Editorial

Improving Quality Improvement: 4 years of international medical QI conferences

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1. Introduction

Quality Improvement (QI) is a key agenda for change item recognised as fundamental to the success of healthcare systems by the National Institute for Health and Care Excellence. QI can be defined as the systematic process to identify problems, evoke change, and improve standards. The outcomes of any QI process should be improved safety, better co-ordination of care and improved satisfaction amongst patients and healthcare professionals (HCPs) [1]. There are methodologies such as the 'Plan-Do-Study-Act PDSA cycle' and 'Lean processing', that help identify areas requiring improvement and allow for trials of potential solutions [2]. However, awareness of these processes is not absolute for HCPs, it is therefore imperative that fundamental QI principles are taught and encouraged and that HCPs have a means of collaborating.

Medical conferences remain the main mechanism for continuing professional development and educating healthcare professionals on updates and innovation [3]. Combinations of lectures, workshops, presentations and informal interactions with peers allows for the development of standards within healthcare [4]. The Quality Improvement South West (QISW) international conference was created in order to promote awareness of QI, encourage learning from others, and make QI more accessible within healthcare. It ran face-to-face in 2019 and then virtual in subsequent years (2020, 2021 and 2022). Utilising multiple PDSA cycles (see Appendix A) and our conference checklist (see Appendix B) we have not only produced a high quality and open access conference for thousands of attendees but also improved year to year in terms of quality and learning efficiency.

The aim of this paper is to review the results from the application of a PDSA cycle process to QI conferences. The secondary aim is to demonstrate non inferiority of virtual QI conferences to in person conferences in terms of learning outcomes.

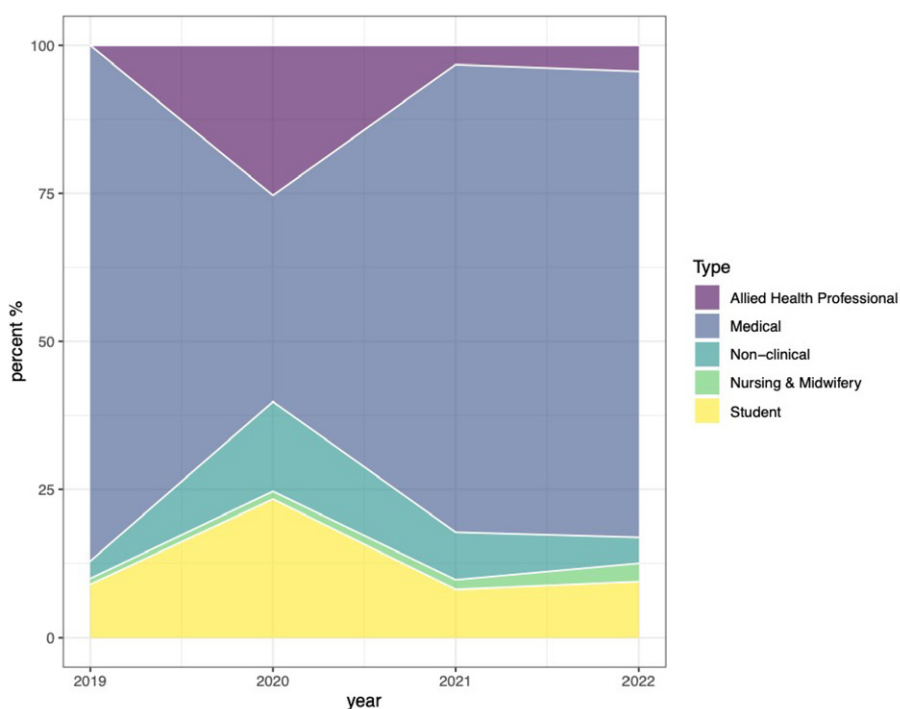*Corresponding author: M. Okocha. E-mail: M.Okocha@doctors.org.uk.
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Fig. 1. Percentage breakdown of yearly attendance by healthcare profession.

2. Methods

Review of conference participant data, comparisons of pre and post conference questionnaires, assessment of common themes throughout the conference and year to year comparisons of confidence in QI methodology.

3. Results

3.1. Number and specialism of participants, pre-conference and post-conference feedback completion

The first year (2019) of QISW had 153 participants of these 88% were doctors and 12% students. 2020 substantially increased in size with 2780 participants of which 33% were doctors, 10% nurses, 22% students, and 35% allied health professionals including physiotherapists, speech and language therapists, occupational therapists, QI practitioners, and and senior managers. The following two years had 500 and 178 participants with 68% and 65% being doctors respectively (see Fig. 1). The pre- and post-conference feedback surveys were utilised to develop key themes and areas for improvement for subsequent years. In 2019, 101 individuals completed the pre-conference survey and 40 completed the post-conference survey. In the following years the pre-conference survey numbers were 639, 60 and 277 respectively. Post-conference survey figures were 361, 127 and 114 respectively.

3.2. *Common themes*

The results of the pre and post conference surveys were analysed for key themes. These were transferred into word cloud maps to represent what participants wanted to achieve by attending the conference (see Fig. 2 as an example) and how they thought the conference could improve. As the conference developed the aims changed as our participants' understanding of QI principles improved.

In the pre-conference questionnaire, each year participants were asked demographic data, confidence in QI methodologies, level of experience with leading or participating in QI projects and what they hoped to achieve from the conference. Post conference questionnaires focused on self-scored improvement of their confidence in QI methodology, willingness to lead on a QI project, and how they thought the conference could improve as well as key messages they took away from the conference. Below we have highlighted the top three themes by year in response to 'what do you hope to achieve from the conference' and 'how do you think the conference could improve'. We have also given an example of how we displayed these in word clouds for committee review (Fig. 2).

Pre-conference:
2019:

(1) What is quality improvement
(2) What makes up an effective quality improvement project
(3) Ideas and examples of previous projects

2020:

(1) Deepening the basic knowledge of QI
(2) Understanding how to undertake better QI projects
(3) How does quality improvement relate to patient safety

2021:

(1) Learning from others
(2) Ability to network with individuals
(3) Opportunity to share research

2022:

(1) How to present QI work
(2) Hear inspirational QI projects
(3) Learn how to create a good QI organisation

Post-conference:
2019:

(1) Continue excellent quality of speakers
(2) Improve opportunities for discussions surrounding QI
(3) Improve networking amongst others

2020:

(1) Greater understanding of the QI process including understanding of the PDSA cycle

Fig. 2. Word cloud of 2020 pre-conference expectations.

(2) Greater publicity of the conference
(3) Improved inclusivity of the conference

2021:

(1) Availability of more workshops
(2) Technical issues with hosting platform
(3) The lack of interaction available with the oral presentations

2022:

(1) Importance of diversity for quality improvement
(2) Request for the conference to return to a face-to-face or hybrid setting
(3) Having specific time allocated for the poster hall

3.3. Pre- and post-conference QI methodology confidence scores

Each year conference participants were asked to self-score their pre- and post-conference confidence scores about understanding of QI methodologies. Across the four years the average pre-conference confidence increased from '2.1' in 2019 to '2.5' in 2020 and '3' in 2021 and 2022. Each year confidence improved between the pre- and post-conference surveys. The post-conference survey also increased throughout the years from 3.75 in 2019 to 4.5 in 2022.

3.4. Comparison of virtual to face-to-face learning

When comparing pre-vs post 2019 (in person conference) to pre-vs post 2020-22 (virtual conferences) improvement factor, there was 1.23 ($P < 0.001$) improvement pre-and post 2019 and 1.57 ($P < 0.001$) for
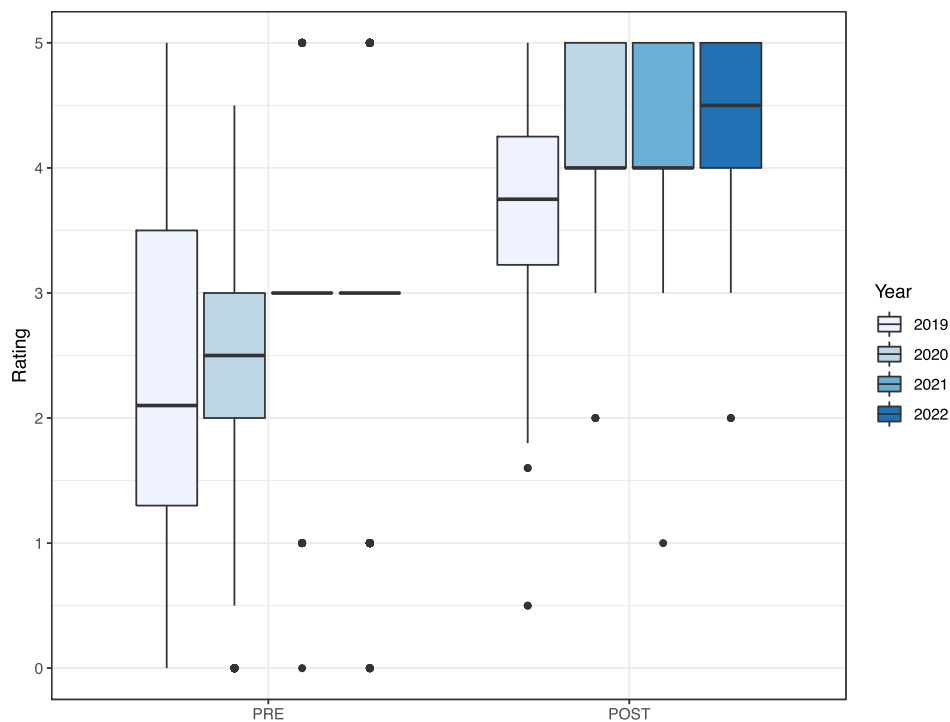
Fig. 3. Box plot demonstrating yearly pre and post conference confidence in QI methodologies.

the virtual conferences (2 way ANOVA), but there was no significant statistical difference between the two values. There were no significant thematic variations when reviewing free word box statements from attendees, all included opportunities to network as an important aspect of the conference participation.

4. Discussion

4.1. PDSA cycle application to conferences

Our results demonstrate a continued improvement in the delivery and content of our conferences in keeping with our aim of teaching QI principles and improving understanding and confidence in QI methodologies. We have included our PDSA cycle (see Appendix A) and would encourage those who run annual conferences to implement regular Plan-Do-Study-Act cycles to improve the quality of their conference. We were able to demonstrate improvements in our pre-and post-conference QI methodology scores and our thematic analysis shows a shift from learning the principles of QI methodology to implementation. We have developed a conference checklist as part of the planning stage of any conference (Appendix B).

4.2. The demand for virtual conferences

The first Quality Improvement Southwest international conference was organised and run as a face-to-face conference in 2019. The COVID-19 pandemic required significant changes to the structure and

delivery of educational material. The introduction of international travel restrictions further threatened the inclusion of international delegates and speakers. To overcome the associated safety risks, subsequent pressures on the NHS, and barriers to travel, virtual conferences were developed as a solution [5]. QISW has run its subsequent conferences virtually thus reducing carbon footprint, improving attendance, and removing barriers for Low- or Middle-Income Countries. This was largely supported by the use of a virtual conference platform MedAll (Medicinall Limited) with features such as the 'virtual poster hall' and the use of multiple broadcasting 'virtual stages'. It has been demonstrated that effective and easily accessible audiovisual platforms are necessary to the development and delivery of virtual conferences [6].

5. Conclusion

We have demonstrated continued improvement with the delivery of our QI conferences. We have outlined the steps to apply PDSA cycles to annual conferences as well as step-by-step guidance on how to run and deliver a conference. We have proved non-inferiority of virtual conferences to face-to-face conferences as our data has demonstrated that it is possible to run virtual conferences to the same if not higher standard than face-to-face conferences with similar or superior attendance numbers and engagement with the learning process.

QISW remains a learning organisation and we will continue to work on expanding our inclusivity, especially on a global scale, with improved accessibility through virtual platforms.

Acknowledgements

References

[1] Jones B, Vaux E, Olsson-Brown A. How to get started in quality improvement. BMJ [Internet]. 2019;364, Available from: https://www.bmj.com/content/364/bmj.k5437.
[2] Quality improvement made simple [Internet]. 3rd ed. The Health Foundation; 2021 Apr [cited 2022 Nov 1]. Available from: https://www.health.org.uk/publications/quality-improvement-made-simple.
[3] Mishra S. Do medical conferences have a role to play? Sharpen the saw. Indian Heart J. 2016;68(2):111–3.
[4] Kamal M, Bhargava S, Katyal S. Role of conferences and continuing medical education (CME) in post-graduate anaesthesia education. Indian J Anaesth. 2022;66(1):82–4.
[5] Palethorpe MK. Time for face-to-face medical conferences and hybrid events. BMJ. 2022;24:376, 761.
[6] Rundle CW, Husayn SS, Dellavalle RP. Orchestrating a virtual conference amidst the COVID-19 pandemic. Dermatol Online J. 2020;26(7), 13030/qt5h19t1jx.

Appendix A: Example PDSA cycle

West of England Academic Health Science Network
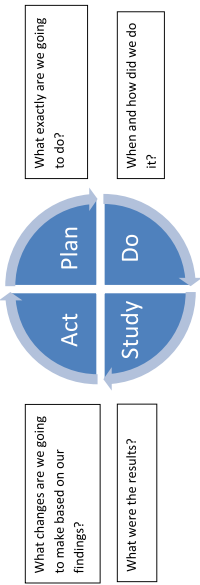
PDSA cycle

Model for Improvement: Three questions for improvement
1. What are we trying to accomplish (aim)?
2. How will we know that change is an improvement (measures)?
3. What change can we make that will result in an improvement (ideas, hunches, theories)?

PDSA cycle diagram with quadrants: Plan, Do, Study, Act
- Plan — What exactly are we going to do?
- Do — When and how did we do it?
- Study — What were the results?
- Act — What changes are we going to make based on our findings?

Plan
- What is the objective of the test?
- What do you predict will happen and why?
- What change will you make?
- Who will it involve (e.g. one unit, one floor, one department)?
- How long will the change take to implement?
- What resources will they need?
- What data need to be collected?

List your action steps along with person(s) responsible and time line
Conference aims: Promote awareness of QI, encourage learning from others (interprofessional sharing), and make QI more accessible within healthcare "MDT QI"
Create a structure and plan for organizing the conference including appointing committee members and determining conference themes – committee leads, 1 year out
Investigate which virtual platforms will be most appropriate for a virtual, medical conference; with a particular focus on poster presentations – by 6 months out
Advertise to attendees and participants in order to make the conference accessible and inclusive of all healthcare professionals – at 6 months
Identify sponsors in order to fund prizes – 3 months out
Create and populate pre- and post-conference questionnaire and feedback form to ensure that we can learn from this cycle of the PDSA and make future changes

Do
- Implement the change. Try out the test on a small scale.
- Carry out the test.
- Document problems and unexpected observations.
- Begin analysis of the data.

Describe what actually happened when you ran the test
QISW 2020 was planned with the key themes of patient safety, wellbeing and quality care identified
The 2020 committee was selected and organized with a set number of pre-defined roles and job descriptions
A large number of keynote speakers, breakout room hosts and wellbeing activities were organized and a scheduled created for the day; pre-published on the QISW website
The conference was hosted mainly via a Youtube stream but also utilised Zoom for breakout rooms and poster presentations
The conference was advertised heavily through social media and hospital trust emails; a steering committee was formed in order to aid with advertising to AHP and other geographical areas
A feedback form was developed before and after the conference and participants were encouraged to fill this in

Study
Set aside time to analyze the data and study the results and determine if the change resulted in the expected outcome.
- Complete the analysis of the data.
- Compare the data to your predictions.
- Summarize and reflect on what was learned. Look for: unintended consequences, surprises, successes, failures.

Describe the measured results and how they compared to the predictions
2780 participants attended in our first virtual year in 2020
Increased participation of other allied healthcare professionals in 2020 from 0% to 25%
Common desired outcomes of the conferences included gaining a deeper understanding of what quality improvement involves
Participants reflected on the fact that they learnt about the PDSA audit cycle but reported some internet connection problems and some participants felt inclusivity could be increased even further

Act
If the results were not what you wanted you try something else Refine the change, based on what was learned from the test.
- Adapt – modify the changes and repeat PDSA cycle
- Adopt – consider expanding the changes in your organization to additional residents, staff, units
- Abandon – change your approach and repeat PDSA cycle

Describe what modifications to the plan will be made for the next cycle from what you learned
Ongoing efforts will be made to maintain high numbers of individuals attending the conference
Review of the virtual platform will be used to determine whether we can streamline the conference by utilizing fewer platforms at once to potentially improve internet connection issues
Develop the themes of quality improvement even further and focus upon learning from others; look into increasing the interactivity of the virtual conference

Appendix B: QISW conference checklist

<div align="center">QISW conference checklist</div>

6-10 months out	
Create and finalise aims of the conference; utilising past years' feedback if applicable	
Create mission statement and themes of the conferences relating to above aims	
Set up a committee team of individuals – those with time, specific skillsets and an interest in delivering a high-quality conference	
Set up a steering committee of individuals with a breadth of experience, range of professions and interest in your conference specialty	
Set size expectations	
Set initial conference schedule and identify potential speakers	
Identify potential sponsors and contact to gauge interest	
Investigate most appropriate virtual platforms and arrange a meeting with platform hosts for planning	
4-6 months out	
Contact a range of speakers and confirm the line-up	
Contact a range of AHP to act as judges for the poster presentations and generate a generic mark scheme for posters	
Open abstract submissions and score abstracts as submitted	
Confirm your virtual platform and familiarise with features	
Create and advertise a conference website	
Advertise the conference via the website, emails and social media platforms	
Confirm prize sponsorships	
Apply for CPD points	
2-4 months out	
Finalise the conference programme and release this to the general public	
Open registrations	
Create a pre-conference questionnaire and ensure responses are mandatory	
Release the results of abstracts to allow adequate time for poster creation and for work requests for leave	
4 weeks out	
Create post conference questionnaires and certificate requirements	
Deadline for return of posters / presentations	
Re-confirm with conference speakers, judges and poster presenters their attendance	
Run test run with speaker slides	
2 weeks out	
Have a dry run of the conference to identify areas for improvement / ensure smooth technology throughout the day	
On the day	
Ensure a member of the virtual platform is available for technology support	
All committee members to attend to be present throughout breakout rooms	
Meet with the speakers and judges prior to the conference starting on the virtual platform, to ensure connectivity is appropriate	
Send out post-conference questionnaires, prizes and certificates	
Following the conference	
Analyse post-conference questionnaires and reflect on changes for the next cycle	