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Exploring distributed leadership in the BC Sepsis Network

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Abstract

Commissioned research was undertaken to explore the role of networks in supporting large-scale change and improvement. Participatory action research and social network analysis were used to study the BC Sepsis Network. Findings of this research include insights into distributed leadership, enablers and barriers within a network approach; the importance of relationships and trust; and the need for meaningful and timely data. Recommendations are made for health leaders who are considering utilizing networks for improving patient quality and safety.

Introduction

The BC Patient Safety and Quality Council (BCPSQC) receives its mandate from the Minister of Health to bring a provincial perspective to and build capacity for quality improvement in the health system; improve system transparency and accountability to the public for safe, quality care; and support provincial health authorities in their efforts to improve. In 2013, BCPSQC commissioned a research partnership project with the Centre for Health Leadership and Research at Royal Roads University to determine how the use of networks could support large-scale change and improvement in healthcare. Stakeholders were specifically interested in how distributed leadership best facilitates the development and sustainability of the network.

There is a growing body of evidence regarding the positive value of networks as an alternative to formal governance systems for advancing improvement work in healthcare and enhancing knowledge transfer.[1,2] Having an understanding of how a network functions and making improvements within its structure are critical success factors for achieving its goals.[3,4]

A focus on the early development of the BC Sepsis Network (BCSN) was a timely and appropriate avenue to initiate this research. The BCSN was initiated in June 2012 to support emergency department clinicians with sepsis quality improvement through a model of distributed leadership to share resources, improve care, spread innovation, and collaborate on change.[5] Its success to date and burgeoning community of over 250 members provided an excellent opportunity to better understand network leadership, composition, and develop strategies to create conditions to maximize network performance.

This project used quantitative and qualitative approaches[6] to explore how leadership is understood in a network, how it is currently practiced, and how it could be used to accelerate improvement within the BCSN to achieve its goal to decrease morbidity and mortality for emergency department patients with sepsis. The findings from this project could help inform and foster the development of other networks.

Methodology

The project involved two data collection phases over an 11-month period between December 2013 and October 2014. In the first phase, 12 leaders were interviewed and asked how they saw themselves as leaders/champions, what this meant to them, and how the network helped them (or not) in their roles. They were also asked about the benefits of network connections, how relationship development within the network could be supported, and what could be done to improve/develop leadership skills in the network. The interview data were analyzed using NVivo 9 to identify themes.

The second phase employed Social Network Analysis (SNA) software called PARTNERTool.[7] A 20-question survey was conducted to map the connections within the BCSN and quantify network measures to assess the strength of the network from the perspective of its members. The survey was released on September 28, 2014, to coincide with announcements regarding World Sepsis Day and closed on October 22, 2014.

Results

Leading in a distributed network

While many participants didn't self-identify as leaders, all participants were able to provide examples of how they demonstrated effective leadership within the network. Many

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talked about engaging others and characterized their leadership style as a strategist, watching for opportunities, seeing the larger picture, recognizing barriers, and assessing procedures and protocols with an eye to improving processes. They described themselves as conduits in the flow of two-way information in the system.

One participant said being a leader in the network meant being an active contributor—an agent of change—not a passenger. Participants spoke of leading by example, leading with heart, and being self-aware of their actions and reactions. This included being aware of the system and network in which they worked, their place in it, and their ability to influence positive awareness in others. They looked for system barriers and how they could mitigate them.

Critical attributes for leaders working within this distributed network were identified as commitment and enthusiasm for continuous learning; being open to change, exhibiting forward and future thinking, being intentional about their leadership, showing passion and commitment for the work, cultivating an environment that fosters engagement and relationship-building, proactively advocating for changes and improvements, and contributing to a sense of community.

Network relationships

Leaders described the network as a collection of relationships which are a challenge to develop and strengthen because the network is spread over a wide geographic area. Participants identified competing priorities beyond sepsis care as a major barrier to the network's performance. They believe the network could better support them by ensuring more clarity on roles, eliminating disconnections among healthcare departments within a site, providing better resources, and improving processes around gathering and analyzing sepsis data.

Participants suggested the network could provide better resourcing for leaders to enable them to spend more time engaging and developing other leaders, increasing opportunities for face-to-face interactions, and providing more feedback and opportunities for recognition. They also suggested expanding the network to include some affiliated professions such as laboratory technologists (critical to timely lactate measurement and blood cultures in sepsis diagnoses and treatment).

Leaders listed several enabling factors that helped them accomplish their objectives: a sense of community, collaborative relationships and opportunities, learning opportunities, and attention to purpose and focus.

Social network analysis

The survey was sent to 227 participants and resulted in a 44% response rate. Data revealed demographic information and illustrated key connection points in the network. The majority of respondents identified themselves as nurses with an average of 11 years in their position. Most described their role as clinicians working directly with patients and their families.

Respondents believe the BCSN was very successful (19%), successful (37%), or somewhat successful (29%) in reaching the goal of reducing sepsis mortality rates; 15% were unsure. Survey respondents attributed network success to a clear understanding of shared goals, collective decision-making, informal relationships bridging different areas of the network, sharing resources, free flowing exchange of information and ideas, opportunities to meet and form relationships, and diversity in stakeholder groups.

Respondents indicated they considered sharing knowledge and information through virtual learning sessions and face-to-face gatherings as the most important contribution to a healthy and sustainable network. These contributions took the following forms:

- Cooperative activities: (19%) exchanging information via guidelines and protocols as well as sharing resources through webinars and in-person meetings;
- Coordinated activities: (19%) enhancing each other's capacity for sepsis improvement such as taking part in the *150 Lives - 150 Days* campaign which was led centrally by the BCPSQC; and
- Integrated activities: (34%) working towards a common goal with shared vision and values for sepsis improvement by taking part in the collection and reporting of sepsis data as part of the sepsis network.

Network members participate in coordinated activities by promoting provincial work at the local level, sharing knowledge, and engaging local staff to join the network. An integrated activity includes the in-patient sepsis pilot, where sites geographically spread across the province work together virtually to do improvement cycles on materials and protocols for the development of an in-patient sepsis provincial tool kit. Network scores for density, centrality, and trust were calculated by PARTNERTool as part of the analysis (Table 1). Eleven participants stood out as hubs (high degree of network centrality). These individuals also scored high in relative connectivity meaning they had many connections with people who trust them. The data also showed there appear to be areas of the network where hubs were lacking.

Discussion

The results of this study provide several key findings. First, they deepen our understanding of the leadership roles and relationships in the BCSN and actions that may improve leadership, quality, and safety in the system. Second, they demonstrate the value and limitations of an SNA tool to provide information for the growth and evolution of the BCSN. Finally, the results provide practical recommendations for healthcare leaders about the use of networks as a means to achieve change in a system.

Although the relatively low response rate of the SNA needs to be acknowledged as a limitation, our results provide valuable insights in terms of improving data flow and supporting its members. Additionally, it provides helpful recommendations

Table 1. Density, centrality, and trust scores in the BC Sepsis Network

Variable of analysis	BCSN overall score	Definition[8]
Density	2.2%	Percentage of ties present in the network relative to the total number of possible ties in the entire network. In order to have a score of 100%, every single member would have to be connected to every other member. This score considers the network as a whole not individual members.
Degree centrality	22%	The number of direct links/ties/contacts one member has with others. The lower the centralization score, the more similar the members are in terms of their number of connections to others (eg, more decentralized). Higher scores indicate members are more equally interconnected. This score reflects individual members' connections.
Trust	70%	The percentage of how much members trust one another (an average of measures of reliability, support for the mission, and openness to discussion). A score of 100% occurs when all members trust others at the highest level.

Abbreviation: BCSN, BC Sepsis Network

for other health leaders when starting or improving existing networks in terms of cocreating a shared vision, seeking distributed leaders, building trust, supporting champions, and anticipating and filling network gaps.

This research identified distributed leadership as an important feature of the success of the BCSN.[9] Leaders in the network self-identified as both informal and formal leaders within the BCSN, although all responded to questions with clear examples of formal leadership activities. Cooperative, coordinated, and integrated activities overlapped to various degrees making it difficult to rate the relative importance of each in driving the success of network. It also does not address the issue of what is the best balance, if any exists, of these activities in a successful network. Overall, network members described having an important role in building and sustaining the network and serving as critical conduits for transferring information from the network to those working at the point of care.

A prominent theme in the interview data was a need for timely data relating to teams' performance in diagnosing and treating patients with sepsis. Currently, the province collates data and filters it to the health authorities through tight channels. The resultant delays in disseminating data in a meaningful way make it challenging for clinicians to make practical improvements in quality and safety. The BCSN could work to advocate for access to data in a meaningful and timely manner to point-of-care staff to help them understand where they are excelling and where they can improve. Data are so important to the sustainability of the network that the BCSN has made finding ways to enable real-time delivery of data for point-of-care staff a priority over the next year.

Trust is important to the vibrancy, success, and sustainability of any network. Trust in networks is often driven by a shared vision (for which members shed a little of their autonomy) and their expectations based on membership in the network.[10] Several large nodes in the network showed a higher perceived level of trust compared to others. This finding is important as we know trust creates an environment in which divergent opinions are encouraged, creating greater opportunities for innovation and improvement.

Sociological theory suggests that members with "weak ties" (eg, acquaintances of members of other professions) may become critical hubs, who add more to the flow of information and connectivity in a network than those with "strong ties" (eg, firmly connected with members of their own profession).[11] The lack of diversity in the professions responding to the survey supports the need to strengthen inter-professional membership within the BCSN, for example, increasing allied health membership. There are likely many forms of informal knowledge transfer occurring between professional groups at the local level, and it follows that the network would be strengthened if these weak ties were formalized.

The SNA revealed that several members of the network are not well connected to the broader network and sit on the periphery—showing opportunities to increase the strength and number of connections between network members. These results need to be interpreted with caution, as the lower density and centralization scores could be partially attributed to the 44.05% response rate and some members who appear unconnected may be connected to members who did not complete the survey.

For healthcare leaders who are launching a new network or strengthening an existing network for health quality and safety improvement, the following recommendations can be considered based on our research:

1. *Start with an overarching goal but make the first order of business the co-creation of a vision with members*. The process of building collective leadership with a shared purpose often requires a high level of dialogue through in-person interactions while encouraging each leader to accept responsibility for shared success.
2. *Seek and include distributed leaders in the network*. Networks are powered by relationships, not formal hierarchies. Find the enthusiastic, positive opinion leaders and influential leaders and recognize their roles as champions. Look for and include those who are likely to resist change, as they may offer diverse and useful opinions. Seek the informal leaders close to the point-of-care who can contribute previously untapped expertise or knowledge and act as engines of change at the frontline.

3. *Anticipate and fill gaps in your network*. Encourage interdisciplinary teamwork to create powerful "weak ties" for the hubs. Cross and Parker[12] remind us "org charts can be redrawn quickly, but in reality, it takes time for some relationships to fade away and other trusted contacts to develop." Ensure the network has proactive support mechanisms and ongoing resources for leaders with easy conduits for communication to mitigate the risks of gaps created by staff turnover.
4. *Foster and develop trust in your network*. The principles of strong networks such as high reliability, mission congruence, and open discussion are important factors for network success. Thought diversity allows for different perspectives on ideas and solutions to complex issues[13] with less reliance on a single mindset. Moreover, it reinforces the importance of each member of the network and the different perspectives and approaches they bring to the table.
5. *Support champions to strengthen relationships using technology or in-person opportunities*. Provide recognition for the successes of informal leaders and champions to validate contributions. Recognizing members acknowledges their importance and helps maintain engagement and network connectivity.

Conclusions

This study employed a collaborative approach and merged two data collection methods to create a better understanding of the BCSN. The findings suggest that the BCSN is in a favourable position. Members of the network identified high levels of trust, indicating a positive working environment and effective leadership. While it is not possible to correlate network strengths with patient outcomes through a network analysis, members overwhelmingly felt the network had been successful in achieving its goals of reducing mortality and morbidity rates for sepsis in British Columbia.

Improving the safety and quality of care for patients with sepsis on a large scale across a province can be enhanced using a network approach. Through SNA and by developing a better understanding of distributed leadership, the BCPSQC and others can use these results to develop strategies to further accelerate health improvement within this and other networks.

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