SIMULCAST

Journal Club Summary November 2018 : "Happy Endings"

Expert Opinion: Jesse Spurr

"Do you want to help us get more people home after cardiac arrest from our hospital?"

SIMULCAST
Journal Club Summary November 2018 "Happy Endings"

The Article :

"Hospitals with more-active participation in conducting standardized in-situ mock codes have improved survival after in-hospital cardiopulmonary arrest."

Josey, K., Smith, M., Kayani, A., Young, G., Kasperski, M., Farrer, P., Gerkin, R., Theodorou, A. and Raschke, R. (2018). *Resuscitation*, 133, pp.47-52.

Case & Summary Author :

- Dr Ben Symon

Expert Commenter :

- Jesse Spurr

Editors :

- Dr Victoria Brazil

First Published : 10/12/18

Simulcast Journal Club is a monthly/ series that aims to encourage simulation educators to explore and learn from publications on Healthcare Simulation Education.

Each month we publish a case and link a paper with associated questions for discussion.

We moderate and summarise the discussion at the end of the month, including exploring the opinions of experts from the field.

The Case :

"This is it!" grinned Nitin. In his hand, he held a copy of 'Resuscitation'. "An ecological study, across 26 hospitals. Improved survival! Statistical significance! This is the paper we've needed!"

He grasped Nimali's hand as they walked towards their office. Nimali's phone rang, she glanced down to see that Catherine was calling her and quietly cancelled.

"Nimali, between this data and the AHA Statement there's no way the hospital can shut us down.".

Her heart skipped a beat as she considered the implications. "All this time we've been looking at RCT's that never get enough power. But with this paper we can justify rolling out Brad's new rapid cycle program! Funding might get easier… This is a huge moment!". She jumped briefly as her phone buzzed again. She put it on silent.

Nitin stared into her eyes. "I told you not to doubt yourself. Everything we do here, it actually means something. And now we have proof! What a way to finish the year.".

Nitin's infectious passion dampened Nimali's inhibitions. She leaned forward and pecked him on the cheek. "Everyone else is off campus at mandatory training. I think it's time we invested in some Spaced Repetition."

"I'd prefer some Rapid Cycle, but as long as there's some contextual learning." Grinned Nitin.

For the third time Nimali's phone buzzed. She sighed. "Hold that thought."

"Hey, what's up?" she asked, as Nitin kissed her neck. "What? Oh God. Catherine I'll be right there.".

She looked up from the phone in shock and pushed Nitin away.

"The staff meeting, we need to get there… now."

Nitin could see the fear in her eyes. "Nimali, what is it?".

"Professor Snythe has been murdered.".

Discussion :

For several years on journal club we've mentioned the great white whale of Simulation Research. The ability to correlate our educational efforts with improved patient outcomes. While some papers have achieved this on some levels, Josey et al's paper finds an association between In Situ Sim Programs and decreased patient mortality in hospital arrest.

For our journal clubbers this month, does this paper seem as exciting and validating as Nimali and Nitin seem to think? Or are they seeing what they wish to see from this data?

This is our last journal club for 2018, so jump in now!

SIMULCAST

Journal Club Infographic November 2018

Hospitals with more-active participation in conducting standardized in-situ mock codes have improved survival after in-hospital cardiopulmonary arrest.

Josey, K. et al. (2018). Resuscitation, 133, pp.47-52.

Simulation training is often asked to prove that the expenses involved in delivery actually translate to better patient outcomes than traditional medical education efforts. But it's a tricky thing to prove!

So Josey et al did an ecological study to test the hypothesis more In Situ Sim = less deaths

An ecological study is where you study a population and observe the frequency of an event occuring within subgroups of that population. The most famous of these studies is John Snow identifying an association with cholera and families near a contaminated pump in London.

And what they found was promising! A significant association with better cardiac arrest outcomes in hospitals with high frequency mock codes!

42.8% vs **31.8%**

In hospital cardiac arrest survival rate | **In hospital cardiac arrest survival rate**

While correlation =/= causation, it's an exciting start!

Infographic by @symon_ben

Expert Opinion: **Jesse Spurr**

JESSE is an Emergency and Critical Care Nurse and Educator.

Jesse's work interests involve clinical governance, nursing leadership, educational design and delivery. He and Vic Brazil co-founded Simulcast in 2016 to help translate simulation research to coal face educators.

A restless soul, Jesse's history includes working as a ICU clinical nurse consultant, Learning and Development manager, Critical Care Nurse, Simulation Educator, and along with post graduate qualifications in critical care nursing he is also an Exercise Science graduate. Jesse is founder and editor of injectableorange.com blog and podcast, the Director of Simulation Education for the Teaching Institute, and a novice social media, simulation, and quality assurance researcher.

Follow Jesse @Inject_Orange

The chicken or the egg? The feature image chosen (disclaimer: it was me) for this month's JC, captured my immediate thoughts on this study. I want it to be true. I want to be able to walk into a boardroom and slap down a paper about in situ simulation being the great panacea, on a mahogany table, channelling Jack Nicholson, "you can't handle the truth!" But does more simulation equal better outcomes from in hospital cardiac arrest, or do more progressive hospitals, that have better clinical governance, a priority of focus and a desire to improve cardiac arrest outcomes, support the expense and time of running more in situ simulations?

This study was thrown in front of me by James French @grade1view on Twitter. Our confirmation bias had broken the gauge. This was it, proof. I was pretty quick to rein myself (and James) in and say, hang on let's read this first and apply the same critique as we would to a pharmaceutical study.

First of all, I really want to echo Vic's sentiment in the comments this month, paraphrasing Atul Gawande, that great performance begins with 'counting something'. The clinical governance and data capture achieved in this study sets a lofty bar to aspire to. I believe this is a well designed study, that I really feel was honestly about as good as we could hope for and we will be unlikely to see something of this magnitude replicated (and do we need to?). After reading it, and Googling 'Ecological Study', I believe the design and methods addressed the research question appropriately and relatively pragmatically. There were some points that do raise questions though. I think it is important for us to be aware of the potential for human, system and equipment differences.

Thoughts sprung from comments made by Komal and Farrukh, following the metaphorical prairie dog that keeps popping its head up on Simulcast – learning from excellence. What is it about the 'more active' hospitals that supports more activity in in situ simulation? What is different? What were outcomes like before increased simulation in the more active centres? What type of defibrillators are used? Are there differences in advanced resuscitation planning in the more active centres (more training and governance probably doesn't stop at CPR and defibrillation)? I echo our bloggers' comments on the desire to read a mixed methods sequel to this 'hypothesis generating' study.

I do feel for Glenn, doomed to fail, running too few simulations. At 1200 beds, Glenn's service would have to run 221.2 in situ mock codes just to make the median for more active? It is great to hear of Glenn's correspondence with one of the authors and the suggestion that there was an observable dose-response in the data. I applaud the authors for staying true to their study design and not claiming/publishing a dose-response curve.

I have worked in two hospitals in roles that involved both quality improvement/clinical governance activity, membership on medical emergency/rapid response teams, and in situ simulation training focused at the management of in hospital cardiac arrests. One hospital, closer to the size of Glenn’s, had Automated External Defibrillators on all inpatient wards (other than ED, critical and coronary care and procedural sedation areas). This was due to the massive physical footprint and the potential delays in the response team arriving. In this hospital, a number of times, I arrived to a ward and the patient had already been defibrillated and had return of spontaneous circulation. In the second hospital, approximately one-third the size, the wards are equipped with semi-automated defibrillators. Staff frequently say in training that they are really nervous about using the defib. There is an active hospital wide mock code program. It is a very rare event for a patient to have been defibrillated before the arrival of the response team (albeit usually quicker, due to smaller geography). I raise this example as one of complexity. Time to defibrillation was only measurable technical separator in the study.

It has unquestionable face-value that training more is better than not training, or not achieving any degree of saturation in training. The findings of the study are really encouraging and puts a pretty big arrow in our quiver as passionate educators and resuscitationists. While I think we shouldn’t claim a cause-and-effect, I would certainly be happy to walk in to the boardroom, Josey et al in one hand, AHA resuscitation education statement in the other, Betsy Hunt on speed dial and say, ‘do you want to help us get more people home after cardiac arrest from our hospital?’

SIMULCAST

Journal Club Summary November 2018 "Happy Endings"

Summary of this Month's Journal Club Discussion :

Blog Contributors :

- Glenn Posner, Ben Symon, Jennifer Dale-Tam, Janine Kane, Susan Eller, Farrukh Jafri, Komal Bajaj
- Vic Brazil, Belinda Lowe, Kamal Cortas, 'Paul', Sarah McNamee

Thanks to all for commenting so enthusiastically this month.

There were a number of relatively consistent themes that came out through the discussions :

1. Widespread admiration for the level of detail and breadth of data collected in this study.
2. Concern that for big hospitals in particular it's hard to hit the prescribed 'dose' of In Situ Sims.
3. Acknowledgement that an ecological study generates hypotheses, not proof.

Widespread admiration for the level of detail and breadth of data collected in this study.

Many people described an initial excitement when they first heard of the paper, and a sense of hope that this paper would be 'the one' that would allow them to justify their simulation service's existence with greater clarity.

Belinda Lowe admired the depth of detail collected by Josey et al, stating that one of her take homes was *"It's possible to achieve a highly detailed and rather impressive data collection and metrics for ISS over a large scale.".*

Concern that for big hospitals in particular it's hard to hit the prescribed 'dose' of In Situ Sims.

Glenn Posner voiced concern regarding the dose-response required to hit the highest frequency of In Situ Sims outlined the paper, pointing out that *"My hospital has nearly 1200 beds – I would need to run 200 sessions per year to match the median of the "most active" group."*. Other responders such as Jennifer Dale-Tam echoed thoughts that the manpower required to emulate the study is daunting and potentially impossible for some centres, particularly while ensuring a level of quality control within the simulations being delivered. She also identified the way that this paper builds on the AHA Statement on Resuscitation Education by mirroring several of the principles.

Acknowledgement that an ecological study generates hypotheses, not proof.

Consistent with the paper's stance, it was acknowledged that this paper does not provide clear causation that In Situ Sim decreases patient mortality at a high enough 'dose'. Farrukh Jafri voiced curiosity regarding the lack of measurable CPR quality improvement between groups, for example, although Belinda Lowe asked if potentially there were changes in CPR quality, just not easily measurable ones.

While this discrepency was acknowledged, many journal clubbers stated that this paper still contributes heavily to research within that field. As Susan Eller described :

"As a PhD student, there is still some part of my brain that gets stuck on the fact that correlation ≈ causation. The authors described the work as an ecological study, and again that challenges the rules of hard science. YET – I don't know that I think "hard science" is necessary. When I read Jennifer's description of the interprofessional simulations with nurses debriefing physicians, I think that kind of training changes not only performance, but culture. I believe those changes in culture contribute greatly to the improved outcomes."

Vic Brazil, on the other hand, reframed the importance of such papers with this statement : *"Robust, generalisable impact papers on ISS are all welcome, including negative studies. We need to know when we aren't having an impact too. The question is not 'does it work?' but for what, whom and under what circumstances..".*

Thanks to all for a great month, and a great year at Simulcast Journal Club.

Acknowledgements :

Thank you to Jesse Spurr for his expert commentary this month.
Thank you to all commenters this month for sharing your thoughts and allowing us to learn from you.
Simulcast would like to thank the creators of the ALiEM MEDiC series for the inspiration for the journal club's blog format and their ongoing support and contributions to the project.

References :

1. Josey, K., Smith, M., Kayani, A., Young, G., Kasperski, M., Farrer, P., Gerkin, R., Theodorou, A. and Raschke, R. (2018). Hospitals with more-active participation in conducting standardized in-situ mock codes have improved survival after in-hospital cardiopulmonary arrest. Resuscitation, 133, pp.47-52.