Reviewer’s report

Title: Patterns of team communication in a busy Emergency Department

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Reviewer: Frances Cunningham

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Comments on ‘Patterns of team communication in a busy Emergency Department

1. Is the question posed original, important and well defined?
The researchers have employed social network analysis to examine communication between clinicians (nurses, physicians and other Emergency Department (ED) clinicians) and staff in an ED. Knowledge of communications in the ED will inform the design and effectiveness of interventions to improve communications. Of particular interest, the study surveys communication relationships between clinicians in one ED across all shifts, and over a three month period to shed greater light on ED team communication, with a view to assisting with safety improvement in the ED setting.

2. Are the data sound and well controlled?
The data appear to be sound and well controlled. A good response rate of 82% of eligible participants has been achieved.

3. Is the interpretation (discussion and conclusion) well balanced and supported by the data?
The interpretation of study findings in the discussion and conclusion is well-balanced and is supported by the data.

4. Are the methods appropriate and well described, and are sufficient details provided to allow others to evaluate and/or replicate the work?
The study employs a case study design in one ED setting. The authors have adequately described the study setting, and when the study was conducted. The study has made appropriate use of SNA to examine communication relations between clinicians in the ED. As identified by the authors, SNA is a particularly useful tool for the examination of the communications between ‘actors’. It is unique with its utility in graphically depicting the patterns of communication and interaction, and in providing objective standardised measures of network performance.

For the data collection, the authors used a three-item SNA survey instrument which was adapted from items used in a previous study of communication in the ED by Creswick et al. (2009). Of assistance to the reader and to other researchers, the authors have provided details of the actual questions asked in the study. Similarly to the approach in the Creswick et al. study, the authors
employed a paper-based SNA survey. Ten-point Likert scales were used for the participant responses in the instrument.

The authors have fully described the methodological approach they have used with SNA (in Figure 1 and in the Analysis of Data section in the paper). They have also described the measures that they have used, and how these measures can be applied in SNA. The standard SNA measures used, network density, network centralization, and in-degree centrality, are appropriate to use in the examination of communication patterns in this network. The authors have described the de-identification techniques, and have noted appropriate ethics approval for the research.

5. What are the strengths and weaknesses of the methods?

SNA is used most appropriately here to examine the communication relationships between the clinicians in an ED. In this setting where communications can be complex and, at times, confusing, SNA provides a sound approach to making the invisible network visible. In addition, the authors have examined the communication relationship of the ED clinicians across all shifts and over a three month period.

Of particular interest, the authors have presented their findings stratified by night/day shift and over time. Hence, the authors have been able to examine variation in communication cohesion (density), in the concentration of communication between clinicians (centralization), and of power/influence (in-degree centrality) by day/night shift and over time. This work has added to the field of research by providing the richness of the additional detail of breaking out the data by day/night shift in the ED, and through the examination of ED communication over time, rather than relying on a one-time assessment.

In the Discussion Section, the authors have provided a useful comparison and discussion of their findings with those of similar research.

6. Minor essential revisions

6.1 Details of study participants

In the results, comment is provided on several demographic variables of the study participants – ‘age’, ‘years of ED experience’ and ‘years in healthcare’. Did the authors also collect data on ‘gender’, as gender can be an important variable in communication relations? To assist the reader, could the authors indicate how many of the unique respondents were in day shifts or in night shifts? The response rates are provided, but not actual numbers.

6.2 Methodology limitations

One limitation of the study is that the authors have used a single method in their case study to examine communication in the ED network. Multi-methods, combining qualitative approaches with participant interviews can shed further light on network structure, and can assist with interpretation of the network results. Also, greater rigour would have been achieved if it had been possible to link network structure with network outcomes – incident reporting, or quality and safety data, however this may not have been possible in this study. The authors
could refer to such limitations of the study in their discussion of the study results.

6.3 Improvement of writing, organization, tables and figures

One point is that the paper refers to clinicians and staff throughout the paper. It is not clear if the reference should be more properly to clinicians and administrative staff? There are numerous such references, e.g., para 2, page 6: ‘The registration clerk (RC) was the only staff member.’ Should this read: ‘the only administrative staff member’? Or do the authors mean to convey that the only employed people (staff) in the ED were the administrative personnel?

There are several sections in the paper where the authors need to attend more carefully to the drafting of the text. The following points should be attended to:

- In the Abstract, first sentence, line 2: amend ‘demand’ to ‘demands’.
- Figure 2 needs to have a title/label, as do Figures 3 and 4.
- A legend should be provided for Figure 4 to assist the reader. What is ‘other’ in the five ‘isolates’ at the top left-hand of Diagram 4? This is not referred to in the text.
- In the first para, p.9, in the second sentence, insert ‘for the day shift’ after ‘greatest’. Similarly, in sentence 3, insert ‘for the day shift’ following ‘on week 8’.
- In the first para, p.9, sentence 5, insert ‘whereas this was not the case for social issues or general problem-solving’.
- In the second paragraph on p.10, in the third sentence, the reference should be to ‘Figure 4’, and not to ‘Figure 3’. The sociogram in Figure 4 shows 5 isolates and not 4.
- In the second paragraph on p.10, in the seventh sentence, the sentence should read: “In this study, in the context of communication …”.
- In para 1, p. 11, sentence 6, amend ‘finding’ to ‘findings’.
- In paragraph 2, p.12, the authors compare network density in their study, with findings in the Creswick et al. study. Could the authors provide their network density result (or range) as well as the Creswick et al. density result – for all the network relations discussed in this section? It is not possible to read the density axis in Figure 3.
- In paragraph 2, p.12, in sentence 5, insert ‘in’ following ‘differences’.
- In paragraph 3, p.12, should the references be: [2,4,40,41]? The referencing needs to be checked here.
- In the Discussion section, in the sixth sentence, the sentence should read: ‘These findings …’.
- In paragraph 1, p. 13, the second last sentence needs to be amended – the subject and object of the sentence do not follow logically.
- In the last sentence in para 2, p.13, insert ‘with’ after ‘associated’.
- In Table 1, insert ‘MD’ following ‘Attending’ in Column 1, row 2; insert ‘MD’ following ‘EM Resident’ in Column 1, row 3.

Figures 1, 2 and 3 appear to be fuzzy, and of very low resolution – could clearer
figures, with higher resolution be provided?

7. Major compulsory revisions
7.1 Discussion of sociogram
In the description of the sociogram (p.10), the authors do not refer to the depictions of the connectors in the sociogram – for example, some connections are represented with ‘heavy’ lines, some with ‘light’. Do these reflect the frequency of communication between the actors, and if so, could the authors please provide some comment on this in the paper? Also there are different node sizes, for example for MDs and for RNs. Could the authors please provide detail on what these different node sizes represent, to assist the reader?

8. Do the title and abstract accurately reflect the study?
The title could be strengthened by referring to the methodology used – network analysis. The abstract accurately reflects the study.

9. Are there any ethical or competing interests issues you would like to raise?
No – these are addressed in the paper.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
I declare that I have no competing interests.