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Positive Attitudes, Absent Systems: A Health Workforce Perspective on Irregular Antibody Screening in Fako Division's Blood Banks

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Abstract

Blood bank staff in Fako Division, Cameroon, know that irregular antibody screening matters. Every one of them told us so. However, all four Blood banks surveyed, and most of the nation, test only for ABO and RhD before transfusion, leaving a well-documented group of hemolytic transfusion risks untested (Obeagu, 2025; World Health Organization [WHO], 2021). This gap may stem from a knowledge deficiency in the workforce, which training workshops can address, or an attitude problem, which awareness campaigns can address. In the present study of 21 blood bank workers from 4 blood banks in Fako Division, neither reason was observed. Staff are not a problem. The systems that surround them are.

Knowledge, Attitude, and Practice (KAP) surveys are typically read for one headline figure: the percentage of staff who know the correct answer or, if they have an opinion, support for a practice. The only framing that could ever be offered is more education or more sensitization. The most helpful information from our survey came from the section typically considered secondary: the barriers respondents volunteered when describing why screening is not implemented. That section challenges the knowledge/attitude outcome when compared with the knowledge/attitude results. It is not a story of things staff don't know or don't want. It's a story of not building systems that let them act on what they already know and want.

Summary

Blood bank staff in Fako Division, Cameroon, know that irregular antibody screening matters. Every one of them told us so. However, all four Blood banks surveyed, and most of the nation, test only for ABO and RhD before transfusion, leaving a well-documented group of hemolytic transfusion risks untested (Obeagu, ; World Health Organization [WHO], 2021). This gap may stem from a knowledge deficiency in the workforce, which training workshops can address, or an attitude problem, which awareness campaigns can address. In the present study of 21 blood bank workers from 4 blood banks in Fako Division, neither reason was observed. Staff are not a problem. The systems that surround them are.

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An overlooked element of transfusion safety

Irregular antibodies, any antibody other than anti-A and anti-B, are those produced when a person is exposed to foreign red blood cell antigens via transfusion or pregnancy. If not detected, they can cause a delayed hemolytic transfusion reaction, make future crossmatching difficult, and cause hemolytic disease of the newborn. An irregular antibody screen (indirect antiglobulin test) is standard practice in safe pre-transfusion testing and not optional (WHO, 2023; Cohn et al., 2023). In most of sub-Saharan Africa, it is the exception (Adias et al., 2023): facilities provide ABO and RhD typing because they have the resources and institutional requirements to do so, not because they think anything else is adequate.

What we found when we asked the staff directly

Between January and May 2025, we surveyed the complete available workforce of four blood banks in Fako Division: Buea Regional Hospital, Limbe Regional Hospital, CDC Cottage Hospital in Tiko, and Mount Mary Hospital, Buea. A structured questionnaire assessed knowledge, attitudes, and self-reported barriers.

Knowledge was mixed: only 8 of 21 staff (38.1%) reached the threshold for adequate knowledge, with the weakest domains being antibody identification and quality control rather than basic definitions. Attitudes, by contrast, were uniform and strongly positive: all 21 respondents agreed screening was clinically necessary, and 90.5% said they would perform it routinely if resources and guidance were provided. Attitude scores showed no meaningful association with knowledge scores ($r = 0.18$, $p = 0.43$): staff who scored poorly knew the practice mattered just as clearly as those who scored well.

Barriers were near-universal and structural. Every respondent cited resource deficits, chiefly the absence of antihuman globulin reagent, group O screening cell panels, and functioning incubators or analyzers. Eighteen of 21 (85.7%) reported no written standard operating procedure for screening at their facility, an absence that held across all four sites regardless of ownership type or volume. Thirteen (61.9%) cited inadequate training; underneath that figure, 90.5% had no access to a specialist supervisor or mentor and 85.7% had no access to reference standards such as AABB guidelines. In open-text responses, two-thirds described screening as a low institutional priority relative to transfusion-transmissible infection testing, and 42.9% cited workload constraints.

The only independent predictor of adequate knowledge was educational attainment: staff with a bachelor's degree or above were nearly four times as likely to reach the threshold as those below degree level (adjusted OR 3.84, 95% CI 1.12–13.18). Read as a workforce-planning finding, this is concerning: competence in this domain depends almost entirely on the level of pre-service education a worker happened to receive, with no institutional mechanism to close that gap afterward.

The attitude-practice gap is not a motivation problem

Behavior-change research distinguishes between the intention to act and the structural capacity to act on it; a gap between the two typically signals missing enablers rather than a lack of will (Gollwitzer & Sheeran, 2006). Our data fit that pattern closely. Staff with the weakest knowledge scores were no less

convinced of the value of screening than their most knowledgeable colleagues, and every barrier named sat outside their individual control. A KAP survey that stops at describing gaps risks implying that the fix lies with the individual worker. Ours points the opposite way: the workforce has already done its part.

Three system failures underneath the numbers

Three distinct structural failures emerge from the barrier data, each with a different point of intervention.

The first is a supply chain failure. Every facility reported the absence, in whole or in part, of antihuman globulin serum, screening cell panels, dedicated 37°C incubation capacity, and semi-automated analyzers. These are procurement problems, not competency problems: a technologist cannot perform an indirect antiglobulin test without antihuman globulin reagent, no matter how well they understand the underlying immunohaematology.

The second is a governance vacuum. No facility, public or mission-run, had a written protocol for irregular antibody screening, and none could point to a national guideline requiring it. Where ABO and RhD testing is mandated, and antibody screening is not, staff have little formal basis to prioritize it over other demands, however much they personally value it.

The third, and the least visible in the existing literature, is the collapse of professional development pathways. Training in immunohaematology, almost universally, stopped after initial education: no facility offered in-service training, no one had access to reference standards, and no one had a specialist mentor to consult. Knowledge in a technical discipline like this is not static; it depends on continued exposure, supervision, and correction. A workforce cut off from all three cannot close its own knowledge gaps through willpower alone. This is a workforce reproduction problem: the mechanisms that normally transmit and refresh competence within a profession have stopped functioning here.

Why this belongs on a health workforce agenda

Every barrier named maps onto a familiar workforce-planning category: skill-mix and pre-service curriculum design, supervision and mentorship structures, continuing professional development financing, and task prioritization within existing staffing establishments. None of these are laboratory bench problems; they are workforce governance problems that surface in a laboratory setting. Treating them as a technical quality gap, fixed with an equipment donation or a single workshop, addresses the visible symptom while leaving the underlying systems untouched. A supply-side fix alone would produce a short-lived improvement that decays as staff turns over with no mentorship structure to onboard replacements; a training-only fix would produce staff who understand a test they still cannot perform. The data argue for treating these as one workforce system rather than separable technical inputs.

A regional pattern, not a local anomaly

Fako Division is not an outlier. A 2025 multi-center study of emergency healthcare providers in Gabon found two-thirds had limited knowledge of non-ABO blood groups (Okoue Ondo et al., 2025). A 2026 national audit in Tanzania found that nearly half of facilities lacked SOPs for antibody screening and a third lacked critical reagents (Mwashiuya et al., 2026), despite Tanzania having a national blood transfusion service with a standard-setting mandate that Cameroon currently lacks; a separate survey found measurable irregular-antibody prevalence among Tanzanian donors outside any structured screening program (Matowo et al., 2025). Reviews of transfusion medicine training across African curricula have similarly identified immunohaematology as under-resourced and variably taught (Geurkink et al., 2021). Together, these findings describe a regional pattern in which structural and educational deficits reinforce one another, rather than a series of unconnected local failures.

Reframing the intervention agenda

Interventions built around individual knowledge or attitudes, refresher lectures, sensitization sessions, single-day trainings, are likely to underperform here, not because they are poorly designed but because they target a bottleneck that does not exist: the workforce already holds the attitude such interventions are meant to produce.

Three structural investments would target the bottlenecks that do exist. First, national guidelines that make irregular antibody screening an explicit, resourced requirement, rather than an aspirational best practice, would convert positive attitudes into an institutional mandate. Second, integrating antihuman globulin reagent and screening cell panels into the essential laboratory commodity supply chain would remove the most universally cited barrier. Third, immunohaematology needs a recognized place in continuing professional development frameworks, with structured access to reference standards and a designated mentorship pathway for staff without an on-site specialist. Without this third piece, even a well-supplied, well-mandated system will keep depending on a small number of degree-level staff who happened to receive stronger initial training, an unstable basis for a service that needs to function reliably across the health system.

Scale, interpretation, and limitations

The number of respondents in the four facilities (21) in one division represents a small base; these are results that should be interpreted as illustrative and not representative of the Cameroon blood banking workforce as a whole; the study should be read as part of a Master's thesis and not as a definitive audit. Self-administered attitude items may be subject to social desirability bias, which would understate rather than overstate the attitude-practice gap we describe. Nevertheless, the uniformity of the finding, whether between national audits in other countries that count the number of missing SOPs and reagents that get lost, and individual staff here that report the reasons they can't screen, is informative; it indicates that the structural explanation is not simply a product of any one audit design. This approach should be further replicated in more divisions of the region with more samples.

Conclusion

The staff in this study did not need persuasion. They need suppliers, guidelines, and someone to teach the next round what they were never taught. A problem with motivation among the workforce is a misdiagnosis of the problem and can lead to deploying resources to interventions that evidence shows will not make a difference in practice. The most helpful diagnosis is structural: no reagent supply chain that reaches blood banks, no policy where a policy should be, and a staff professional development pathway that ends in the middle and needs to continue.

This is not an indictment of KAP methodology; it is an indictment of the knowledge score. If attitudes are already consistently positive, the barrier data almost do all the diagnostic work. These three structural failures should be the next to be covered in Fako Division's Blood bank workforce, rather than staff knowledge or attitudes, and should be assessed through a comparable KAP survey in other regions.

Declarations

The data referenced in this comment were drawn from a cross-sectional survey of blood bank staff conducted between January and May 2025 across four transfusion centers in Fako Division, South West Region, Cameroon. Ethical clearance was granted by the Faculty of Health Sciences IRB, University of Buea, and the South West Regional Committee for Human Health Research (Ref. No. 85/CRERSH/SW/C/02/2025). We obtained written informed consent from all participants. The authors declare no competing interests. This work received no external funding and was conducted to fulfill part of the requirements for the Master of Science in Hematology and Blood Transfusion at the University of Buea, Cameroon.

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