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POSTCOVID-19 WAR era, Hematologic and Blood Banking Updates

Abstract

Transfusion medicine and hematological interventions remain essential, life-saving components of modern healthcare. However, the post-COVID-19 era has introduced new challenges related to transfusion safety, diagnostic accuracy, and the potential emergence of transfusion-related risks. Since the onset of the COVID-19 mutants pandemic in 2019, global attention has increasingly focused on the safety of blood recipients, the integrity of blood-transfusion systems, and the handling of isolated biological products. Concerns regarding storage conditions, unknown viral contaminants, and the theoretical risk of transfusion-related transmission have intensified, particularly in relation to complications such as transfusion-related acute lung injury (TRALI) and chronic graft-versus-host disease (GVHD).

This paper aims to highlight critical updates and potential improvements needed to strengthen multiple aspects of transfusion medicine. It also discusses possible hazards associated with hematologic procedures that may adversely affect patient outcomes or disease progression. By addressing these emerging gaps, the paper underscores the importance of continuous vigilance and modernization of transfusion practices in the evolving post-pandemic landscape.

Keywords: postcovid-19, human, blood banks, mortality, morbidity, management, health, haematology, pathology, AI, Medicaid and Medicare

Volume 14 Issue 1 - 2026

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Received: January 14, 2026 | **Published:** February 25, 2026

Introduction

Emerging concerns about increasing Transfusion-related risks and diagnostic gaps in these Post-COVID-19 era, which is one of most lifesaving concerns, needs updates, significantly. Since the onset of the COVID-19 pandemic in 2019, global attention has intensified regarding the safety of blood transfusion systems, biologic products storage sciences, and unknown viral contaminations particularly with respect to the theoretical risk of transfusion- related transmission of emerging or unknown viral agents.[1–6] Although different published studies and evidences suggest that SARS-CoV-2(Corona virus mutated mutants) infection or vaccination does not increase transfusion-related adverse outcomes, the pandemic attacks of COVID-19 mutants have exposed long-standing vulnerabilities in blood-screening infrastructures.[5–8]

Now (2026) the abovementioned vulnerabilities intersect with broader concerns about Profit Structures in Health- and Disease-Related Markets (PSHDRM), which continue to shape blood isolation, storage sciences, and associated diagnostic innovation and regulatory inertia.[4–8] As novel viral mutants continue to emerge globally, most blood banks and transfusion centers did lack the technological capacity to detect, differentiate, or characterize unknown (viral) antigens, immunogens, or allergens (AIAs) in real time.[1–3,6,7] Artificial intelligence (AI) has been proposed as a potential solution to reduce human-driven bias and enhance high-throughput data interpretation, yet AI-focused institutes have struggled for decades to meaningfully influence Good Manufacturing Practices (GMPs) or Standard Operating Procedures (SOPs) in transfusion medicine. This draft outlines the scientific, regulatory, and economic challenges that hinder the modernization of transfusion-screening systems and highlights the need for integrated AI-driven diagnostic frameworks. The COVID-19 pandemic reshaped nearly every aspect of transfusion medicine, prompting renewed scrutiny of transfusion safety and pathogen-screening protocols. Early public fears focused on whether SARS-CoV-2 could be transmitted through blood products.

However, multiple studies and retrospective analyses have found no increased risk of adverse outcomes among recipients of blood from donors with prior SARS-CoV-2 infection or vaccination. Despite these reassuring findings, the pandemic heightened awareness of broader systemic vulnerabilities—particularly the inability of current screening systems to detect unknown or rapidly mutating pathogens. Simultaneously, concerns about Profit Structures in Health- and Disease-Related Markets (PSHDRM) have persisted. These structures often prioritize incremental, low-risk innovations over disruptive diagnostic upgrades, contributing to a paradoxical stagnation in transfusion-screening modernization even as global biological threats intensify.

Transfusion-related transfection concerns, in these POSTCOVID-19 war era

Although there are no and/or limited study reports published over the COVID-19 mutant itself, which has not been shown to transmit via blood transfusion, the pandemic highlighted several issues indicated that different missing links exist that are neglected in the last 4-5 years i.e., I. uncertainty about donor eligibility windows and viral persistence in asymptomatic individuals. II. increased demand for blood products during periods of supply- demand and instability since 2020. Besides, III. public misconceptions about vaccinated or previously infected donors, requiring evidence-based clarifications, while no direct cause- and-effect studies have been reported in the last 4-5 years. Simultaneously, more than 10000 Lancet, Nature, and Scientific Reports retracted, as admitted in Nature NEWS December 2023,[8] which indicated that overall Scientific peer-reviewed studies and administrative employees have been corrupted, in the last 20 years, however. Although it could mean that eventually, such retraction was a consequence of published papers of all suppressed Authors and Researchers, who indeed tried to expose such fake news, via LinkedIn and different Journals with low impact factors, who could not get a chance to do that via Peer-reviewed Elite Journals.

These concerns catalyzed discussions about the broader risk of transfusion-related transfections involving unknown or emerging viral agents—risks that cannot be fully mitigated by current pathogen-reduction technologies or nucleic acid testing (NAT), which rely on known genomic targets. In the most high-income industrialized countries, different biological products and blood donation primarily rely on anonymous, voluntary donors. Although paid donations have increased in the last 4-5 years. Nevertheless, directed blood donation, single apheresis, and using own autologous blood salvage, where people donate for a specific recipient, have resurged, particularly due to misinformation surrounding COVID- 19 transfections and with high-risk manufactured vaccines, and associated vaccinations.[5]

ABCs of diagnostic gaps: unknown antigens, immunogens, and allergens (AIAs)

Most blood banks and transfusion centers continue to rely on screening technologies optimized for known pathogens. This creates several limitations: A). Inability to detect unknown viral mutants, besides lacking validated primers or antigenic markers. Are causing B) significant lack of multidisciplinary detection systems, capable of simultaneous detection and differentiation of novel AIAs. Consequently, C) delays and slow update cycles for an appropriate diagnostic platform. Furthermore, these failures are often constrained by regulatory and economic barriers, to become upgraded, resulting in excessive morbidity and mortality rates.[1–8] In these POSTCOVID-19 periods, after 6 years, still many main managers can not follow fact-based AIR&Ds and do not understand what is ongoing with lack of knowhow concerning storage sciences, blood banking, and transfusion-related allergic reactions, which underscored the need for adaptive, real-time pathogen surveillance systems capable of identifying unexpected biological (un)known signatures before they could be propagated through transfusion networks.[1–5]

AI as a potential upgrade—and its historical limitations

Artificial intelligence (AI) has been proposed as a potential solution to reduce human-driven bias and enhance high-throughput data interpretation, yet AI-focused institutes have struggled for decades to meaningfully influence Good Manufacturing Practices (GMPs) or Standard Operating Procedures (SOPs) in transfusion medicine. The PSHDRM and different AI- generative tools have been proposed as a transformative tool for transfusion diagnostics, offering potential advantages such as

I. High-throughput pattern recognition in genomic, proteomic, and serologic datasets.

II. Reduction of human-driven bias in donor screening and laboratory interpretation.

III. Rapid anomaly detection that could flag unknown or atypical biological patterns. Though, despite decades of AI-Research and Developments (AIR&Ds) in biomedical domains, AI-focused institutes have struggled to influence transfusion-related GMPs or SOPs in a meaningful way.

Besides, the PSHDRM contributing factors include:

I. Regulatory conservatism, which prioritizes proven technologies over experimental algorithms.

II. Economic disincentives within PSHDRM structures, which may deprioritize disruptive diagnostic innovation.

III. Data-standardization challenges, limiting the integration of

AI across heterogeneous laboratory systems, were well-appreciated and recognized as additive and positive activities, in the last decade. Thus, while AI-R&Ds remains a promising avenue, its real-world impact on transfusion success and patients 'safety has been limited and will remain limited as long as the same policy in manufacturing AIR&Ds remains. The convergence of global viral evolution, diagnostic stagnation, and economic constraints creates a complex risk landscape for transfusion medicine. Although current evidence supports the safety of transfusions from donors with prior COVID-19 infection or vaccination, the broader issue is not COVID-19 mutants themselves but the next unknown pathogen(s).[3–6]

To address this, Hematologists, blood transfusionists, pathologists, and different systems biologists should collaborate with each other worldwide. They must however develop adaptive, AI-enhanced screening platforms capable of detecting unknown AIAs. By collaborating with each other only, they can reform regulatory frameworks to allow controlled integration of machine-learning tools, and implement appropriate AIR&Ds, globally. On the Other hand, reevaluating economic incentives within AIR&Ds, should all Hematologists try to prioritize long-term (bio) surveillance resilience, and strengthen the PSHDRM together a global coordination for pathogen-surveillance data sharing (system), indefinitely. [2–4]

Taken together, revision of the post-COVID-19 era shows the low-quality of different PSHDRM and the AIR&Ds in the 21st Century, which have exposed critical gaps in transfusion-screening systems, particularly regarding unknown or emerging AIAs, are perquisite first action that could be prioritized, if our goal is to save lives of patients/recipients. While AIR&D offers a promising path toward more adaptive diagnostics, structural, regulatory, and economic barriers though, AI-tools have prevented meaningful modernization, among old and young Hematologists and Transfusion Medicine Specialists, eventually. Addressing these challenges is essential to ensure transfusion safety in an era of accelerating viral evolution, and unknown synthetic superbugs.

Acknowledgments

None.

Conflicts of interest

The Author declares no conflict of interest.

References

1. Bahram A Badlou. Postcovid-19 War Era, (re-) Consideration of Enhanced Mortality and Morbidity Rate of Cardiovascular Affected Patients. *J Clinical Cardiology and Cardiovascular Interventions*. 2023;6(8).
2. Bahram A Badlou. Postcovid-19 War era, no drugs-No side effects, (re) Consider Discovery of a Novel mind Provoking Alternatives. *J Pharmaceutics and Pharmacology Research*. 2025;8(2).
3. ABC Blood Bulletin. Directed Donations and COVID-19 mRNA vaccinated blood donors. 2023;23(1).
4. Jeremy W Jacobs. How physicians like me are grappling with requests for unvaccinated donor blood.
5. Jeremy W Jacobs, Garrett S Booth, Mithya Lewis-Newby, et al. Medical, Societal, and Ethical Considerations for Directed Blood Donation in 2025. *Ann Intern Med*. 2025;178(7):1021–1026.
6. Badlou BA. POSTCOVID-19 WAR Era, Abnormally some patients being affected by exceptional disease progression, and accelerated excessive mortality rate. *Arch Pharmacol Ther*. 2024;6(1):24–26.

7. Badlou BA. POSTCOVID-19 WAR era, remarkable accelerated hemato-immunologic processes affecting patients' disease progression toward excess mortality. *Hematol Transfus Int*. 2024;12(1):16–17.
8. Van Noorden R. More than 10,000 research papers were retracted in 2023 - a new record. *Nature*. 2023;624(7992):479–481.

Citation: Badlou BA. POSTCOVID-19 WAR era, Hematologic and Blood Banking Updates. *Hematol Transfus Int.* 2026;14(1):4–6.
DOI: 10.15406/htij.2026.14.00350