

Quality Improvement



An open access professional development module for simulationists

How to use this module



Module progresses from foundational concepts to advanced practice. Self direct how deep you want to go!

Exercises are designed to work on your own or to discuss with a friend over coffee.



Open access links sometimes break! Let us know via @sim_podcast

This module is a collaboration with :



This document is licensed under a Creative Commons Attribution 3.0 Australia licence. To view a copy of this licence, visit creativecommons.org/licenses/by/3.0/au

© Simulcast 2022

Last reviewed 22.08.2022

You are free to copy, communicate and adapt the work, as long as you attribute the authors of this module and their institution.

For more information contact:

Simulcast at @sim_podcast

An electronic version of this document is available at simulationpodcast.com

Simulation and Quality Improvement (QI)

Module Author : Daniel Hufton, Children's Health Queensland

Overview :

At its core Quality Improvement is an attitude: a behaviour to continually be curious, a wanting to be better at what we do. The science of improvement adds structure, devices and methodology to action this attitude. Simulation, as an educational tool, is well established and this is comfortable practice for many of us but how about using our simulation skills and techniques in QI projects too?

The aim of this module is to introduce key QI principles and tools that will help you think critically about how you can use simulation techniques in QI, but also how to use QI methods in simulation! This module should be read as foundational to the translational simulation module.

Exercise 1 : Foundational Principles

Watch the following online videos:

- [Quality Improvement in Healthcare](#) (~11mins) by Dr Mike Evans¹
- [QI Improvement Journey](#) (~2 mins) by National Education for Scotland (NES)²

Discuss with a colleague:

- Dr Evans describes a number of philosophies and mindsets that are helpful for entering into the QI industry. Did you notice any similarities or differences with the values espoused in healthcare simulation?
- Thinking about educational/simulation programmes you have observed or implemented. What are the similarities and differences you notice about the QI journey?

Retrieval Practice:

- The model for improvement is a key methodology in QI (there are other methodologies as well but in this module we will focus on the IHI model).
 - Mike describes three questions and a cycle – can you draw these out and explain this model to a colleague?
- The QI journey describes six steps and 3 overarching themes.
 - Can you draw out the QI journey and explain it to someone?

Relationship building:

- Reach out to the "QI team" in your area, Invite them to a simulation or set up a meeting to share ideas
- Find out what QI educational content or courses you may be able to access

Further Reading:

These two linked videos describe the model for improvement in more detail

- [Model for Improvement Clip 1](#)³
- [Model for Improvement Clip 2](#)⁴
- [Quality improvement made simple: What everyone should know about health care quality improvement](#)⁵
- [Quality improvement into practice](#)⁶

Exercise 2 : Understanding Systems - Complex vs Complicated

"Every system is perfectly designed to get the results that it does" - W. Edwards Deming

In order to improve patient care or staff wellbeing we first need to understand the people, processes and the connectivity/relationships of where we work.

Read [these web pages](#)⁷ and watch the short video embedded.

Listen to this podcast:

- [The Emergency Mind : Shannon McNamara, MD, on Complexity and Emergence](#)⁸

Discuss with a colleague:

- Can you explain the differences between 'Simple', 'Complicated' and 'Complex' systems?
- Can you reflect on a personal experience where changes were made with good intentions but had unintended consequences?

Exercise 3 : Understanding Systems through Process Maps

There are a variety of tools we can use to help us understand a system. This [IHI toolkit](#)⁹ is a good resource of QI tips (free web registration required).

In this exercise we will focus on Process Maps (Flowcharts), which help a team describe important functions/decisions within a process. They help make sense of high-level processes or zoom in on smaller details of patient care.

Watch this video: [Whiteboard: Flowchart](#)¹⁰

Create a Process Map for the following tasks (the IHI toolkit may be useful here):

- Making a sandwich
- Preparing for a simulation event

Questions for yourself and your Simulation Team:

- Could a simulation work as a "live" process map?
 - What might be the benefits of simulating a process over a table top approach?
 - What are the risks/downsides of simulating a process over a table top approach?

Exercise 4 : Understanding systems through 'Experience based co-design'

An essential component of understanding the system is understanding the patient and staff experience. This experience data can help us to know the system, direct the aim and to come up with change ideas. One simple question to consider in understanding the system is to ask patients and staff: *"What matters to you?"*.

Experience based co-design (EBCD) is a methodology for developing, designing and implementing change *with* patients (rather than for patients).

Read more about EBCD at the [Point of Care Foundation website](#)¹¹.

- In particular look at [focus groups](#)¹² and [patient narratives](#)¹³. (These point-of-care foundation resources are behind an email login but they are free to access)

Ask yourself or as a team consider the following:

- Briefly reflect on what makes a good simulation facilitator - What are the attitudes, behaviours and competencies required for running a great debrief?
- Imagine you are running a focus group with patients:

- What overlap in skills do we have in simulation that will assist us running a good focus group?
- What are differences in approach that we will need to be mindful of?
- Imagine you are conducting some individual patient interviews:
 - Consider the same questions: where is their overlap with skill as a debriefer and where are there differences?

Exercise 5 : Establishing an aim

Now we are starting to understand our system we can think about how we want to improve it. This hopefully leads to 'aim ideas' and generation of an 'aim statement'.

Top tips for an aim statement are:

- Be specific – What are you aiming for, who will it affect?
- Make it measurable – How much will it change?
- Include a timeframe – Make it challenging but realistic

An example might be:

- *“Reduce hospital admissions for children/young people with severe asthma (WHAT/WHO) by 60% (HOW MUCH) within the next 8 months (WHEN).”*

Aim Statement task:

Challenge yourself to come up with an aim statement for a project you're involved in or have observed.

- Tell a colleague your aim statement.
- Ask them if they can identify the above-mentioned elements (WHAT/WHO/HOW MUCH/BY WHEN).

Review the following aim statements and consider how they differ:

1. *“There will be >90% use of the discharge medication checklist on Ward 2D within 3 months”*
2. *“Less than 5% of discharge prescriptions on Ward 2D will contain errors within 3 months”*

A common pitfall in aim statements is to include the 'change idea' within the statement (in this case the medication checklist). The second option highlights the true aim of the project (fewer prescription errors) and ensures the organisation remains focused on that meaningful outcome rather than on the intervention being trialled.

Aim statements should be defined and refined through the life of a QI project. Things to watch are “Target slide/drift” (reducing the target to make it more manageable). Sometimes refocusing the aim on a smaller part of the system or a more specific population group can help, this is different to target slide.

Further Reading:

- [Science of Improvement: Setting Aims | IHI - Institute for Healthcare Improvement](#)¹⁴

Exercise 6 : Measurement in Quality Improvement

Data is essential to understanding our system but also in testing our ideas: *Is what we have done an improvement?*

Watch this video:

- [Trauma, team and tribes: Vic Brazil at DFTB18](#)¹⁵

Read this article:

- [Using data for improvement \(bmj.com\)](#)¹⁶

Retrieval Practice:

- From the above resources can you explain to a colleague what the differences between 'Outcome', 'Process' and 'Balancing' measures are?

Patient (or staff) Experience Data:

Some vital components of an effective healthcare system are hard to measure in a traditional, quantitative way. For this reason we also need qualitative data.

Think back to Exercise 4 and Vic's talk above. Where we talked about focus groups, interviews, patient narratives and debriefing.

- How do we analyse the stories from staff and patients? Who do you know that might have skills you can learn from in qualitative data analysis?
- Consider the benefits and drawbacks of in-depth interviews with a few people and broader surveys from many.

Exercise 7: Change Ideas and Plan Do Study Act (PDSA) cycles

So... we have some understanding of our system, we have something to aim for and we have got an idea of some useful measures

A simple way to try ideas that might lead to improvement is to use the Plan, Do, Study, Act (PDSA) cycle.

Watch this:

[YouTube video from BMJ Quality¹⁷](#) for a quick overview of what each step in the cycle means.

The final exercise in this module we are going to explore PDSA cycles by spinning coins. This IHI game is a good way to rapidly practice and reflect on performing several rapid PDSA cycles with your team.

You will need a small group(s) of people – 3-5 people per team work best. The whole exercise will take around 25mins to do (15mins playing the game and 10mins for reflection)

[Watch this 3min video¹⁸](#) from IHI that lays out how to play the game.

Equipment required 1) 3-4 coins of different sizes, 2) A timepiece and 3) [Print the PDSA tracker sheet here¹⁹](#).

Play the game for 15 mins and then discuss and reflect on the activity as a group.

Here are some questions to get you started:

- What got you to the longest spin?
 - How did your theories of what would work play out when you tested them?
- How did you find collecting data? What did you learn by collecting a little data?
- Imagine the same game without the instructions to use a PDSA cycle approach - What difference did it make going through each PDSA step in sequence?
- Can you translate what you have found here to your work in simulation or healthcare?

You can [watch this video from IHI²⁰](#) about their reflections on debriefing this game.

Additional Resources

Further reading on Quality Improvement and some introductions to Human Factors:

- [Quality Improvement Tools - Clinical Excellence Commission \(nsw.gov.au\)²¹](#)
 - Includes spread sheets on making [Pareto Charts](#) and [Run-Charts](#).
- [NES webpages²²](#) - relevant to QI
- [IHI toolkit⁹](#) - (behind a login but free to sign up to IHI)
- [SEIPS 101 and seven simple SEIPS tools²³](#) - a good introduction to some simple human factors tools
- [Augmenting Health Care Failure Modes and Effects Analysis Wi... : Simulation in Healthcare \(lww.com\)²⁴](#) - Useful paper describing how simulation can be used to help understand the system and identify risks.
- The human side of change, bringing people with you on a QI journey, would need a whole self-development module in itself. This paper is a great place to start. [Psychology of change papers from IHI²⁵](#)

References

1. Evans, M. "Quality Improvement in Healthcare" *YouTube*, 14 Nov. 2014, accessed 11 Aug. 2022, <<https://www.youtube.com/watch?v=jq52ZjMzqyl>>
2. NES. "Quality Improvement Journey" *Vimeo*, 29 June 2021, accessed 11 Aug 2022, <<https://vimeo.com/568959724>>
3. Lloyd, R. "Model For Improvement Clip 1" *YouTube*, 2009, accessed 17 Aug 2022, <<https://www.youtube.com/watch?v=SCYghxtioIY>>
4. Lloyd R. "Model For Improvement Clip 2" *YouTube*, 2009, accessed 17 Aug 2022, <<https://www.youtube.com/watch?v=6MIUqduINwQ>>
5. The Health Foundation, "Quality improvement made simple". *The Health Foundation*, Apr 2021, accessed 17 Aug 2022, <www.health.org.uk/publications/quality-improvement-made-simple>
6. Backhouse A, Ogunlayi F. Quality improvement into practice *BMJ* 2020;368:m865 doi:10.1136/bmj.m865
7. Turas Learn, "Quality Improvement Zone – Understanding Systems", *National Education for Scotland (NES)*, Aug 2021, accessed 17 Aug 2022, <<https://learn.nes.nhs.scot/821/quality-improvement-zone/quality-improvement-journey/understanding-systems>>
8. Dworkis D, "EP 63: Shannon McNamara, MD, on Complexity and Emergence", *The Emergency Mind Podcast*, accessed 17 Aug 2022 on Soundcloud <https://soundcloud.com/emergencymind/episode-63?utm_source=clipboard&utm_campaign=wtshare&utm_medium=widget&utm_content=https%253A%252F%252Fsoundcloud.com%252Femergencymind%252Fepisode-63>
9. Institute for Healthcare Improvement, "Quality Improvement Essentials Toolkit", 2017, accessed 17 Aug 2022 < https://www.ihl.org/resources/Pages/Tools/Quality-Improvement-Essentials-Toolkit.aspx?PostAuthRed=/resources/layouts/download.aspx?SourceURL=/resources/Knowledge%20Center%20Assets/Tools%20-%20QualityImprovementEssentialsToolkit_e14261f9-05ff-4a7b-ba25-58c85c4c9e9a/QIEssentialsToolkit.pdf>
10. Lloyd, R. "Whiteboard: Flowchart" *YouTube*, 2014, Accessed 17 Aug 2022, <<https://www.youtube.com/watch?v=tq7dQVaTbcc&t=39s>>
11. The Point of Care Foundation, "EBCD: Experience Based Co-Design" 2016, accessed 18 Aug 2022 < <https://www.pointofcarefoundation.org.uk/resource/experience-based-co-design-ebcd-toolkit/>>
12. The Point of Care Foundation, "Focus Groups – Point of Care Foundation" 3rd Nov 2020, accessed 18 Aug 2022 <<https://www.pointofcarefoundation.org.uk/resource/using-patient-experience-for-improvement/gathering-data/focus-groups/>>
13. The Point of Care Foundation, "Patient narratives – Point of Care Foundation" 3rd Nov 2020, accessed 18 Aug 2022 < <https://www.pointofcarefoundation.org.uk/resource/using-patient-experience-for-improvement/gathering-data/patient-narratives/>>

14. The Institute for Healthcare Improvement, "Science of Improvement: Setting Aims", 2022. accessed 18 Aug 2022
15. Brazil, V. "Trauma teams and tribes: Vic Brazil at DFTB18". *YouTube*, 31 Jul 2019, accessed 18 Aug 2022, <<https://www.youtube.com/watch?v=ivl-DAqkY94>>
16. Shah A. Using data for improvement *BMJ*, 2019; 364 :l189 doi:10.1136/bmj.l189
17. BMJ Quality, "The PDSA Cycle 101", *YouTube*, 22 Oct 2015, accessed 17 Aug 2022, <<https://www.youtube.com/watch?v=szLduqP7u-k&t=20s>>
18. The Institute for Healthcare Improvement – IHI, "IHI Quality Improvement Games: Learn How to Use PDSA Cycles by Spinning Coins" *YouTube*, 8 Oct 2016, Accessed 19 Aug 2022, <<https://www.youtube.com/watch?v=evVIMpzahc8>>
19. Williams D. Coin Spinning Game Worksheet, The IHI, 2015, accessed 18 Aug 2022 available online <<https://www.ihl.org/education/IHIOpenSchool/resources/Pages/AudioandVideo/QI-Games-Learn-How-to-Use-PDSA-Cycles-by-Spinning-Coins.aspx>>
20. The Institute for Healthcare Improvement – IHI, "Debrief - IHI Quality Improvement Games: Learn How to Use PDSA Cycles by Spinning Coins" *YouTube*, 8 Oct 2016, Accessed 19 Aug 2022, <https://www.youtube.com/watch?v=CgYf_N3GvUM>
21. Clinical Excellence Commission Academy, "Quality Improvement Tools – Clinical Excellence Commission" *NSW Government*, Accessed 19 Aug 2022, <<https://www.cec.health.nsw.gov.au/CEC-Academy/quality-improvement-tools>>
22. Turas Learn, "QI Tools" *National Education for Scotland*, accessed 21 Aug 2022 <<https://learn.nes.nhs.scot/1262>>
23. Holden RJ, Carayon P. *BMJ Qual Saf*, 2021;30:901–910.
24. Nielsen, DS et al. Augmenting Health Care Failure Modes and Effects Analysis With Simulation. *Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare*: February 2014 - Volume 9 - Issue 1 - p 48-55 doi: 10.1097/SIH.0b013e3182a3defd
25. Hilton K, Anderson A. IHI Psychology of Change Framework to Advance and Sustain Improvement. IHI, White Paper. Boston, Massachusetts: Institute for Healthcare Improvement; 2018. Available at IHI.org <<https://www.ihl.org/resources/Pages/IHIWhitePapers/IHI-Psychology-of-Change-Framework.aspx>>

About the Author:



Dr Dan Hufton

@danhufton

MRCPC, MBBS (Hons)

Paediatrician and STORK Simulation Fellow, Queensland Children's Hospital

Dan is a husband, father to 3 children and a Paediatrician with a keen interest in Simulation-Based education (SBE) and translational simulation. He has an interest in human factors and how we can use SBE to improve system performance and staff wellbeing. Currently working as simulation fellow with the STORK team based at QCH to deliver, design, and innovate SBE that improves paediatric critical illness and resuscitation training in healthcare settings across Queensland.

With thanks to Jesse Spurr, Redcliffe Hospital Intensive Care Unit for his time and review