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Migration as a Structural Determinant of Health Systems Performance

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Abstract

International migration reached approximately 281 million people worldwide in 2024, while forced displacement exceeded 114 million individuals — the highest level recorded in modern history [1,2]. Although migration is frequently framed as a humanitarian or demographic phenomenon, it increasingly functions as a structural determinant of health systems performance. Mobility exposes institutional fragility across governance architecture, entitlement frameworks, financing models, workforce distribution and digital interoperability. Operational data from international agencies illustrate the systemic scale of migration-related health activity, including millions of consultations in crisis settings, extensive vaccination campaigns and cross-border health interventions [3]. This paper advances a structural analytical framework in which migration operates as a continuous systems-level stress test, revealing embedded design contradictions within territorially organized health systems. Drawing on international governance, financing and operational evidence, the analysis reframes migration from episodic emergency response toward institutional transformation aligned with universal health coverage (UHC), resilience and global health governance. Recognizing migration as a structural determinant is essential for designing adaptable, equitable and performance-stable health systems in an era of sustained demographic mobility.

Keywords Migration; Health systems performance; Structural determinants; Universal health coverage; Health governance; Resilience; Digital health interoperability

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1. Introduction: Mobility as a Defining Structural Reality

Global human mobility is no longer peripheral to health systems; it is intrinsic to their operation. The International Organization for Migration (IOM) estimates 281 million international migrants worldwide [1]. The United Nations High Commissioner for Refugees (UNHCR) reports that more than 114 million individuals were forcibly displaced by the end of 2023 — the highest level recorded in modern history [2]. IOM operational datasets further demonstrate the systemic scale of migration-related health activity, including 6.2 million health consultations in crisis settings across 126 countries during 2024 alone [3].

The UCL–Lancet Commission on Migration and Health characterized migration as a defining feature of globalization, requiring structural health system adaptation rather than episodic emergency response [4]. The World Health Organization (WHO) Sixth Global School on Refugee and Migrant Health

reinforced the imperative of leadership translating policy into action across health systems globally [5].

Despite this recognition, most health systems remain territorially organized, with entitlement, financing and surveillance mechanisms anchored in assumptions of population stability. Migration destabilizes these assumptions and exposes structural fragilities that affect not only migrant populations but the broader institutional architecture of health systems [6,7].

This review employs a structured narrative synthesis approach, integrating peer-reviewed literature, international governance frameworks, and operational data from multilateral agencies to construct a systems-level analytical perspective on migration. Sources were identified through purposive searches of PubMed, Scopus, and the institutional repositories of WHO, IOM, UNHCR, OECD, and the World Bank, prioritizing recent peer-reviewed evidence and authoritative agency reporting. Rather than treating migration as a humanitarian or demographic phenomenon, this review advances the conceptualization of mobility as a continuous structural determinant of health systems performance.

Figure 1 summarizes the conceptual framework adopted in this review, depicting sustained human mobility as a structural condition that simultaneously tests five architectural dimensions of contemporary health systems and shapes their measurable performance outcomes.

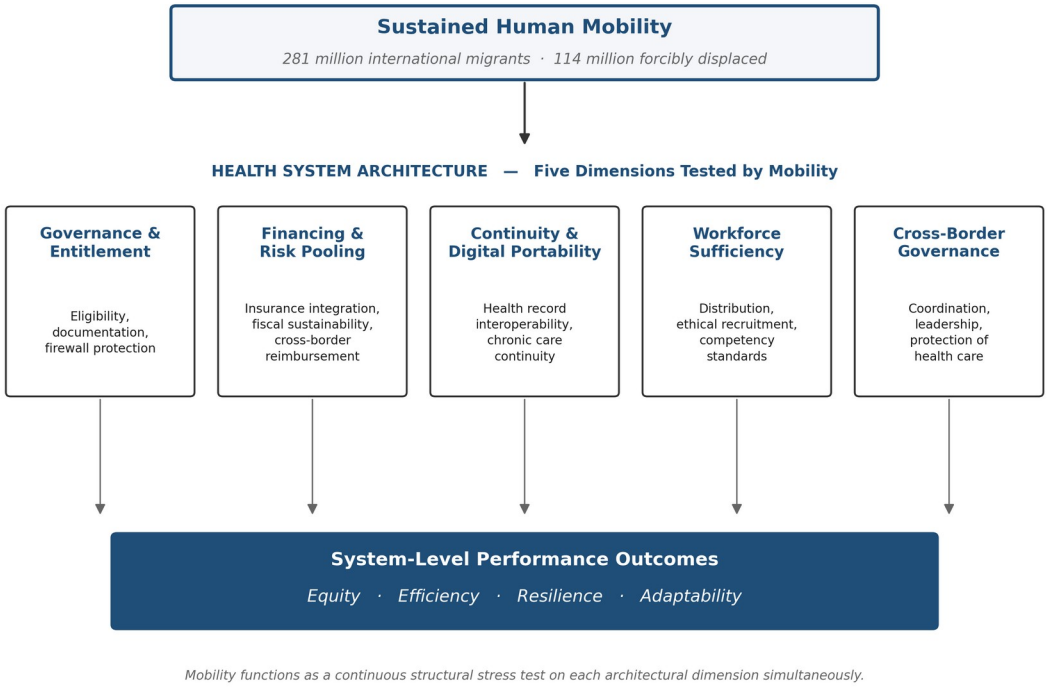

Figure 1. Conceptual framework: Migration as a continuous systems-level stress test on health system architecture, with measurable consequences for equity, efficiency, resilience, and adaptability.

2. From Social Determinant to Structural Determinant

Migration is frequently described as a social determinant of health, intersecting with employment, housing, legal status and discrimination [6]. However, social determinants operate primarily at the level of individual and community exposure, while migration additionally functions at the level of system architecture. Migration challenges:

- Legal definitions of membership and entitlement
- Contribution-based insurance systems
- Data interoperability and medical record portability
- Workforce planning assumptions
- Cross-sector governance coordination

Comparative European research demonstrates substantial heterogeneity in access models for migrants, including fully integrated systems, restricted emergency-only access, specialized parallel services, and NGO-dependent frameworks [7]. These differences reflect governance design rather than epidemiological necessity.

Thus, migration reveals how solidarity and inclusion are codified within health law and financing architecture. Systems reliant on rigid eligibility criteria often demonstrate inequitable outcomes and operational fragility when confronted with sustained mobility [8].

3. Governance Architecture Under Mobility Stress

Universal health coverage (UHC) aims to ensure equitable access to essential services without financial hardship [9]. Yet entitlement criteria frequently depend on citizenship, residency documentation or contribution-based insurance — conditions that mobility commonly disrupts.

Evidence from OECD countries indicates that undocumented migrants and some temporary workers face systematic barriers to comprehensive care, even in nominally universal systems [8,10]. During the COVID-19 pandemic, migrants and refugees experienced disproportionate exposure to infection alongside reduced access to testing, treatment, and vaccination services in multiple settings [11].

The WHO Sixth Global School reinforced the need for cross-border leadership and governance alignment, highlighting that mobility requires coordination beyond traditional humanitarian paradigms [5]. UNHCR guidelines emphasize integrated primary care delivery in displacement contexts [12].

Migration exposes structural tension between immigration regulation and public health objectives. Systems that separate these domains often produce fragmented outcomes.

4. Operational Evidence: System Load and Service Delivery

Operational data underscore the systemic implications of mobility. In 2024 alone, IOM-supported health programmes delivered 6.2 million health consultations in crisis settings across 126 countries, supported 8.1 million vaccinations, and conducted health assessments for more than 800,000 individuals on the move [3]. These figures demonstrate that migration health is not marginal. It is embedded in primary care, outbreak response, vaccination campaigns and surveillance systems.

At points of entry, IOM supported 167 border health facilities and conducted 81 population mobility mapping exercises to strengthen preparedness [3]. Such data illustrate how mobility intersects directly with epidemic intelligence and emergency response infrastructure.

UNHCR emergency health guidelines further emphasize that health system response in displacement contexts must integrate primary care, referral pathways, vaccination, reproductive health, mental health and protection services within a unified architecture [12]. The scale and multisectoral integration required demonstrate that migration health challenges are embedded within system architecture.

5. Financing and Political Economy Under Mobility

Public discourse often portrays migrants as fiscal burdens. However, OECD analyses demonstrate that migrants' net fiscal impact is generally modest relative to GDP and often positive, particularly among working-age populations [10]. Remittance flows to

low- and middle-income countries reached an estimated US$ 656 billion in 2023, indicating substantial economic participation [13].

Nevertheless, structural vulnerabilities persist in financing models:

- Contribution-based insurance systems exclude irregular or informal workers
- Enrollment delays create coverage gaps
- Administrative documentation requirements impede continuity
- Cross-border reimbursement mechanisms remain limited

IOM's Strategic Plan 2024–2028 explicitly frames migrant health coverage and social protection as essential components of sustainable development and institutional reform [14]. This framing recognizes financing inclusion as a structural rather than discretionary policy choice. Migration therefore reveals the adaptability — or rigidity — of solidarity-based financing structures.

6. Continuity of Care and Digital Portability

Chronic diseases account for approximately 74% of global mortality [15]. Effective management requires uninterrupted medication, follow-up and monitoring — conditions that mobility commonly disrupts.

A systematic review found significant challenges in health record portability for migrants and refugees, including fragmentation across providers, lack of standardized data formats, and limited interoperability between national systems [16]. Disruption of HIV treatment across borders has been documented in Southern Africa, with measurable consequences for treatment continuity [17].

IOM's digital initiatives, including electronic personal health records (e-PHR), supported nearly 76,000 migrants and trained 461 health professionals to improve record continuity [3]. These efforts demonstrate that portability is operationally feasible when supported by appropriate digital infrastructure.

The WHO Global Strategy on Digital Health underscores interoperability as foundational for resilient systems [18]. Yet implementation remains uneven, particularly across low-resource or conflict-affected settings. Migration highlights portability as a core dimension of health systems performance. Systems that cannot ensure continuity under mobility conditions demonstrate structural fragility.

7. Workforce Redistribution and Institutional Preparedness

Health workforce migration compounds systemic imbalance. The WHO Global Code of Practice addresses ethical recruitment concerns, recognizing that high-income countries frequently depend on internationally trained health professionals while source countries experience workforce shortages [19].

Estimates suggest significant financial losses for low-income countries due to physician emigration [20]. Simultaneously, OECD countries report substantial proportions of foreign-trained doctors and nurses within their workforces, reflecting structural dependence on international mobility [10].

Beyond quantitative redistribution, qualitative preparedness across receiving systems remains inconsistent. The WHO competency standards for refugee and migrant health emphasize trauma-informed care, communication safety and cultural responsiveness as essential institutional capacities [23]. Migration therefore tests both workforce sufficiency and institutional readiness.

8. Protection of Health Care in Mobility Contexts

Migration often occurs in settings affected by conflict or insecurity. The International Committee of the Red Cross (ICRC) has documented systematic violence affecting health care delivery, including attacks on facilities, personnel and patients [21,22]. When health infrastructure is compromised in conflict-affected displacement contexts, mobility compounds vulnerability.

The structural determinant lens must therefore incorporate protection of health care as a foundational systems-level concern. Resilient systems must ensure safe access to care even under insecurity conditions.

9. Resilience as Structural Adaptability

Resilience has become central to global health discourse following Ebola and COVID-19 [24]. Kruk et al. define resilient systems as those capable of maintaining core functions under stress [24]. Migration represents sustained rather than episodic stress.

Blanchet et al. emphasize governance flexibility as central to resilience [25]. Systems capable of integrating newcomers without structural disruption demonstrate adaptive strength. The WHO Global School's emphasis on leadership translating policy into action reinforces the importance of institutional adaptability [5].

Migration thus serves as a continuous systems stress test. It reveals whether governance, financing and service delivery frameworks are designed for demographic fluidity.

10. Structural Transformation Imperatives

Recognizing migration as a structural determinant requires institutional redesign across five domains:

- Inclusive entitlement frameworks aligned with UHC [9]
- Financing mechanisms adaptable to labor mobility [10,14]
- Interoperable digital health records [18]
- Workforce planning responsive to redistribution [19,20]
- Cross-border governance coordination [5]

Importantly, such reforms strengthen systems beyond migrant populations. Portability enhances chronic care management universally. Inclusive financing reduces administrative inefficiency. Workforce competency reform improves patient safety system-wide.

Migration does not threaten health systems; it reveals structural modernization imperatives.

11. Limitations

Several limitations should be acknowledged. First, this analysis adopts a narrative rather than systematic review design and therefore does not apply formal protocol registration, exhaustive database searching, or quantitative synthesis; while the structured approach mitigates selection arbitrariness, the absence of pre-specified inclusion criteria limits reproducibility relative to PRISMA-compliant reviews. Second, the evidence base draws substantially on operational reports from international agencies, which are authoritative for institutional activity but vary in methodological transparency and may not be peer-reviewed. Third, the literature reviewed is predominantly published in English and oriented toward European, OECD, and high-income contexts; perspectives from low- and middle-income countries, particularly those generating substantial migration flows, are correspondingly under-represented.

Fourth, the conceptual framework proposed here is theoretical and has not yet been subjected to empirical validation through cross-national modeling or comparative health-system performance analysis. Fifth, operational figures cited from agency reports reflect the reporting period of those documents and may not capture subsequent developments. Future research should test the framework empirically using standardized indicators of system performance, examine domain-specific contributions to resilience under sustained mobility stress, and incorporate evidence from underrepresented regions.

12. Conclusion

With 281 million international migrants and more than 114 million forcibly displaced persons globally [1,2], human mobility constitutes a defining structural condition of contemporary health systems rather than a peripheral humanitarian phenomenon. Operational evidence demonstrates that migration-related health activity is embedded within primary care, surveillance, financing and workforce architecture at scale [3].

Although prior scholarship has framed migration primarily as a social determinant of health or as a humanitarian governance challenge [4,6], this analysis advances a systems-level perspective by conceptualizing migration as a structural determinant of health systems performance. Mobility continuously tests entitlement design, financing inclusivity, workforce sufficiency, digital portability, and resilience governance.

Resilient health systems are defined by their capacity to maintain core functions under sustained stress [24,25]. Migration does not represent episodic shock but ongoing structural transformation. Systems that integrate mobility considerations within entitlement design, financing mechanisms, digital interoperability,

workforce planning and cross-border coordination demonstrate adaptive capacity that benefits the entire population, not migrants alone.

Drawing on a structured synthesis of peer-reviewed scholarship, multilateral governance frameworks and operational datasets, this analysis shows that migration exposes institutional design assumptions embedded within contemporary health systems. Recognizing migration as a structural determinant therefore shifts the analytical lens from crisis response toward institutional modernization. In an interconnected global environment, adaptability to mobility is not a migrant-specific accommodation; it is a foundational characteristic of coherent, equitable and resilient health systems.

Abbreviations

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COVID-19 — Coronavirus Disease 2019
DOI — Digital Object Identifier
e-PHR — Electronic Personal Health Record
GDP — Gross Domestic Product
GMJ — Georgian Medical Journal
HIV — Human Immunodeficiency Virus
ICRC — International Committee of the Red Cross
IOM — International Organization for Migration
LOCKSS — Lots of Copies Keep Stuff Safe (digital preservation network)
NGO — Non-Governmental Organization
OECD — Organisation for Economic Co-operation and Development
ORCID — Open Researcher and Contributor ID
PHIG — Public Health Institute of Georgia
PKP PN — Public Knowledge Project Preservation Network
UCL — University College London
UHC — Universal Health Coverage
UN — United Nations
UNHCR — United Nations High Commissioner for Refugees
USD — United States Dollar
WHO — World Health Organization

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Authors' contributions

SI: Conceptualization; methodology; supervision; project administration; investigation; writing — original draft; writing — review and editing; final approval. Corresponding author.

GP: Conceptualization; methodology; investigation; writing — original draft; writing — review and editing; final approval.

TT: Investigation; validation; writing — review and editing; final approval.

IPk: Investigation; data curation; writing — review and editing; final approval.

SG: Investigation; data curation; final approval.

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