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Understanding networks in health systems: insights from realist research

HIGH-Q RESEARCH BRIEF 8, AUGUST 2025

HIGH-Q and NEST360 network meeting, January 2023. Photo courtesy of KEMRI-Wellcome Trust Research Programme

About this brief

This brief is the eighth in a series based on the HIGH-Q (Harnessing Innovation in Global Health for Quality Care) project and related research on neonatal care in Kenyan hospitals. This work was carried out by the KEMRI-Wellcome Trust Research Programme and the Kenya Paediatric Research Consortium (KEPRECON), with support from the University of Oxford.

HIGH-Q is a multi-disciplinary study evaluating how the introduction of new technologies and workforce innovations influences the quality of care in newborn units (NBUs). Ethnographic and observational research has also explored the everyday experiences of nurses, the physical environment of NBUs, and mothers' experiences within these settings. Each brief focuses on a different aspect of this work.

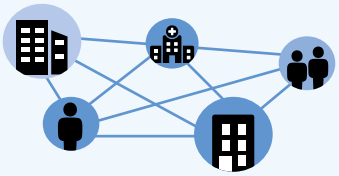
The brief was written by members of the HIGH-Q research team.

Introduction

Efforts to improve health systems increasingly recognise the importance of human relationships – how people connect and work together across all levels of care. Networks of these relationships, both formal and informal, can be essential for enabling connections within health systems. In low- and middle-income countries (LMICs), networks are increasingly used to improve the quality of care, strengthen service delivery, and address health system challenges. While evidence of their potential is growing, less is known about how and why networks succeed in driving change.

This brief summarises realist research that explores how networks function at multiple levels of the health system. It focuses on two areas: networks across organisations, facilities, and programmes (meso/macro level), and networks of staff relationships within health facilities (micro level).

Networks across organisations, facilities, and programmes



Networks of relationships within health facilities

At scale, networks can provide the leadership, structure, and coordination needed to bring together health system actors to tackle problems. Within hospitals, informal ties between staff shape everyday behaviours and decisions that affect care. Understanding both aspects is crucial for designing interventions that drive and sustain health system functioning and performance.

Box 1: Realist approach – understanding complexity in health systems

The research in this brief uses realist methodology – a theory-driven approach suitable for understanding how and why phenomena occur and change happens in complex systems, such as health networks.

What is it? Realist methodology includes:

- **Realist review:** A structured evidence synthesis that develops a programme theory to explain how a phenomenon of interest (e.g. programme, intervention) works.
- **Realist evaluation:** An approach that tests and refines a programme theory in real-world settings. In this research, programme theories were tested in newborn units in Kenya as part of the HIGH-Q study and the Pathways Study.

Why use it? Networks and relationships operate through complex and context-dependent mechanisms, which influence their outcomes. Realist approaches are helpful to explore these hidden or less tangible influences.

How does it work? Realist research uses primary (evaluation) or secondary (review) data to develop causal explanations, known as context–mechanism–outcome (CMO) configurations, to refine a programme theory. These causal explanations help to form an understanding of what works, for whom, in what circumstances, and why.

Networks across organisations, facilities, and programmes

Health system networks are increasingly used in LMICs to improve system and clinical performance by fostering collaboration among different actors and levels of care. Network members – who may be from across levels and sectors of care, health sector entities, and geographies – work together because they see value in collaborating to address shared challenges (see Box 2 for examples). These networks often operate alongside existing health system structures, creating new connections and supporting coordinated action across organisational boundaries.

A scoping review of networks in health systems mapped different types of networks to examine their structure, purpose, and use. The review identified five interrelated components that characterise a network: form and structure, governance and leadership, mode of functioning, resources, and communication (see Figure 1).

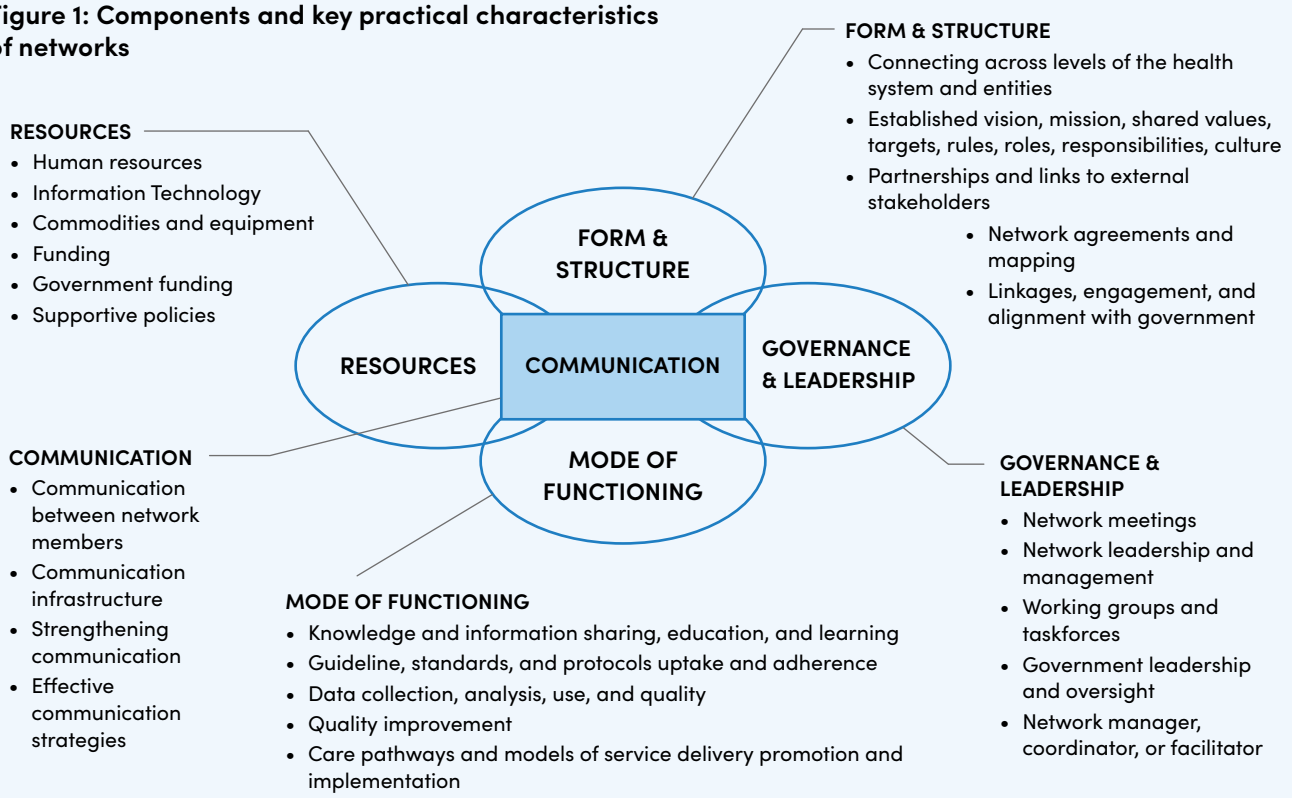
These components create a foundation for the network, enabling it to work effectively towards its purpose, although their expression varies by context and purpose.

Box 2: Examples of health system networks

- **Clinical network:** "Voluntary clinician groupings that aim to improve clinical care and service delivery using a collegial approach to identify and implement a range of strategies across institutional and professional boundaries" (Brown et al, 2016)
- **Networks of care:** "Group of public and/or private health service delivery sites deliberately interconnected through an administrative and clinical management model … enabling providers across all levels of care, not excluding the community, to work in teams and share responsibility for health outcomes" (Carmone et al, 2020)
- **Managed care network:** "Linked groups of health professionals and organisations from primary, secondary and tertiary care working together in a coordinated manner … to ensure equitable provision of high-quality effective services" (Addicott & Ferlie, 2007)
- **Health services network:** "The integration of diagnostic, therapeutic and care activities provided by different professionals and different organisations… that cooperate to achieve a shared mission" (Aspromonte et al, 2017)
- **Quality improvement collaborative:** "A group of professionals from a single or multiple organisations who get together to learn from one another, support and motivate each other … with the intent of improving quality of health services" (Murki et al, 2018)

Definitions adapted from original sources as cited in Kalaris et al., 2023[2]

Figure 1: Components and key practical characteristics of networks



Source: Adapted from Kalaris et al., 2023[2]

How and why networks form

Realist-informed research shows that networks typically form in response to a recognised problem that health system actors are motivated to address together. For example, networks focused on improving maternal and newborn health may start with a shared concern about gaps in clinical quality of care.

The early stages of network formation involve intentional relationship-building and developing a shared vision. As members begin to work together, they establish new norms and behaviours and spaces that foster learning and build psychological safety. Over time, a distinct network identity and culture emerge, generating the trust and commitment needed for collaboration and change.

How networks work to achieve change

A realist evaluation of the Newborn Essential Solutions and Technologies (NEST360) – a multi-country initiative to improve newborn care through the integration of technologies, training, and systems strengthening – refined this understanding of how health system networks develop and operate. In Kenya, NEST360 acts as a meso-level network, uniting clinicians across hospitals, biomedical engineers, policymakers, and implementing partners to address gaps in neonatal care.

The evaluation identified three core phases through which networks evolve:

1. **Initiation and formation:** Members identify a problem, articulate a shared vision, and begin to build purposeful relationships. In NEST360's case, this involved aligning actors around a shared aim of reducing high neonatal mortality and improving access to life-saving technologies in hospitals.

2. **Functioning and performing:** The network deepens through structured activities, such as peer learning and mentorship. NEST360 facilitated these through mechanisms like continuing medical education, network review meetings, and WhatsApp groups to support the consistent adoption of new practices.

3. **Sustaining change and impact:** As shared identity and commitment grow, the network focuses on embedding innovations into national policy, fostering local ownership, and strengthening the overall environment for ongoing improvements.

Across these phases, networks are supported by a set of interrelated processes: identifying a problem, developing a collective vision, taking action to solve a problem, and building identity and culture. Key activities include knowledge and skills dissemination, cross-learning, resourcing, leadership, champions, and adaptability. At the foundation are teamwork, a psychological safe space, committed, engaged, motivated, empowered, and confident network members, and purposeful relationships, linkages, and partnerships. Key elements throughout the programme theory include communication, trust, energy, effort, and passion.

Box 3: Lessons for building and sustaining networks

Findings from this body of work highlight several practical considerations for health system actors seeking to establish or strengthen networks as a means of improving care delivery and system performance:

- Ensure sufficient time and resources are dedicated to network formation
- Develop and deploy activities to develop a collective vision and to rally potential members around this
- Provide suitable opportunities for relationship building for network members
- Ensure processes are in place to create psychological safe spaces for network members
- Develop a plan to sustain the change and impact of the network
- Implement plans and processes that enable the network to adapt to both internal and external changes.

Networks of relationships within health facilities

Relationships that form between staff working within hospitals are often informal and fluid. How these social ties are formed and how they influence patient care processes are fundamental but under-explored aspects of hospital functioning and team behaviour. Social ties between health workers, built through routine interactions and shared experiences, play a significant yet often hidden role in shaping behaviours, communication, information flow, and decision-making.

A realist review explored how social networks within multi-professional hospital teams affect the delivery of quality care. It examined how, why, for whom, to what extent, and in what context social ties among staff influence service quality. The review developed an initial programme theory, which was structured around four key domains: (1) social groups, (2) hierarchy, (3) bridging distance, and (4) discourse. These domains reflect recurring themes in the literature about how social position, power, and communication shape staff behaviours and access to information.

The programme theory highlights that healthcare workers tend to communicate and collaborate with others they trust or share aspects of identity with. These patterns can build group cohesion and support, but can also create silos or reinforce existing hierarchies. Distribution of influence becomes uneven, and some staff have greater agency to drive change than others, depending on their position in the social network.

Conceptualising the relational workplace: the GELLE framework

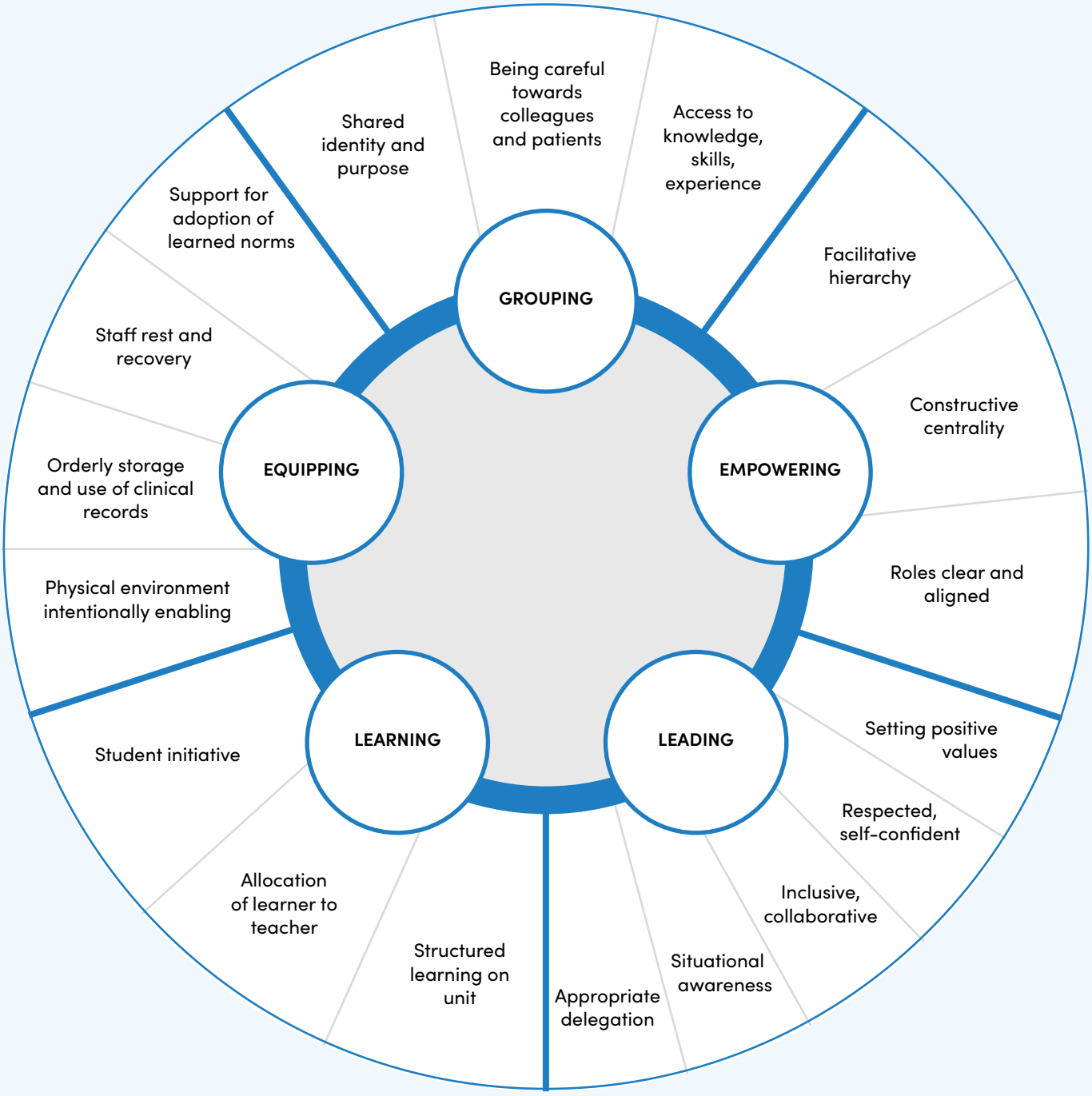
To explore these issues further, the Pathways Study conducted a realist evaluation using mixed methods data from neonatal units in Kenya to understand how relational dynamics within clinical teams affect behaviour and quality improvement.

The study developed the GELLE Framework, a tool to map and understand the relational dimensions of hospital workspaces (Figure 2). It identifies five domains that shape how social ties and communication channels operate:

- **Grouping:** Who individuals consider their peers and trusted colleagues.
- **Empowering:** How formality and structure influence who is enabled to act.
- **Leading:** The role of leadership in setting relational culture.
- **Learning:** How informal and formal learning relationships develop.
- **Equipping:** How the physical environment supports or hinders relational processes.

By capturing these dynamics, GELLE provides a conceptual lens to examine how workplace culture and interpersonal dynamics influence team behaviours, communication, and care quality. It shows how seemingly small relational acts can have widespread consequences across teams and care outcomes. This makes it a valuable tool for designing interventions aimed at improving quality by addressing the human factors within health systems.

Figure 2: The GELLE Wheel



Source: Adapted from Blacklock et al (Draft manuscript)

Conclusion

Networks can play an important role in supporting change in health systems. At the meso level, networks across organisations can help align actors around shared goals and enable coordinated improvements in service delivery. At the micro level, informal social ties within health facilities shape how decisions are made, how information is shared, and how care is delivered.

Realist research offers a way to unpack how and why networks operate, for whom, and under what conditions, revealing the underlying mechanisms that shape outcomes. With greater understanding, this can lead to a more considered planning and implementation of networks.

Tools such as the GELLE Framework support a deeper understanding of the relational workplace and to what extent it impacts on patient care, offering practical insights for designing context-sensitive quality improvement interventions.

Sources

This brief draws on both published and unpublished research. Key sources include:

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6. Wanyama C, Blacklock C, Jepkosgei J, *et al* Protocol for the Pathways Study: a realist evaluation of staff social ties and communication in the delivery of neonatal care in Kenya *BMJ Open* 2023;13:e066150. doi: 10.1136/bmjopen-2022-066150

7. Blacklock C, Wanyama C, Jepkosgei J, Hinton L, McKnight J, Jepkosgei J, Oluoch D, Molyneux S, Hogan B, English M, Wong G. Health facilities as relational workplaces: A framework derived from a realist evaluation of neonatal care in Kenya. *Draft Manuscript*

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