

## From Awareness to Action: Why the Time for Patient Blood Management (PBM) Implementation is Now

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In the 2021 *World Health Organization's (WHO) Policy Brief The urgent need to implement Patient Blood Management (PBM)* it is stated: "Adoption of PBM as a standard of care remains an unmet, but urgent need. There is a persistent lack of awareness about PBM on the part of patients, health authorities including those responsible for universal health coverage, health care professionals such as doctors, nurses and pharmacists, professional societies, public health experts, health economists, hospital administrators and others."<sup>1</sup>

Almost five years later, it can be stated that Patient Blood Management (PBM) has been largely adopted within Anaesthesiology, and in part, within intensive care medicine and haematology: The number of PBM-related publications is steeply growing. Annual conferences of large professional societies, including Anaesthesiology, intensive care, haematology and cellular therapy societies, are continuously offering PBM sessions that are well attended. More than 100 anaesthesiology societies have signed the Santa Cruz Declaration,<sup>2</sup> expressing their commitment to make PBM a standard of care. In addition to long-established PBM programs,<sup>3-5</sup> new initiatives have emerged, and others are about to begin, where most of them are led by anaesthesiologists that act as clinical champions. These programs have produced publication-worthy outcomes, including those at Mayo Clinic, Johns Hopkins and University Hospital Zurich.<sup>6-9</sup> One of the largest women's and children's hospitals in the UAE, Corniche Hospital in Abu Dhabi, has fully established an Anaesthesiology led PBM program in the obstetrics and gynaecology department. Particularly in women suffering from postpartum hemorrhage (353 patients with PPH of more >2,000 ml), the program reduced blood utilization by 84% with activity-based cost savings between US\$677,000 and US\$908,000.<sup>10</sup> Further clinical guidelines on PBM have been published since 2021,<sup>11-13</sup> and for the first time, the European Society of Cardiology (ESC) clinical guideline on cardiovascular assessment and management of patients undergoing non-cardiac surgery, included a fully dedicated PBM section with three level 1A recommendations on PBM modalities.<sup>14</sup>

However, apart from a few new and notable exceptions in Ceará, a low-income state in Brazil,<sup>15</sup> and Mexico, as laid out in the *Gaceta Parlamentaria (Parliamentary Gazette)*,<sup>16</sup> full implementation of PBM at regional and national levels still falls short. Following the Donabedian model, which is widely used in health care research and management to evaluate and improve the quality of health care delivery,<sup>17</sup> the implementation of PBM first requires structural changes at the jurisdictional/national or public health level. These changes can only be initiated through a genuine policy commitment to respond to the WHO's call to action, alongside the establishing of the necessary governance structures and the reallocation of resources necessary for PBM – at this point it may be important to reiterate that PBM implementation is never a cost, but an investment into health with exceptional returns on investment.<sup>3,4,7,9</sup> A national/jurisdictional task force would then ensure that PBM is endowed with a degree of normative force by embedding it within the quality and safety framework. Other tasks would include the institution of at least the minimally required PBM education for post- and undergraduates, securing access to medicines and devices necessary for PBM, and the respective funding. Building on these structural measures – according to Donabedian –, individual PBM pilot projects with their respective clinical and administrative processes can be established. However, at this stage, it becomes clear how complex and challenging large-scale PBM implementation is, and why an unusually large number of diverse stakeholders needs to be involved and motivated to contribute.

Successful implementation requires that stakeholders clearly understand the benefits for them, and this is precisely where the strength of PBM lies. Back in 2012, when it became clear that the expectations of the statewide Western Australia PBM Program<sup>3</sup> had been greatly exceeded, an article in the *British Journal of Anaesthesia*, entitled "Patient Blood Management is a win-win: a wake up call",<sup>18</sup> concluded that this success represented the rare alignment of patient benefit, economic efficiency, and clinical quality in medicine.

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With this, PBM also delivers disease prevention, health promotion, and protection - the three core deliverables or “3Ps” of public health. This is achieved for instance through the early detection and treatment of iron deficiency (ID) and iron deficiency anaemia (IDA). Children under five years of age and women of reproductive age, particularly vulnerable populations, are especially affected. ID and IDA increase child mortality and are associated with an elevated risk of neurological, cognitive, and other developmental impairments. In pregnant women, they are linked to a higher risk of obstetric complications and increased maternal mortality. Overall, ID and IDA impair physical and cognitive performance and frequently lead to increased utilization of healthcare services. Another population particularly affected by ID and IDA is older adults. This population is not only the fastest growing worldwide, but the prevalence of ID and IDA also increases continuously with advancing age,<sup>19</sup> leading to progressive impairment of quality of life. In addition, there is a markedly higher prevalence of anaemia of inflammation associated with chronic conditions such as heart failure, diabetes, arthritis, nephropathy, colitis, and other chronic diseases. When these patients are hospitalized—older adults aged 65 years and above account for a highly disproportionate share of hospital admissions in high-income countries—the burden of anaemia is often further aggravated by hospital-acquired anaemia, for example due to frequent blood sampling. In surgical patients, the situation is exacerbated by perioperative blood loss and bleeding related to coagulation disorders. In all of these populations, both preventative and corrective Patient Blood Management (PBM) measures can significantly reduce morbidity and mortality, as well as overall treatment costs and the need for blood transfusions. Increasing awareness within the medical establishment about PBM and improved health literacy of the public about blood health – the preventive and therapeutic goal of PBM and a term that resonates better with lay people –, empowers patients and fosters informed choice, thus promoting and protecting health. Another compelling line of argument for all stakeholders is, that PBM is driven by “3Es”: it is evidence-based, with a strong economic rationale, and therefore leads to an unconditional ethical obligation to implement. And finally, it is the sheer magnitude that is compelling: Anaemia, blood loss, and coagulopathy with bleeding affect more than three billion individuals. “Taken together they represent one of the world’s biggest, largely preventable, yet greatly underestimated public health and health-economic burdens.”

However, when the WHO states that *delaying the implementation of PBM translates into increased morbidity and mortality*,<sup>1</sup> and when PBM offers this exceptional opportunity to improve outcomes for millions while saving billions of healthcare dollars<sup>20</sup> a fundamental question remains: why is PBM not yet a global standard and why – as the title of this editorial suggests – is the time for implementation right now? Quite simply, because it is only since 2025 that the first comprehensive *WHO Guidance on implementing patient blood management to improve global blood health*<sup>21</sup> has been available. It is a document in which all relevant stakeholders can see themselves reflected, recognize their potential contribution to PBM and blood health, and clearly understand the benefits that arise from it. Together

with its toolkits and supporting materials, it consolidates the experience and critical lessons learned from more than 100 experts on facilitators and barriers to PBM, as well as the structural and cultural challenges that must be addressed. The implementation pathway is based on the “8-model”, a methodology recently developed for complex and comprehensive system implementations in large sectors, including national health care systems. This Guidance enables stakeholders to avoid implementation gaps and to contribute to the full adoption of PBM as the urgently needed national standard of care.

This special issue of *Update in Anaesthesia* will certainly add valuable complementary insights to the WHO Guidance Document on PBM.

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