



Sustainable Quality Improvement Teaching Case Study Template

Name of Institution: University of Bristol

Name of course or session: Sustainable Healthcare and Quality Improvement

Summary

A one-hour interactive lecture introducing quality improvement and sustainable healthcare with susQI workshop activities, was delivered to University of Bristol third year medical students via video-conferencing software in their small-group 'academies' across the Severn region. At the end of the session, students were encouraged to engage in a QI project or explore undertaking a project with the idea they had developed during the workshop activities. Students were given contact details of healthcare professionals in the hospital where they were on placement to aid in this process. However, due to coronavirus students were subsequently unable to engage in hospital-based activities. Pre- and post-session evaluation with questionnaires and focus groups was carried out to pilot the susQI toolkit in delivering sustainability-focused QI teaching to medical students. We assessed its impact on learning and motivation to engage in both topics.

Course or session dates:

- 7th Feb 2020
- A second session was planned for students to present their ideas/projects in May 2020, but this was cancelled due to COVID-19

Background

Sustainable Healthcare in the Curriculum

Bristol Medical School usually introduces QI teaching to final year medical students, but has no sustainable healthcare formally embedded in the curriculum. Third year medical students had no prior teaching in either QI or sustainable healthcare.

The GMC mandates that newly qualified doctors must be able to apply the principles of quality improvement and sustainable healthcare to medical practice. Undergraduate QI teaching often isn't given much space in the curriculum, and sustainable healthcare even less so. The CSH has designed the susQI framework to embed sustainability outcomes into mainstream QI methods. Health Education England are developing a susQI toolkit for undergraduate and postgraduate teaching nationally. A few medical schools across the UK, mostly in London and Bristol, have tried susQI teaching as part of SSCs (student selected components) or their QI curriculum, but none have been formally evaluated to determine the if, how, what and why of key factors in success for the delivery of sustainable healthcare education.

SusQI at Bristol Medical School

A medical education professor and advocate of 'sustainable healthcare' suggested susQI could fit into the Medical School 'Helical Themes' curriculum - where the 'wider' healthcare topics aligning with the GMC's Outcomes for Graduates framework are taught in a vertical fashion throughout their training. As part of this, third-year medical students in their smaller 'academy' groups across the Severn region have approximately 30 'Hub' sessions (named after the video-conferencing software, Microsoft® Surface Hub technology) delivered every Friday throughout the year. The Surface Hub technology allows centralised lectures/workshops to be delivered to groups (consisting of approx. 8 – 24 students) across all Trusts, or 'Academies' and allows lecturers to incorporate small group teaching and break-out activities via use of a communal interactive 'Whiteboard'. This lecture and workshop were delivered as one of these 'Hub' sessions.

Bristol as a climate-conscious city

Bristol's residents, teachers and students commonly express an attitude and live a culture angled toward more sustainable living. Students in particular are active in this field.

Course Description

Year group taught: Third year medical students

Status of this teaching within the curriculum: The teaching was delivered as part of the core helical themes curriculum on 'quality improvement'. There is some flexibility within this curriculum and therefore the board approved the decision to use the two sessions allocated to QI to be dedicated to SusQI.

Curriculum area: The 'Helical Themes' are based on the GMC's medical outcomes for graduates.

Learning outcomes:

1. Define 'Quality', 'Quality Improvement' and 'Sustainability' in the context of healthcare and patient safety
2. Recognise the key steps in the 'Plan Do Study Act' framework for QI methodology
3. Identify possible areas where patient safety or sustainability issues in the clinical environment could be improved by QI Projects
4. Experience in the design of a PSQI project based on learning from 1-3
5. Experience with the implementation of a PSQI project within the academy
6. Experience in creating Academy-Academy Peer-presentation of QI projects
7. Experience in delivery of Academy-Academy Peer-presentation of QI projects

The session plans are outlined below. However, note that Session 2 never happened due to coronavirus.

Session 1

- Lecture introduction to QI and Sustainability in healthcare
- Videos of examples of quality improvement projects in practice
- Small groups within academies to brainstorm & consider common issues of sustainability, patient safety, human factors, technology and processes in healthcare 'quality' that could be used as a QI project

- Complete workshop activities to apply QI methods to an example project
- Design QI interventions from own ideas or pre-determined projects

Between Session 1 and 2

- Attempt to implement small QI intervention with leadership and guidance from Clinical Teaching Fellows, clinical-based supervisor and local QI team. Approximately in groups of 4-6 students.

Session 2

- Paired session for peer-presentation of QI project work

Post-Session 2 Showcase

- We are discussing the feasibility of a 'showcase' afternoon or evening to disseminate and recognise the students' work and effort, with prizes for best projects.
- There may be opportunities for students to present at Trust QI Forums or Conferences, to which we will signpost.

Pedagogical format

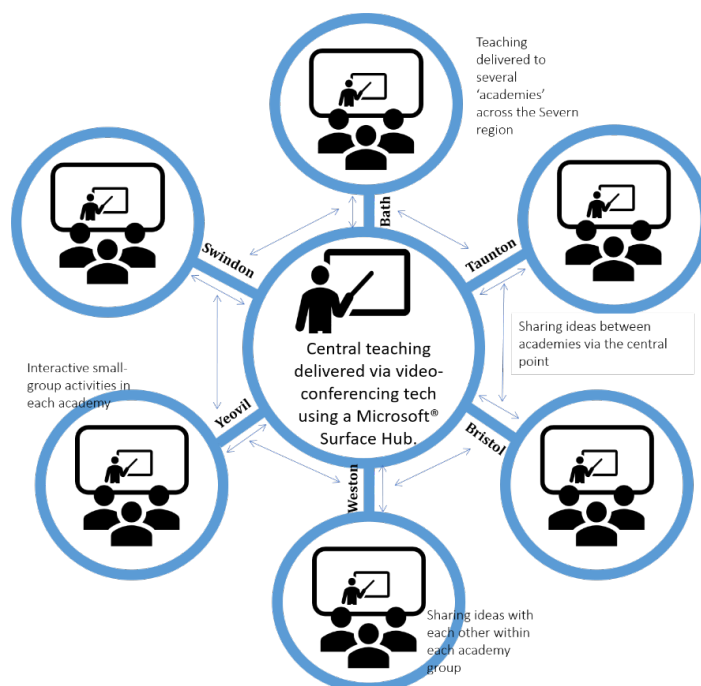
A lecture with interactive workshop activities

Teaching time

2 x 1 hour lectures

Number of students taught:

Cohort of students is approx. 342, depending on attendance. Via the 'Hub and Spoke model' using Microsoft Surface Hub technology:



Materials used:

The powerpoint lecture: introduced the impacts of climate change on health and the healthcare sector's contribution to climate change, providing context for the importance of practicing sustainable healthcare. The environmental, social and financial aspects of sustainable healthcare were discussed in terms of quality and quality improvement. The SusQI framework was introduced and students engaged in activities via the 'Whiteboard' to apply their learning of QI methods. To consolidate learning we created a video in collaboration with a local consultant anaesthetist, describing his QI project to reduce anaesthetic gas usage.

Videos used: Example QI project from local anaesthetist: <https://youtu.be/KEUyXJLc4PU>

Workshop activities were based on the CSH's SusQI materials and institute for healthcare improvement's PDSA cycles: (1) annotating a process map (2) annotating the map to generate ideas for a SusQI project (3) PDSA template for a project plan.

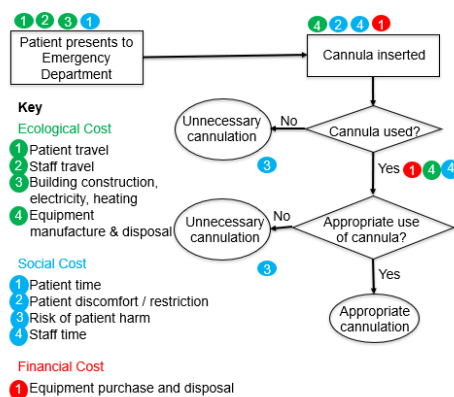


Figure 1: Annotating the process map

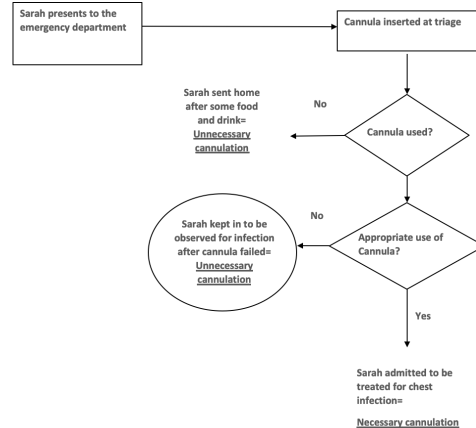


Figure 2. PDSA template for project plan

Activity 2: QI project planning

This is an **example** of a QI project plan based on the consultant anaesthetist's project in the video.

1. What is the aim?

What is the overall aim you are hoping to achieve? Be specific with for who/by how much/when etc.

To reduce the amount of desflurane being used for all operations in adult theatres in the BRI by 50% by the end of 2020.

2. What could you measure?

What can be measured to determine a change is an improvement? Consider environmental, social and financial impacts.

The amount of desflurane being used – i.e. The numbers of bottles used and a survey of people's self-reported use before and after intervention.

3. Identify a change you could make.

What intervention can be done to improve the system you're trying to change

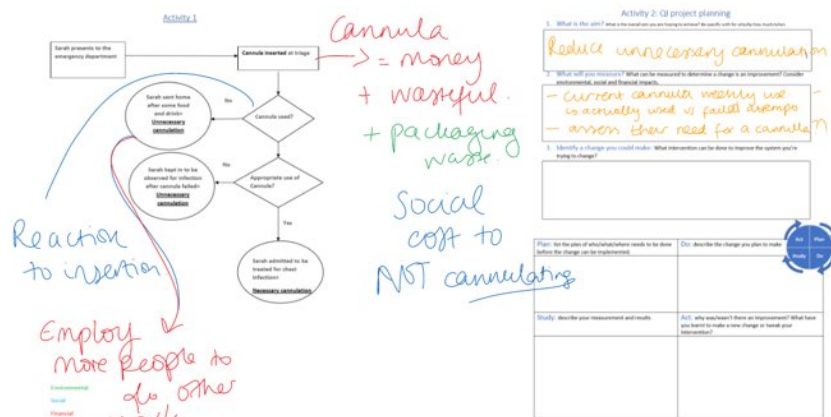
1. Stickers on each of the bottles and gas machines with facts on the impact of desflurane on the environment and asking people to use an alternative instead.
2. Talking at departmental meetings about the impact of desflurane on the environment and which gas to use instead.

Plan: how did you come up with the idea. Who helped you plan. What needed to be done before the change was implemented.	Do: describe the change you made.
Studies have shown the impact of desflurane on the environment. In adult theatres, we were using it as much as, if not more than, other gases. We performed a survey and found that people were unaware of this. We discussed with the staff in theatres and set up this project.	We spoke at a departmental meeting to introduce the project and disseminate the information and to encourage people not to use desflurane. We then put stickers on each of the gases to provide information about the impact on the environment/carbon footprint.
Study: describe what you measured and results (incl. run chart)	Act: What did you learn to make a new change or intervention? What did you/will you do next?
Over the next months, we did regular data collection to look at how much desflurane was being used. We compared this to baseline and plotted each of our findings on a run chart. It showed a reduction in desflurane use. We then looked at what environmental and financial impact this had by calculating the reduced carbon footprint, and cost savings.	The stickers were the first step, but we had to update them and change their locations as we learnt where people needed more encouragement. We then used posters as well as stickers, and continued to speak at handovers or meetings. Our next steps will be to do the same in other theatres across the Trust e.g. children's theatres.



Figure 3: Examples of students annotating the process map and PDSA plan during the session

Swindon



Please rate your confidence in the following statements:
 1 = not at all confident 2 = a little confident 3 = somewhat confident 4 = fairly confident 5 = very confident

1. I know what a quality improvement (QI) project involves^{K,C}
2. I know how to identify when there is need for QI projects^{K,C}
3. I can develop and undertake a QI project on my hospital placements^{K,C}

Please rate your knowledge of the following:
 1 = very poor 2 = poor 3 = fair 4 = good 5 = excellent

1. The health impacts of climate change^K
2. Sustainable healthcare^K
3. Sustainability in quality improvement^K

Please rate the following statements:
 1 = strongly disagree 2 = disagree 3 = unsure 4 = agree 5 = strongly agree

1. Quality improvement projects are important for improving patient care^A
2. I am likely to be involved in QI projects in the future^{A,Av}
3. It is important for quality improvement to be part of core teaching for medical students^A
4. Quality improvement projects with a sustainability focus are important in the future of healthcare^A
5. It is important for sustainable healthcare to be part of core teaching for medical students^A
6. It is important for me to take actions to reduce carbon emissions in my future job^A
7. I am likely to take action to reduce my environmental impact in my future job^{A,Av}

Please rate the following statement:
 Very likely Likely Neutral Unlikely Very unlikely

1. How likely are you to take part in a quality improvement project following this session?

What suggestions do you have for future teaching on this topic?
 Free text answers.

If you would like more information about getting involved with a QI project, please contact your local CTF lead.

Key
 Knowledge^K, Confidence^C (Did participants gain knowledge and confidence?)
 Attitudes^A (Do participants think it is an important topic?)
 Applied value^{Av} (Is the learning useful and will participants apply it?)

Lesson Learned

- Our teaching led to improvements in students' self-reported knowledge, confidence, and attitudes in both topics, corresponding to a likelihood to engage in SusQI projects and a willingness to change behaviour to reduce environmental impact in their jobs.
- Students reported that they enjoyed the session and they found it useful, relevant and engaging.
- We identified that they particularly enjoyed how interactive the session was and the use of video conferencing and Microsoft® Surface Hub 'Whiteboard' features to facilitate this.
- Students identified the following as teaching successes:
 - Interactive with opportunities for participation and discussion
 - Allowed them to engage in discussions with peers and identify like-minded colleagues. This allowed them to develop confidence and generate ideas.
 - Teaching needs to be pitched at the right level of understanding. There was a good balance of the disasters of climate change for health, but providing hope and solutions.
 - It needs to be relevant to their real-life experiences and fit in with the curriculum. Also needs to be congruous with what they're seeing on the wards. One way we achieved this was by using videos from local anaesthetists talking about their SusQI project as an example.
 - Students need resources for action; they need a way to be able to link their SusQI learning to enacting it in real life. They need named contacts, good mentorship and a momentum to keep projects going.

Quotes

"I think definitely the best hub [session] we've had so far" (Student V9)

"it was really useful" (Student V1)

"everything was helpful" (Student Q1)

"good presentation and vital content" (Student V4)

"it was very relevant and current topics and things" (Student V13)

"I thought that was really good because it was pitched at exactly the right level" (Student V15)

"they're just better when they're interactive and get participation from us on this side of the Hub – it was one of the best that we've had because there was so much opportunity for us to get involved as well" (Student V5)

"I think it's better when it's interactive and we get a chance to discuss things as a group – and we did today" (Student V6)

"It was a lot better than normal – it's better when you can do stuff in the Academies rather than just watching on a screen all the time" (Student V8)

"I think this one was better than average because of the interaction" (Student V10)

"I think hub sessions like this one that are interactive...are the most useful" (Student V11)

"we had activities in between as well and it took us through a systematic approach it kind of made sense of how it fits in to what we're doing here as well" (Student V7)

"good for students to know how they can be involved in those kinds of projects" (Student V3)

"how to get involved in QI projects ... was well explained in the hub session" (Student Q48).

For further information, please contact:

Philippa.clery@doctors.org.uk