SYNOPSIS

Review of "Social network-based distancing strategies to flatten the COVID-19 curve in a post-lockdown world"

One-Minute Summary

- Using stochastic infection models, the authors adopted a social network approach to evaluate three social distancing strategies:
    - **Seeking similarity:** restricting one's contacts to those who share common attributes, e.g., proximity in age, geographical location or belonging to the same organization.
    - **Strengthening community:** restricting contacts to those already connected to existing social contacts, hence creating small inter-connected communities with redundant contacts.
    - **Repeating contact:** restricting interactions to those people with whom one wants to interact regularly (i.e., building "bubbles").
- Drawing upon classical disease modelling, the authors showed that **all three strategies slowed the spread of and reduced the number of people infected by COVID-19** compared to no intervention or social distancing with no set strategy (e.g., a random reduction of contacts).
- **The repeating contact strategy was the most effective**, followed by strengthening community and seeking similarity, when compared with the random reduction strategy. The peak of infections was predicted to be delayed by 37%, 34% and 18%; the height of the peak of infections to be decreased by 60%, 49% and 44%, and the number of infected persons to be reduced by 30%, 19% and 2% respectively.
- **Multiple strategies, implemented simultaneously, were found to be as effective as the implementation of a single strategy** and may be more feasible recognizing that individuals may need to interact with contacts from multiple social circles.

Additional Information

- In the null model, no social distancing occurred and the actors in the model interacted at random. In modelling the other strategies, a 50% contact reduction relative to the null model was employed.
- The strategy of repeated contacts reduces the number of contacts as opposed to the number of interactions and would incorporate the idea of a social contract in which individuals in these bubbles interact only within the same group.

- Seeking similarity was predicted to be more effective if restrictions based on a geographic characteristic were selected over a demographic characteristic. The authors noted that selecting contacts based on a broad characteristic, such as gender, race, or ethnicity, would not be successful in forming communities and may exacerbate negative consequences of social distancing.
- The authors acknowledged that the seeking similarity strategy could potentially result in reduction in intergroup contacts with associated rise in inequality over time. Policy makers are urged to keep the potential social consequences in mind when selecting the attributes to pay attention to.
- The relative effectiveness of the strategies does not vary by:
    - The number of model actors (number of individuals) included in the simulation (from 500 to 4000). However, dynamics in a larger networks could not be assessed due to the complexity of the simulation.
    - Virus infectivity and variations in the time during which individuals are in the exposed state (i.e., infected but not yet infectious) relative to the infectious state
- All strategies were found to be more effective in networks with fewer connection opportunities.

PHO Reviewer's Comments

- The authors speculate that the social-network based distancing strategies may have higher compliance compared to full isolation, as they empower individuals to strategically adjust and control their interactions without being forced. However, making adjustments to one's interaction patterns and determining an optimal strategy may be challenging. Further research into the implementation of these strategies in a population is required.
- The modelling builds on the assumption of direct person-to-person transmission of infection. It is uncertain how the predicted efficiency of the social networking strategies may vary when factoring in indirect transmission by environmental objects.
- Although the authors claim that adopting social networking strategies would lessen the economic consequences of a complete or near-complete lockdown, the discussion focuses on enhancing the psychosocial quality of life and sheds little light on how to ensure equity in these strategies.
- The authors suggest that hospitals and community health care providers may reduce the risk of transmission by shift work (seeking similarity) and cohorting groups of providers with steady groups of patients (repeating contact). This idea of cohorting health care providers has long been recommended but remains very challenging to implement, especially in times of heightened staff demand coupled with shortage of staff supply due to sickness and isolation/quarantine requirements. Health care and many essential services are not "elective" in nature, and interactions beyond one's "small communities" are frequent and essential.
- Finally, the model focuses entirely on social networking without consideration for other personal prevention measures, such as cough etiquette, hand hygiene, isolating oneself when sick, and maintaining social connectedness virtually.

Citation

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