documentation of the identified diagnoses.
- Orders or performs screening and diagnostic investigations using best available evidence to support or rule out differential diagnoses with necessary follow-up.

Standard 3. Outcomes Identification

The PBM nurse identifies expected outcomes and patient-specific goals for the care plan. Plan will include expected outcome/goal with interventions. Plan will be reviewed for continued assessment and monitoring of patient progress.

The PBM nurse:

- Collaborates with the patient and the multidisciplinary care team to create a care plan that identifies expected outcomes and patient-specific goals related to blood health.
- Utilizes current evidence regarding PBM along with clinical conditions of the individual to assist in creation of measurable outcome expectations.
- Establishes a timeframe for evaluation of outcomes based on a multidisciplinary plan that is agreeable to the patient.
- Documents expected outcome related to blood health as a measurable goal.

Additional competencies for the graduate level-prepared registered nurse, including the advanced-practice registered nurse:

- Provide communication to the patient of the diagnosis including implications for short- and long-term outcomes and prognosis.

Standard 4. Planning

The PBM nurse develops a collaborative plan to engage strategies to optimize patient outcomes in relation to blood health. The plan is made in collaboration with multidisciplinary input and recorded through charting in an electronic health record (EHR) when possible. The plan must include buy-in from the patient and care team.

The PBM Nurse:

- Prioritizes identified nursing diagnoses, delivering these to the multidisciplinary team to facilitate a plan.
- Communicates PBM management plan to the entire multidisciplinary team.
- Provides PBM resources needed to execute established care plans to both the patient and all collaborating clinicians.
    - Ensures that execution of the plan is aided by all necessary equipment and/or technical staff.

Additional competencies for the graduate level-prepared registered nurse, including the advanced-practice registered nurse:

- Facilitates implementation of advanced protocols and procedures related to blood health.
- Formulates a plan of care based on diagnosis and evidence-based practice.
    - Monitors patient's responses to medication therapy and modify treatment based on results

Standard 5. Implementation

The PBM nurse ensures the implementation of the identified plan with the multidisciplinary team. Implementation occurs within primary care settings, ambulatory clinic care, throughout the perioperative phases, or from hospital admission to discharge. The PBM nurse implements PBM interventions that are: preventive when risk is identified, or therapeutic when immediately indicated.

The PBM nurse:

- Assists in the implementation of hospital-wide policies and procedures that guide PBM for clinicians.
- Ensures implementation of a patient-centered plan of care addressing blood health while respecting preferences and choices of the patient.
- Participates with multidisciplinary providers to ensure anemia is treated, blood loss is minimized, and coagulation optimized.
- PBM nurses assist in the development of workflows transitioning to a patient-centered model of care with PBM as a guide.

Additional competencies for the graduate level-prepared registered nurse, including the advanced-practice registered nurse:

- Assists in the implementation of hospital-wide policies and procedures that require documentation of discussion with the patient about the risks and benefits of PBM methodology.
- Integrates therapeutic interventions that reflect evidence-based advanced knowledge and practice within specified populations regarding blood health.
- Uses prescriptive authority procedures, referrals/consultation, treatments, and therapies to improve blood health

Standard 5A. Coordination of Care

The PBM nurse coordinates care delivery to ensure optimized blood functionality, allocation of resources, and appropriate monitoring of patient status.

The PBM nurse:

- Develops strong relationships with members of the multidisciplinary team who have knowledge and experience in blood health modalities.
- Coordinates patient care with other health care agencies and specialists.

- Facilitates communication within the patient-family support network during transitions between care settings with respect to cultural background and norms.

Additional competencies for the graduate level-prepared registered nurse, including the advanced-practice registered nurse:

- Synthesizes data and information to provide necessary system and community support measures, including modifications for environments.

Standard 5B. Health Teaching and Health Promotion

The PBM nurse utilizes various methods to educate providers and patients on PBM modalities that promote optimal blood health.

The PBM nurse:

- Queries patients, families, and the health care team to determine level of understanding regarding blood health and PBM interventions, to help identify specific learning needs.
- Provides comprehensive education to patients, their families, and all clinicians and other ancillary health care staff to ensure awareness about all PBM interventions available including anemia treatment, reduction of blood loss, and blood conservation.
- Ensures all patients have access to information regarding the risks and benefits of receiving blood transfusion, of declining transfusion, and of competing clinical strategies that are available or applicable.
- Ensures a discharge plan for management of anemia (identified or acquired during the hospital admission) is shared with the patient, providing clear direction for next-steps, patient responsibilities, etc.
- Provides mentorship and coaching of others within the healthcare team, to help advance knowledge and skill sets related to PBM and blood health.

Additional competencies for the graduate level-prepared registered nurse, including the advanced-practice registered nurse:

- Engages in academic and clinical teaching of concepts related to blood health and PBM interventions, sharing their expertise with nursing students, healthcare professionals, and other stakeholders.
- Assists in development of information regarding the risks and benefits of either receiving or declining a blood transfusion. The information includes competing clinical strategies or alternatives to blood transfusion available and applicable to that patient.
- Develops education on competing clinical strategies or alternatives to and strategies to avoid blood transfusions is provided to medical staff and other health care providers.
- Ensures that education regarding religious doctrines that prohibit blood transfusion is available to all providers.
- Synthesizes evidence from accessible high-level sources when designing health education information, tools, and programs that pertain to blood health and PBM strategies to ensure accuracy and accessibility to all pertaining audiences.

Standard 6. Evaluation

The PBM nurse evaluates all outcome-related metrics concerning PBM strategies and blood health with the goal of tailoring the previously developed patient care plan. Facilitates multidisciplinary committees to review and evaluate all aspects of the PBM program. Participates in monitoring compliance with PBM clinical protocols. Analyzes data on blood ordering practices and adherence to evidence-based guidelines. Integrates hospital data and related outcomes affecting blood health with current evidence to encourage sound clinical policy and practices. Conduct research; evaluate the current and future state of a PBM program, based on the SABM standards, using a gap analysis.

The PBM nurse:

- Evaluates response to plan of care in collaboration with the patient regarding person-centered and effectiveness of PBM interventions.
    - Revises the plan of care based on the patient's response and preferences.
- Evaluates ongoing progress towards attainment of goals outlined in the blood health plan with respect to predefined timelines and measurable criteria
- Uses results of patient evaluations to improve quality of PBM-related care.
- Uses current research to update and improve PBM-related care plans.
- Collaborates with the entire multidisciplinary team, including the patient and family, regarding evaluation of progress towards goals.
- Documents and reports results of evaluation in a timely fashion.
- Disseminates results of evaluation to the patient and multidisciplinary team.

Additional competencies for the graduate level-prepared nurse, including the advanced-practice registered nurse:

- Synthesizes data to evaluate the plan's effect on the patient and related populations.
- Conducts and evaluates results of current research to continuously recommend changes in process, policy, procedure, or protocol when warranted.

STANDARDS OF PROFESSIONAL PERFORMANCE

Standard 7. Ethics

The PBM nurse continuously utilizes ethical action when practicing specific PBM interventions.

The PBM nurse:

- Remains competent and current in Code of Ethics for Nurses with interpretive statements issued through American Nurses Association (ANA) to guide day to day practice in blood health.
- Documents patients' wishes in the event that they are incapable of speaking for themselves with respect to legality (including informed consent).
- Seeks out additional legal documentation regarding patient preferences to care.
- Utilizes resources and ethical councils when matters of ethics are in question.
- Educates patients, families, and community on medical ethics and practices to help resolve complex patient and family conflicts.

- Refines ethical competence through professional and self development activity, with respect to personal identity and values.

Additional competencies for the graduate level-prepared nurse, including the advanced-practice registered nurse:

- Serves as a mediator in the presence of ethical conflict among any party.

Standard 8. Advocacy

The PBM nurse demonstrates advocacy in all roles and settings.

The PBM nurse:

- Advocates for patient-centered care to ensure that preferences, needs, and beliefs related to blood health are communicated to the entire health care team.
- Engages in opportunities to advocate for nursing contributions, involvement, and awareness in PBM.
- Advocates for policies that improve access to quality healthcare, promote health equity, and address social determinants of health.
- Advocates for the appropriate application of PBM and blood health.

Additional competencies for the graduate level-prepared nurse, including the advanced-practice registered nurse:

- Advocate for change in healthcare policy at local, national, and international levels.

Standard 9. Respectful and Equitable Practice

Nurses ensure the best possible care for individuals from diverse cultural backgrounds. Their commitment to cultural humility and inclusiveness demonstrates a deep respect for patients' values, beliefs, and traditions, thus promoting equitable and patient-centered care in the field of PBM.

The PBM nurse:

- Provides culturally appropriate care to ensure equitable and patient-centered healthcare for all individuals.
- Ensures that patients' wishes are respected regardless of pre-existing bias.
- Implement policies that promote health and prevent harm to all patient populations.
- Administers care that is respectful of religious and cultural traditions and beliefs.

Additional competencies for the graduate level-prepared nurse, including the advanced-practice registered nurse:

- Proactively maintains relationships with stakeholders to ensure respectful internal and external cross-cultural partnerships.
- Shares blood health expertise and provides consultation beyond the institution's boundaries into communities.

Standard 10. Communication

The PBM nurse communicates proficiently in various areas across diverse clinical and patient populations.

The PBM nurse:

- Utilizes appropriate choice of language to ensure information related to blood health is understood by the patient, their families, or their representatives.
- Facilitates standardized communication among the multidisciplinary team ensuring respect of the patient's blood health care choices throughout the care continuum.
    - Uses appropriate communication tools when disseminating information.

Additional competencies for the graduate level-prepared nurse, including the advanced-practice registered nurse:

- Leads in creating environments that promote and sustain communication.

Standard 11. Collaboration

The PBM nurse coordinates collaboration between healthcare consumers and key stakeholders, facilitating cooperation and communication in multiple healthcare settings.

The PBM nurse:

- Facilitates efforts between interdisciplinary health care teams to promote and implement strategies that optimize blood health and function.
- Serves as a liaison for the patient, their families or caregivers, and the health care team to help address issues related to blood health matters.
- Ensures interdisciplinary contributions to the development of organizational policies, procedures, care guidelines, and workflows to address and promote blood health.
    - Additional support present for healthcare personnel new to PBM concepts.
- Manages interprofessional plan of care through documentation and collaborative discussions to improve healthcare consumer outcomes.

Additional competencies for the graduate level-prepared nurse, including the advanced-practice registered nurse:

- Leads in collaborative efforts among interdisciplinary teams to ensure that PBM and blood health is addressed via area-specific guidelines and protocols.

Standard 12. Leadership

With knowledge and expertise in PBM practice, dedication to patient safety and advocacy, collaborative approaches to problem-solving, and other strong skill sets, the PBM nurse is well-suited to hold leadership roles in a variety of settings in order to advance PBM practice.

The PBM Nurse:

- Leads activities of evidence-based initiatives related to PBM care that promotes blood health.
- Facilitates professional development by dissemination of information related to PBM and blood health
    - These may include journal clubs, mentorship programs, medical or professional societies/associations, and more.

Additional competencies for the graduate level-prepared nurse, including the advanced-practice registered nurse:

- Leads efforts advance the safety and quality of care within PBM initiatives.
- Directs efforts to recruit fellow champions/leaders in advancing PBM care.
- Leads various established committees that are responsible for decision-making and policy-setting regarding PBM and/or blood care initiatives
- Leads collaborative efforts within the healthcare system.

Standard 13. Education

The PBM nurse seeks knowledge regarding blood health that demonstrates dedication to learning and evolution of practice.

The PBM nurse:

- Participates in continuing professional development activities pertaining to blood health.
- Works to obtain practice experiences that continually improve blood health knowledge.
- Reviews data to understand local demographics and associated effects of social determinants of health and their impact on blood health.
- Identifies personal learning needs regarding blood health knowledge by self-reflection.
- Maintains evidence-based practice staying knowledgeable of new and emerging trends in PBM

Additional competencies for the graduate level-prepared nurse, including the advanced-practice registered nurse:

- Participates in mentoring and coaching opportunities with to further develop professional education and knowledge regarding blood health
- Constructs research/quality improvement initiatives based on education needs.

Standard 14. Scholarly Inquiry

The PBM nurse integrates current evidence-based research into their daily practice.

The PBM nurse:

- Critically examines and appraises evidence-based research relating to PBM.
- Implements evidence-based practice and unit practice guidelines.
- Contributes to nursing knowledge base through presentation and/or publication of research findings.

Additional competencies for the graduate level-prepared nurse, including the advanced-practice registered nurse:

- Conducts clinical investigations and participates in investigations to monitor and improve PBM care practices.
- Facilitates interdisciplinary clinical research.
- Participates in the evaluation of new products and equipment and techniques supporting related research initiatives.

Standard 15. Quality of Practice

The PBM nurse contributes to maintaining quality in practices that encompass blood health.

The PBM Nurse:

- Ensures that nursing practice in blood health is safe, effective, efficient, equitable, and patient-centered
- Ensures policies, guidelines, and protocols encompass current evidence to contribute to optimal patient outcomes.
- Documents crucial information regarding a patient's medical history, treatment choices and test results for timely and consistent communication across multiple points of care.
- Considers the effects of social determinants of health in quality of care.
- Analyzes data on blood ordering practices and adherence to evidence-based guidelines.
- Collects and reports on PBM metrics to monitor quality of nursing practice (refer to "Resources and tools to advance PBM practice").
    - Uses data to guide subsequent decision-making
- Performs timely quality improvement checks to evaluate PBM practices.
- Engages in formal and informal peer review processes of the multidisciplinary team to develop and implement quality improvement initiatives.
    - Example: intense analysis of reported events; participation in quality councils
- Identifies clinical practice gaps and room for improving quality measures relating to blood through PBM metrics.

- Develops quality improvement initiatives as they relate to PBM.
- Collaborates in the development of policy, procedure, and treatment guidelines to improve patient-specific outcomes
    - Implements practice changes that would advance PBM initiatives.
- Acts as a change agent towards PBM and optimal blood health for the organization

Additional competencies for the graduate level-prepared nurse, including the advanced-practice registered nurse:

- Compares evaluations of the effectiveness and efficacy of care plans with the multidisciplinary team to optimize health and healthcare quality.

Standard 16. Professional Practice Evaluation -

The PBM nurse regularly engages in reflective practice, proactively addressing challenges to implementation of PBM strategies and blood health.

The PBM nurse:

- Reflect on personal practice experiences to evaluate ways to improve professional practice surrounding blood health.
- Influences others' practice in blood health.
- Complies with regulatory laws to maintain current licensure, and maintain knowledge of advancements in PBM.
- Maintains awareness surrounding bias when patient's communicate their wishes regarding their blood health

Standard 17. Resource Stewardship

The PBM nurse utilizes appropriate resources to plan, provide, and sustain evidence-based nursing services that are safe, effective, financially responsible, and used judiciously.

The PBM nurse:

- Partners with stakeholders in an effort to recognize care gaps and create solutions to improve stewardship in PBM.
- Partners with healthcare organizations to provide resources when needed, ensuring all healthcare consumers are able to benefit from the highest standards of care practices relating to blood health.
    - Example: mentorship of additional healthcare staff when implementing PBM
- Utilizes health technologies to provide care that is convenient to consumers with various needs.
    - Improves accessibility to care (example: virtual visits)
- Self-assesses knowledge to maintain up-to-date practice regarding blood health.

- Considers resource implications of therapeutic choices (e.g., cost, availability)

Standard 18. Environmental Health

The registered nurse practices in a manner that advances environmental safety and health.

COMPETENCIES

- Evaluate social determinants of health within the community that may impact patients' ability to maintain blood health.
- Disseminates community education and information regarding local health care access solutions.
- Documents crucial information regarding a patient's specific social determinants of health to address care gaps.

Additional competencies for the graduate level-prepared nurse, including the advanced-practice registered nurse:

- Designs research addressing the connections between the environment and blood health.
- Uses community assessment data and plans to develop policies, recommendations, and programs addressing blood health.

SUMMARY: GRADUATE LEVEL & ADVANCED PRACTICE

The PBM nurse role is dynamic and integral in improving overall blood health and patient outcomes. The PBM nurse works collaboratively with all staff to promote safe and appropriate blood management for all patients in accordance with standards, policies, and guidelines.

EDUCATIONAL CRITERIA

Specialty preparation for PBM can be completed by a registered nurse with a typical graduate degree (e.g., associate's degree, bachelor's degree, master's degree, or doctoral degree). Due to the novelty of the field, there is a lack of formal education in organized nursing education programs; however, there are a variety of specialty training programs that exist within academia. Some of these courses include the SABM PBM Certificate Course, industry-related PBM courses, and other hospital-specific courses worldwide. Many of these sponsoring organizations have a variety of methods to disseminate education, through methods including live annual meetings, webinars, in-person & online modules, research studies, etc.

Many educational opportunities exist within these organizations and hospitals: mentorship, evidence-based practice projects, and quality improvement projects serve as a significant and beneficial method in disseminating education. However, there is a need in the current nursing education system that requires future instructors and mentors to continue educating oncoming nurses in the field, in addition to the development of organized nursing education curricula.

When considering PBM as a larger field that does not only encompass nursing, many organizations globally have multidisciplinary aspects that address a variety of specialties, including nurses, prescribers, perfusionists, pharmacists, laboratory specialists, etc. Many of these personnel have the ability and responsibility to make decisions regarding PBM specific care while centering care on the patient. Nurses have an inherent part in synthesizing data specific to all disciplines within their practice, emphasizing a future need to include similar concepts in their field. This is especially true for bedside nurses, who make up most of the nursing workforce.

At a baseline, the PBM nurse is a registered nurse with experience and knowledge in PBM. The PBM nurse, at a minimum, has completed coursework in:

- Physical assessment
- Nursing theory
- Pharmacology
- Nursing research
- Functional health patterns of adult, pediatric, gynecologic, geriatric, and psychiatric patients

The post-BSN graduate would ideally participate in the SABM PBM Certificate Course. As the PBM nurse progresses through career paths and areas of practice, extended training in leadership, research, or advanced practice training would be required.

PROFESSIONAL DEVELOPMENT

At present, numerous professional development and continuing education programs focussed on PBM subjects exist for nurses. The PBM nurse would have access to these existing educational offerings, and as the scientific literature for the field of PBM expands, would additionally have access to new offerings that are developed as a result.

As a specific example, SABM produces a comprehensive, multi-module education program entitled, “Patient Blood Management Certificate Course” (PBM CC). The following are the 14 modules that comprise the PBM CC as of 2023:

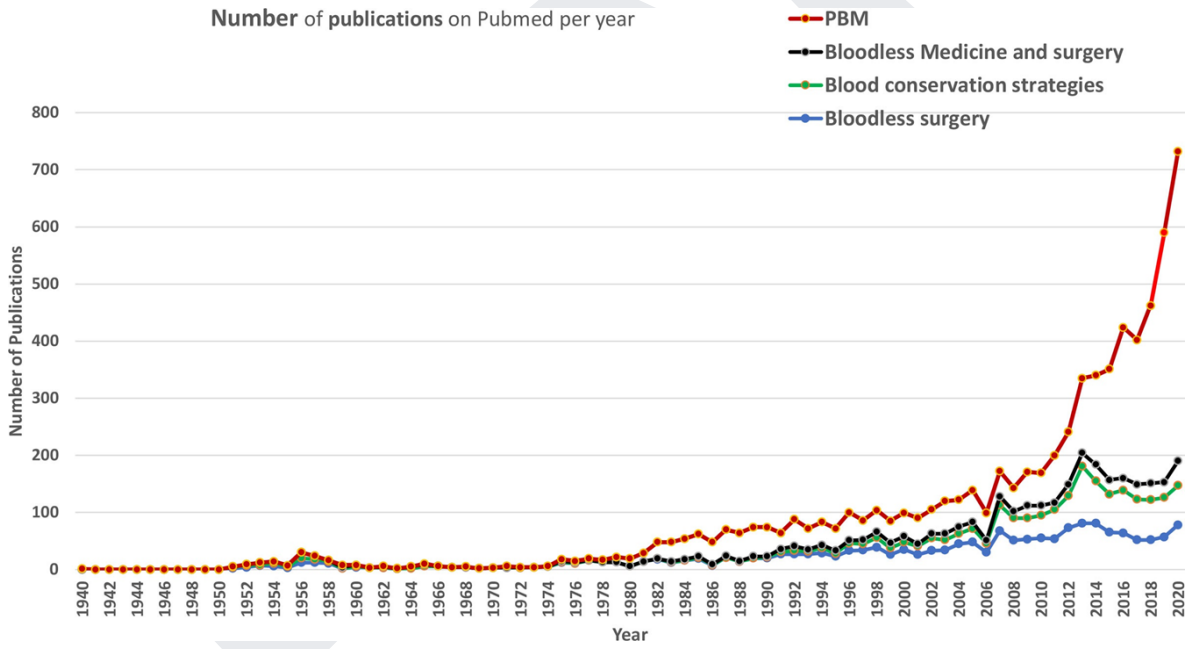
- Introduction to Modern Day PBM
- Program Structure and Implementation Science
- Data Collection for Review and Evaluation of the PBM Program
- The Clotting Cascade–Effects of Anticoagulants
- Blood Components and Coagulation in the Bleeding Patient
- Role of the pathologist in promoting and leading the application of PBM principles
- Pre-Op Evaluation and Preparation of the Surgical Patient
- Anemia Management in the Preoperative Surgical and Hospitalized Patient Populations
- PBM in Obstetrics
- Surgical Concepts in PBM
- Anesthesia Concepts in PBM

- Emergency Medicine Concepts in PBM
- PBM in the Pediatric Patient

The PBM-CC is well-maintained and updated regularly to ensure content is up-to-date with the literature and best practice. Currently, it is offered every 3 years in-person (at the SABM Annual Meeting) and virtually on-demand (by learning management system).

Scientific literature related to PBM subjects has been growing steadily and significantly over time (Figure 4); PBM leaders will need to keep abreast of new literature and practice changes in order to support their colleagues in providing up to date PBM care.

Figure 4. Infographic on volume of research studies



GLOBAL PRESENCE

PBM has shown its presence around the globe through the different degrees of implementation in various countries. The list of countries was obtained from the United States State Department's list of recognized countries. In addition to this list, the Cayman Islands, Scotland, and Taiwan were also added as their countries have hospitals in which policies differ from their parent countries (U.S. Department of State, 2019). A total of 198 countries were recognized for their implementation of PBM programs. Below is a chart regarding the global implementation of PBM around the world (WHO & University of Western Australia, 2022)/

From this data on global implementation, one can see the influence that PBM standards have had on the world, and what is considered the standard for patient care. When considering the volume of nurses that participate and dedicate a majority of their professional work-time to PBM, it is frequently difficult to measure a specific number of nurses due to their large scope of practice and wide flexibility within the field. It is estimated that in countries where PBM is fully implemented, 90% or more nurses of a given location are actively participating in PBM practices, with variability within other countries with different implementation statuses. In the United States, hospitals with dedicated PBM programs have nurses who work specifically in PBM and its associated interventions with an overseeing clinical director, usually a physician. The volume of participating nurses at the bedside or in other roles can vary, depending on the culture and reaction to change from implementation within the hospital.

Type of Implementation	# of Countries	List of Countries

No Current Implementation	140	Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Azerbaijan, The Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brunei, Burkina Faso (Upper Volta), Burma (Myanmar), Burundi, Cabo Verde, Cambodia, Cameroon, The Cayman Islands, Central African Republic, Chad, Chile, Comoros, The Congo Free State, Costa Rica, Cote d'Ivoire (Ivory Coast), Cuba, Democratic Republic of the Congo, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Eswatini, Fiji, Gabon, The Gambia, Georgia, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Iceland, Indonesia, Iran, Iraq, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, North Korea, Kosovo, Kuwait, Kyrgyzstan, Laos, Lesotho, Liberia, Libya, Liechtenstein, Madagascar, Malawi, Maldives, Mali, Marshall Islands, Mauritania, Mauritius, Micronesia, Moldova, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nicaragua, Niger, North Macedonia, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Qatar, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the, Grenadines, Samoa, San Marino, Sao Tome and Principe, Senegal, Serbia, Seychelles, Sierra Leone, The Solomon Islands, Somalia, South Sudan, Sudan, Suriname, Syria, Taiwan (Republic of China), Tajikistan, Tanzania, Thailand, Timor-Leste (East Timor), Tonga, Trinidad and Tobago, Tunisia, Turkmenistan, Tuvalu, Uganda, Ukraine, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, Zimbabwe
Foundational	20	Brazil, Colombia, Ethiopia, Ghana, Hong Kong, India, Israel, Japan, Lebanon, Malaysia, Mexico, Nepal, Nigeria, Philippines, Russia, Saudi Arabia, Singapore, Sri Lanka, Togo, The United Arab Emirates

Private Practice	1	The United States of America
Recommended	30	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, South Korea, Latvia, Lithuania, Luxembourg, Malta, The Netherlands, New Zealand, Poland, Romania, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey
Mandated	7	Australia, Canada, China, Italy, Portugal, Scotland, The United Kingdom

The chart displays the number of countries, and which countries specifically have implemented some form of PBM programming. The definitions for each are as follows: "Mandated" indicates countries where PBM standards are mandatory for all hospitals as determined by government officials. "Recommended" indicates countries where PBM standards are strongly recommended for implementation in all hospitals. "Private Practice" indicates countries where private organizations are responsible for the implementation of PBM programs in hospitals. "Foundational" indicates countries where PBM programs are present in a small number of hospitals, setting up the foundation for future growth of the programs and standards nationally. "No Current Implementation" indicates countries that have not implemented any form of PBM programs or standards.

ORGANIZATION/ASSOCIATION

There are several organizations, both national and international, that participate heavily in PBM and its advancement across the globe. While there are many smaller societies present currently, the large leaders in PBM around the world include SABM, the Network for the Advancement of Patient Blood Management, Haemostasis and Thrombosis (NATA - Europe), The International Foundation for Patient Blood Management (IFPBM - Europe), the National Health Service (NHS - United Kingdom), the Bloodless Medicine & Surgery Society (BMSS - Africa), the National Blood Authority (NBA - Australia), the Association for the Advancement of Blood & Biotherapies (AABB - Global), and the WHO (Global). These societies have provided major platforms and strides in the advancement of PBM as the standard of care across all healthcare settings in the world, and are undoubtedly staffed by hundreds of clinical professionals, including nurses, to further advance their collective goals.

The WHO has mandated PBM practices as what should be the standard for clinical care (WHO, 2011). In addition, the American Board of Internal Medicine, who own the Choosing Wisely Initiative, have established a Choosing Wisely page and standard for PBM in collaboration with SABM. This page outlines different standards that should be met in the clinical setting - all of which correspond with SABM's standards for PBM. This Choosing Wisely page demonstrates that PBM has been effective in clinical settings and is recommended by credible healthcare organizations. Other guidelines now exist to govern the practice of PBM globally, including the Society for Thoracic Surgeons recent update of guidelines for cardiac surgery.

FINAL SUMMARY

Recognition of PBM as a nursing specialty validates and elevates the work of nurses world-wide who work to improve patient outcomes and increase healthcare standards related to blood health. Its global presence signifies its importance in addressing blood-related challenges across diverse populations, unifying healthcare providers under a common goal. The discipline's strong history of ethics, advocacy, and evidence-based practice underscores its commitment to maintaining the highest standards of patient care and safety. The specialty has a broad range of clearly-defined competencies, spanning standard through advanced practice, and its application spans the patient's entire continuum of care. Emphasizing patient-centered care at its core, this specialty acknowledges the crucial role nurses play in optimizing blood health and promoting holistic well-being. By bestowing recognition of PBM as a nursing specialty, healthcare systems can empower nurses to lead with expertise, compassion, and innovation, ultimately enhancing patient outcomes and revolutionizing the landscape of modern healthcare.