PDSA Cycle 1

Aim: what are you trying to accomplish?

To develop interventions aimed at improving oxygen use within the Trust. These interventions should be simple, measurable, and result in sustained improvements in line with National standards.

Plan: what will your test be?

Following the 2012 National audit, the following interventions were agreed:

1. Educational campaign: targeted at junior doctors during Trust induction in August and intended to produce lasting results to new doctors at the start of the clinical year.
2. Training: targeted at nurses to improve documentation of oxygen saturations and subsequent titration to achieve specified target saturation ranges

Prediction: what do you think will happen as a result of your test?

Improved achievement of oxygen prescription in line with National standards

Do: what happened when you carried out your test?

With respect to each of the four standards, the following results were observed following the 2013 National audit (2012 results in brackets):

1. A fall in the number of valid oxygen prescriptions to 54% (71%)
2. A fall in the number of signatures for oxygen at drug rounds to 5% (6%)
3. A fall in the documentation of oxygen saturations, 94% (99%)
4. A fall in the number of patients with a documented target saturation range to 39% (45%)

Study: how did the results of your test compare with predictions?

Despite the interventions there was a fall in achievement of each of the four standards in the 2013 audit compared to 2012. It was felt that the poor results reflect two distinct problems. Firstly, standards one and two are primarily the responsibility of doctors. The results of the 2013 may be explained by a new cohort of doctors within the Trust in 2013 who despite additional education, were poor in using oxygen effectively. Poor results in standards three and four were felt to be related to nursing staff and it was identified that improvements would require a culture change as currently oxygen use is not regarded in the same manner as other medicines.

Act: how will you change your previous test in light of what you have learned?

A number of interventions were designed to produce simple, measurable, and sustained improvements in line with National standards. These included:

1. A new oxygen prescription. This would be designed to meet national standards to facilitate meaningful and sustainable changes for the long term.
2. Oxygen 'Alert' stickers for drug and NEWS charts; to increase awareness by healthcare professionals of a patient who is using oxygen.
3. Point of care educational material.
4. Education by senior doctors to nursing and junior medical staff before and during a period of QIP to embed new principles and practices.

PDSA Cycle 2

Aim: what are you trying to accomplish?

To develop interventions aimed at improving oxygen use within the Trust. These interventions should be simple, measurable, and result in sustained improvements in line with National standards.

Plan: what will your test be?

A number of interventions were designed to produce simple, measurable, and sustained improvements in line with National standards. These included:

1. A new oxygen prescription. This would be designed to meet national standards to facilitate meaningful and sustainable changes for the long term.
2. Oxygen 'Alert' stickers for drug and NEWS charts; to increase awareness by healthcare professionals of a patient who is using oxygen.
3. Point of care educational material.
4. Education by senior doctors to nursing and junior medical staff before and during a period of QIP to embed new principles and practices.

Prediction: what do you think will happen as a result of your test?

Improved achievement of oxygen prescription in line with National standards

Do: what happened when you carried out your test?

The four interventions were disseminated to Consultants and senior nursing staff. Qualitative feedback was obtained and used as follows:

1. A new oxygen prescription: six revisions were made based on feedback obtained by senior staff
2. Alert stickers were revised twice
3. A poster campaign was agreed upon and three revisions made before a final draft was accepted
4. A formal education timetable was agreed and mandatory content agreed. Senior nursing colleagues undertook education to nurses on a daily basis during morning handover. Consultants undertook similar education at morning board rounds.

The revised materials were placed on the AMU and used by the clinical team over three days. Following this qualitative feedback was obtained from the junior doctors during their weekly teaching sessions. The nursing team was approached before evening handover to obtain data from nurses finishing their shift after using the materials throughout the day. Data was used to produce a final version of each of the audit materials before being signed off by stakeholders.

Study: how did the results of your test compare with predictions?

The revisions highlighted problems not identified by the QIP team. The final materials were in line with similar versions used by other Trusts and those endorsed by the Royal College of Physicians.

Act: how will you change your previous test in light of what you have learned?

The new test will be undertaken over a longer period of observation with actual patients. Prospective data collection was undertaken each day for five days at 1800. An accompanying email was sent to the junior doctor team to ensure those working on call during the audit period were aware of the new materials.

PDSA Cycle 3

Aim: what are you trying to accomplish?

To develop interventions aimed at improving oxygen use within the Trust. These interventions should be simple, measurable, and result in sustained improvements in line with National standards.

Plan: what will your test be?

A number of interventions were designed to produce simple, measurable, and sustained improvements in line with National standards. These included:

1. A new oxygen prescription. This would be designed to meet national standards to facilitate meaningful and sustainable changes for the long term.
2. Oxygen 'Alert' stickers for drug and NEWS charts; to increase awareness by healthcare professionals of a patient who is using oxygen.
3. Point of care educational material.
4. Education by senior doctors to nursing and junior medical staff before and during a period of QIP to embed new principles and practices.

Prediction: what do you think will happen as a result of your test?

Improved achievement of oxygen prescription in line with National standards

Do: what happened when you carried out your test?

With respect to each of the four standards, the following results were observed following the 2014 QIP (2013 audit results in brackets):

1. An increase in the number valid prescriptions to 94% (54%)
2. An increase in the number of signatures for oxygen at drug rounds to 18% (5%)
3. An increase in the documentation of oxygen saturations, 100% (94%)
4. An increase in the number of patients with a documented target saturation range to 94% (39%)

Study: how did the results of your test compare with predictions?

The results demonstrated consistent improvements across each of the four standards compared to Trust audit data between 2010-2013. Moreover, the 2014 QIP results were equivalent to or exceeded national data across each of the four standards between 2008-2013.

Overall the results exceeded expectations.

Act: how will you change your previous test in light of what you have learned?

Surveys were disseminated to healthcare professionals working on the AMU who were involved in the QIP. Qualitative feedback was used to make final revisions to the oxygen prescription chart, which will be incorporated into a new drug card that will be used across the Trust.

Point of care information will remain in situ within the department and used more widely following introduction of the new oxygen prescription in 2015.

The oxygen Alert sticker was not felt to be useful and will not be carried forward further.

All new materials will be audited as part of the BTS National Audit following their introduction.