UCLPartners
Academic Health Science Partnership

The UCLPartners acute kidney injury (AKI) and sepsis patient safety collaboratives

Acknowledgements

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Trusts

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- Southend University Hospital NHS Foundation Trust
- University College London Hospitals NHS Foundation Trust
- West Hertfordshire Hospitals NHS Trust
- Whittington Health NHS Trust

Clinical leads

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- Sepsis: John Welch, Intensive Care Nurse Consultant, University College London Hospitals NHS Foundation Trust

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Executive summary

UCLPartners is an academic health science partnership involving over 40 higher education and NHS trust members serving the population of north east and north central London and parts of three connecting home counties. We bring together organisations to address big challenges in health and wellbeing in the NHS and social care. Under this remit, we worked with 13 hospital partners to improve patient care for two conditions that cause high numbers of avoidable deaths in our region and across the country: acute kidney disease (AKI) and sepsis

In 2014, UCLPartners brought together senior clinicians and hospital leaders from its NHS trust partners to identify clinical areas for a quality improvement programme in patient care and safety. Causing around 80,000 deaths annually in England – and the focus of national campaigns and influential reports – AKI and sepsis, two serious conditions that can lead to rapid deterioration and sometimes death, emerged as urgent priorities for improvement.

Patient safety collaboratives

Two patient safety collaboratives were established, bringing together professionals to learn from and motivate each other to improve care. Teams from 12 NHS trusts formed the sepsis collaborative, and teams from nine trusts formed the AKI collaborative. The Institute for Healthcare Improvement (IHI) Breakthrough Series (BTS) was the chosen delivery model. This methodology supports the rapid testing of improvements, and shared learning, when working across multiple sites and project teams.

Both collaboratives completed three main programme phases – baseline, improvement and implementation – over 22 months from September 2015 to June 2017. Throughout these phases, teams took part in a series of group learning sessions intersected with action periods during which they tested and measured improvements in practice in their own hospital settings. Learning sessions centred around the presentation of storyboards to share teams' ideas, successes and challenges with the wider collaborative. Patient representatives informed and were involved in the collaboratives from the outset.

The aims for the UCLPartners AKI and sepsis collaboratives were to achieve measurable improvements in patient care and patient outcomes. These included improving timely recognition and follow-up of the two conditions and, ultimately, reducing deaths by 25 per cent in AKI patients, and 20 per cent in sepsis patients. The collaboratives were also intended to increase the capability of hospital teams to deliver improvements.

Improving outcomes

In total, records from 950 AKI and almost 1200 sepsis cases were included in the final analysis. Both collaboratives exceeded their initial aims for improving survival rates: AKI deaths reduced by 47 per cent, and sepsis deaths fell by 24 per cent. In sepsis, patients' median length of stay in hospital was reduced by 20 per cent, and admissions to intensive care were cut by 52 per cent. In AKI, rates of kidney function recovery were increased by 19.5 per cent. Both collaboratives also demonstrated improvements in clinical processes, such as timely recognition of the conditions, improved documentation and best practice follow-up.

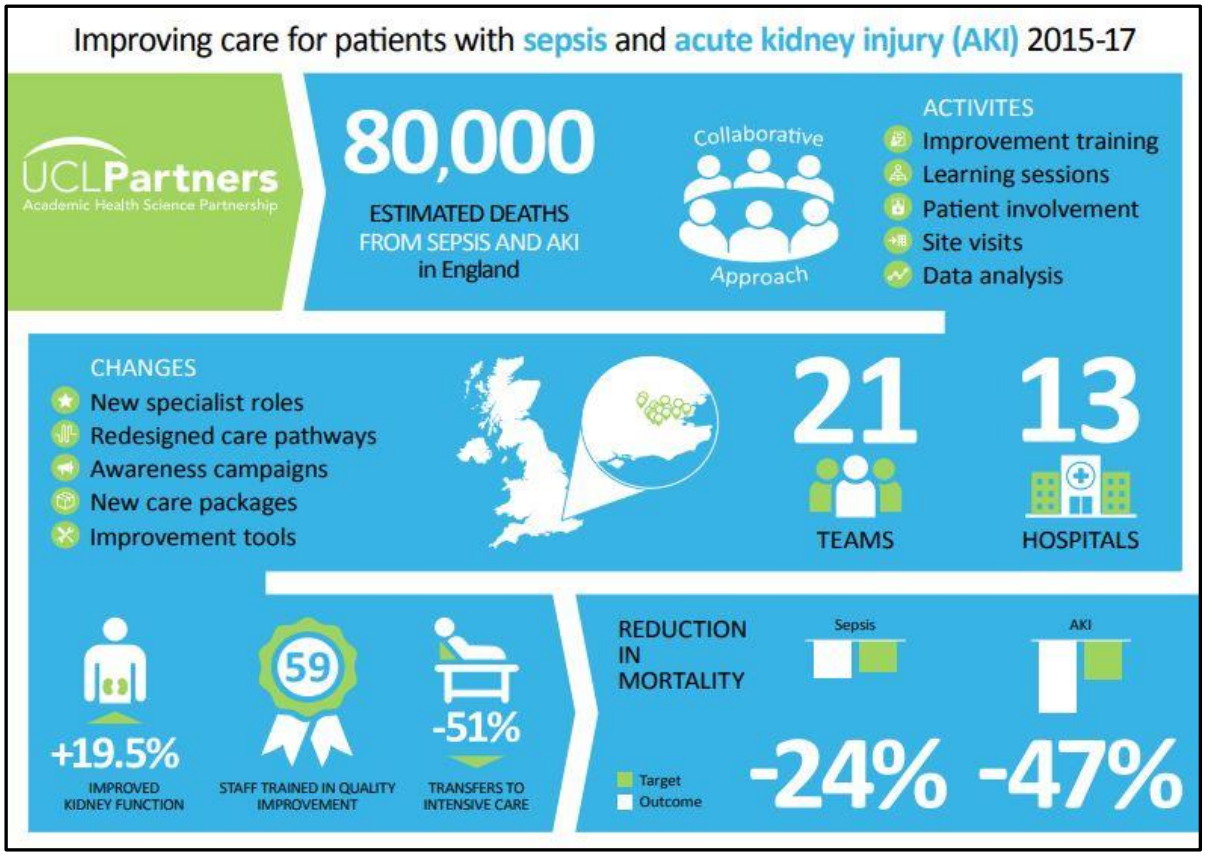
Improvements in practice were achieved through a wide variety of activities, which participants tested and then shared with other teams via storyboards in the learning sessions. These storyboards and subsequent discussions provided excellent learning opportunities for trust teams and innovative change ideas were adopted across hospitals, such as the creation of specialist nursing roles to coordinate care for AKI or sepsis.

The collaboratives also led to improvements in team working, communication and culture across departments involved in caring for AKI and sepsis patients. The sharing of ideas and adoption of successful improvements has benefited patients and their loved ones.

Sustaining improvements

Despite challenges such as conflicting priorities, hard to access data and staff turnover, most trusts involved in the collaboratives maintained their momentum. They reported data as frequently and completely as possible, whilst at the same time testing improvements and participating in regular learning sessions. UCLPartners recognises the effort participating trusts and their teams made towards their collaboratives, often going above and beyond for the shared goal to improve care for AKI or sepsis patients.

The contribution of every healthcare professional and patient at any stage of the collaboratives is highly appreciated. Their will and determination drove improvements that led to better, safer, care for patients with AKI and sepsis in north central London, north east London, and parts of Essex, Hertfordshire and Bedfordshire.



Introduction

UCLPartners is an academic health science partnership with over 40 higher education and NHS members, serving a population of over six million people in north east and north central London, and parts of Hertfordshire, Bedfordshire and Essex. Our role is to bring together people and organisations to work in partnership to transform the health and wellbeing of the local population by addressing challenges that have the most impact on the NHS and social care.

This report provides an overview of the UCLPartners acute kidney injury (AKI) and sepsis patient safety collaboratives, which were delivered between September 2015 and June 2017, as part of the organisation's patient safety programme.

Project background

In 2014, UCLPartners consulted NHS members to understand their current priorities in improving patient care. Insights from a range of senior clinicians and hospital leaders were considered in combination with an analysis of national data. The high number of avoidable deaths from AKI and sepsis emerged as a major opportunity for a partnership improvement programme.

National initiatives provided background and momentum for improving AKI and sepsis care across the UCLPartners region, including:

- NHS *Five Year Forward View* (2014)
- National safety alerts (2014)
- NHS England *Forward View Into Action: Planning for 2015/16* (2014)
- The introduction of national Commissioning for Quality and Innovation (CQUIN) improvement goals (2015)
- *Severe Sepsis & Septic Shock: Report of the Clinical Audit 2013-14* by The College of Emergency Medicine
- National Confidential Enquiry into Patient Outcome and Death report *Sepsis: Just Say Sepsis!* (2015)
- Awareness campaigns: Sepsis 6 and Think Kidneys

Simultaneously, and in response to Professor Don Berwick's report *A Promise to Learn – a commitment to act* (2013), NHS England and NHS Improvement formed 15 Patient Safety Collaboratives to develop a national patient safety network.

AKI and sepsis

There are estimated to be nearly 80,000 deaths from AKI and sepsis in England each year (Kerr et al, 2014, ICNARC, 2013).

AKI

A common, serious and costly condition presenting with abrupt deterioration in renal function caused by a number of acute triggers including sepsis, hypovolaemia, toxicity (from drugs and radiological contrast), urological obstruction and primary renal disease (such as nephritis) (NHS, 2016).

The number of excess deaths associated with AKI has been estimated at 40,000 per year for England (Kerr et al, 2014) and 10,000 per year for the London Metropolitan Area. At the time of planning the collaborative the prevalence of AKI was rising.

Sepsis

Defined as life-threatening organ dysfunction caused by a dysregulated host response to infection that can lead to tissue damage, organ failure and death.

Sepsis has been estimated to cause 37,000 deaths in England per year (ICNARC, 2013). However, if recognised early it can be treated effectively and the risk of death or severe long-term consequences reduced.

Sepsis has been identified as a national priority by the NHS and The College of Emergency Medicine.

The collaboratives

UCLPartners initiated two patient safety collaboratives for AKI and sepsis and invited all 23 NHS trust members to participate. In the summer of 2015 13 acute hospital trusts came together to form the UCLPartners Patient Safety Programme for AKI and sepsis. Of a total of 21 project teams, nine focused on AKI and 13 on sepsis.

The overall mission was to improve the care provided to patients with AKI or sepsis by building improvement capability within the participating NHS trusts. Each collaborative had the following aims:

AKI

Aim to achieve breakthrough improvements in the reliable delivery of two key processes of care for patients entering an acute admitting pathway: *door to recognition of AKI* and *door to therapy of AKI.* Participating teams sought to:

- Reduce AKI mortality by 25 per cent
- Improve renal function recovery by 20 per cent
- Reduce hospital length of stay

Sepsis

Aim to reduce sepsis-related mortality and morbidity by improving early recognition and care in acute hospitals. Participating teams sought to:

- Reduce sepsis-related mortality by 20 per cent
- Reduce hospital length of stay
- Reduce sepsis intensive care unit (ICU) transfers

Methodology

The Institute for Healthcare Improvement (IHI) Breakthrough Series (BTS) was the chosen methodology to test and deliver the improvements to AKI and sepsis care. The IHI BTS methodology offers a succinct framework to close the gap between usual practice and the best possible care in a specific area of care. It allows participants to test improvements locally and perpetuate learnings with other participants to spread and adopt these effectively across multiple settings.

Throughout the collaborative, members from each trust came together regularly to work on improving processes, systems and practices as well as sharing their learning and successes.

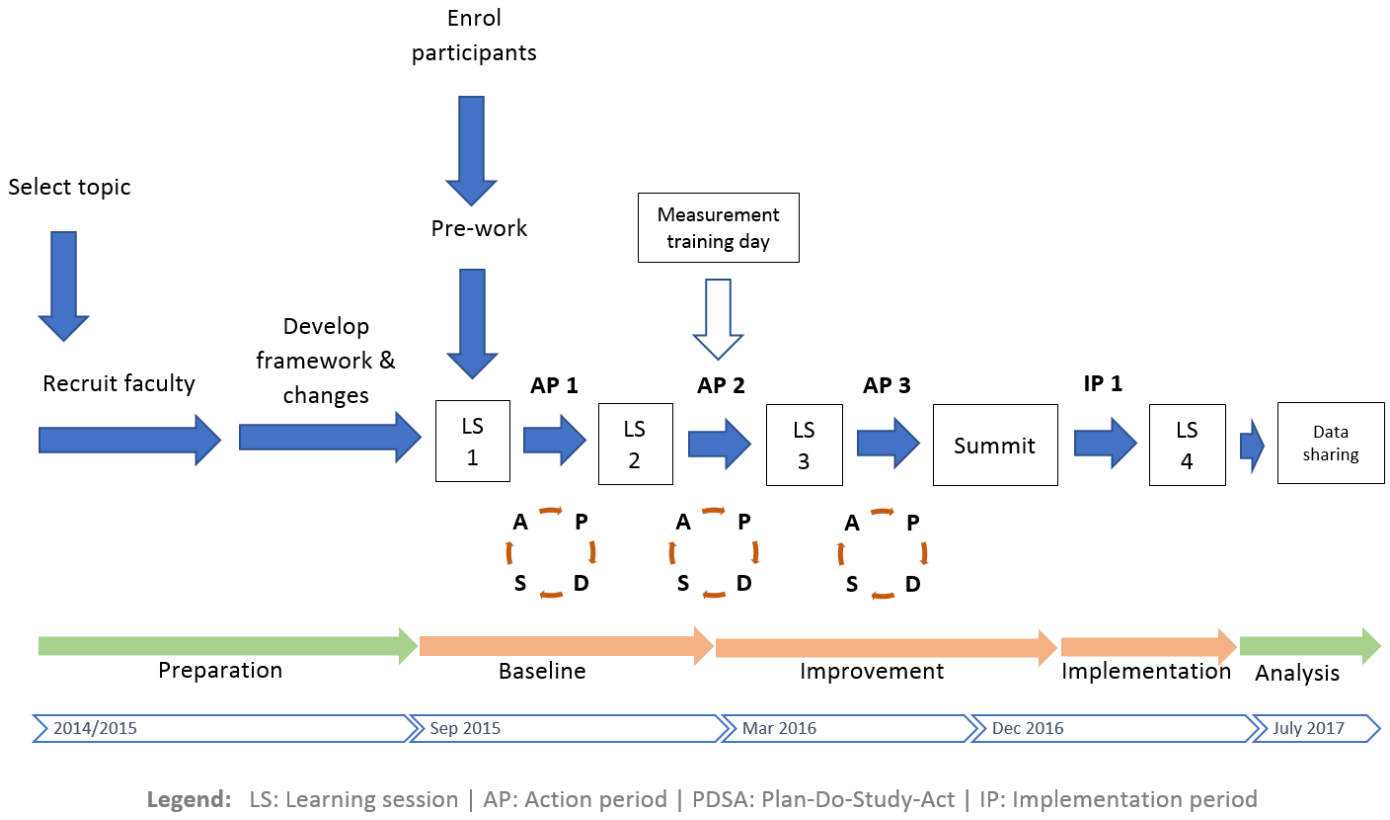


Figure 1: Adaptation of the IHI BTS Collaborative model for the AKI and sepsis collaboratives

Learning together

Following preparatory work, the AKI and sepsis workstreams ran in parallel for 22 months, completing baseline, improvement and implementation phases. Within these phases a series of action periods – where teams tested ideas and measured outcomes in Plan-Do-Study-Act (PDSA) cycles – were interspersed with learning sessions, for upskilling and sharing information (Figure 1).

An initial learning session was held in September 2015 for each collaborative, where all 21 project teams received quality improvement training (IHI Model for Improvement), explored areas for improvement, and developed ideas for change.

At later learning sessions, teams were encouraged to produce storyboards: a set of 12-16 pages outlining improvement activities, learning, achievements and challenges, which were mounted onto a board to

share their story with others. Storyboards were an essential tool for system-wide learning and setting the foundations for the adoption of improvements and change ideas among the participants.

A dedicated measurement day took place in early 2016, when participants learned about measurement for improvement and the interpretation of variation in run charts and statistical process control charts.

Finally, a summit in December 2016 brought the AKI and sepsis collaboratives together given that natural cross-over between their work, to conclude the improvement phase and launch the implementation phase. At the end of the implementation phase a final joint learning session was held to reflect on the collaboratives and celebrate successes. At this event patient safety champions were recognised for their outstanding contributions to the collaboratives and their teams, and an award was presented for the best storyboard.

Data collection

For each collaborative, a set of outcome and process measures was agreed with the help of an expert faculty. Participating teams were provided with an electronic form for monthly data collection, which upon return to the UCLPartners team was collated for trust level and collaborative analysis. The data collection form also acted as a live dashboard allowing trusts to see their results immediately.

Trusts were asked to select 10 AKI and sepsis cases at random each month, and report on the agreed outcome and process measures. For both collaboratives, data was collected for a total period of 22 months from September 2015 to June 2017, divided into 3 measurement phases:

- Baseline phase – month 1-6
- Improvement phase – month 7-16
- Implementation phase – month 17-22

Supporting the collaboratives

The UCLPartners Patient Safety Programme team supported the teams through all stages of the AKI and sepsis collaboratives, including through:

- Organisation and facilitation of the learning sessions, measurement day and summit
- Organisation of 46 webinars for each collaborative. Webinars included collaborative updates and changes to policies and protocols, as well as providing an opportunity for trusts to share developments. Following the live delivery of the webinars, these were uploaded to YouTube as a collaborative resource
- The provision of dedicated training, including quality improvement, measurement for improvement and IHI Open School Quality Improvement certificates
- Regular site visits to the project teams
- Patient engagement, with the help of the UCLPartners Patient and Public Involvement lead
- Help with data collection, auditing of data and data analysis
- Final analysis of the collaborative data, with the help of a statistician.

Patient involvement and engagement

Patients were supported and encouraged to get involved in the development of the collaboratives from the outset, as faculty members. Their participation in the learning sessions helped teams to always keep in mind the patient's perspective and experience.

For example, one patient was actively engaged in the AKI faculty and instrumental in the setup of the collaborative. He was an academic and dentist, who developed stage 3 AKI, which required prolonged intensive care. His experience helped to develop a collaborative understanding about the importance of better recognition and earlier intervention.

Several patients shared their experiences of sepsis during the learning sessions. These emotive stories were at times challenging for participants to listen to, but they set the right foundations for open and honest sharing and learning, and inspired clinicians to reflect on how they would have approached these cases.

In turn, feedback from patient participants revealed that sharing their experiences could be beneficial to them, and they appreciated the insight into how the health service is striving to improve.

Evaluation

A researcher-in-residence approach was taken to evaluate the programme, and a dedicated researcher joined the UCLPartners team. The purpose of this evaluation was to develop a better understanding of the motivation and personal and organisational incentives for taking part in a quality improvement and patient safety programme.

The researcher observed learning sessions, undertook site visits and conducted semi-structured interviews with trust teams in both collaboratives. An evaluation steering group supervised the researcher and provided academic support for writing a peer-reviewed publication (Lalani et al, 2018), which has been published in BMJ Open. Insights from the evaluation also informed the collaborative findings, which are discussed in the *Programme learnings* section of this report.

Results

The AKI collaborative

The AKI collaborative achieved significant improvements in care, and were successful in reducing mortality and improving renal function.

Seven of the nine hospitals in the AKI collaborative were actively involved throughout, attending learning sessions, creating storyboards and collecting data.

A total of 29 storyboards were presented as part of the AKI collaborative. Forty-five storyboards were expected, but not all trusts were able to produce storyboards for all learning sessions. The storyboards recorded a wide range of activities undertaken by teams to deliver improvements in AKI care. These included:

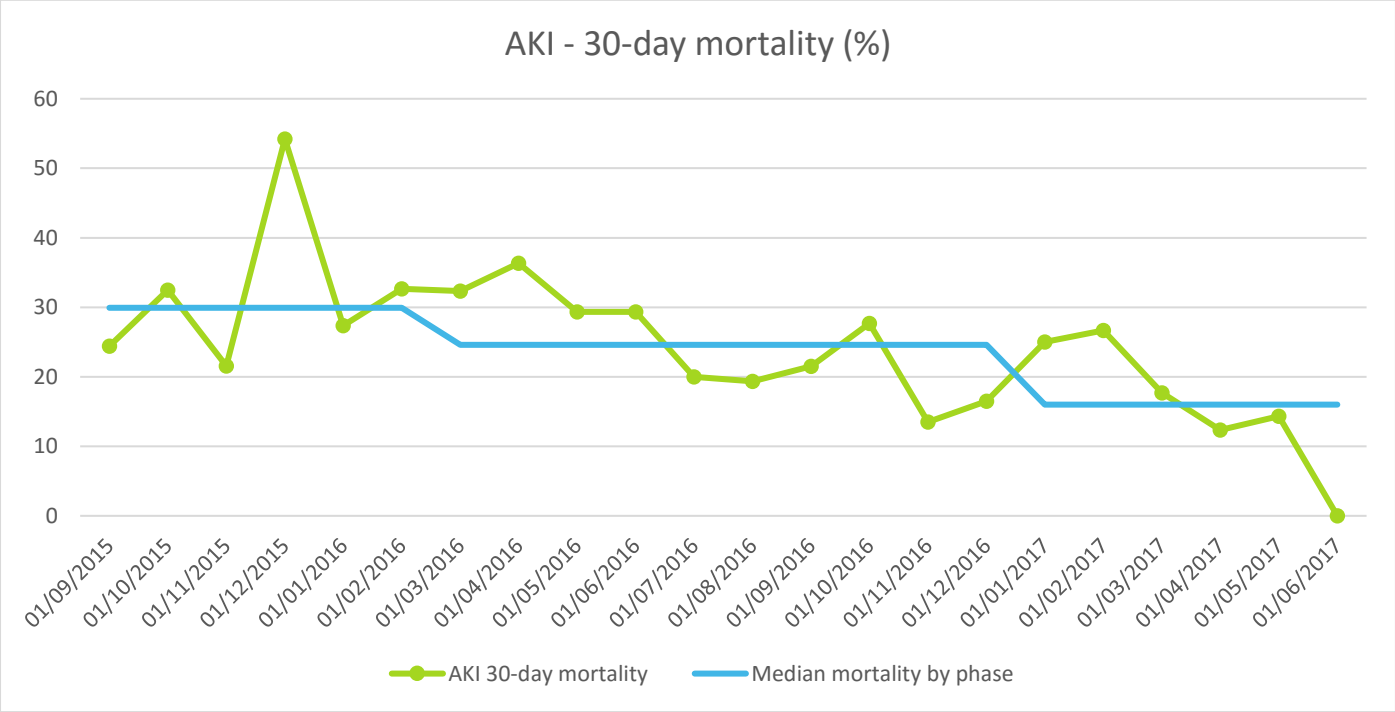
- Improved documentation, discharge planning and follow-up
- Role creation for a specialist AKI nurse
- AKI dashboards, alerts and e-alerts
- Medicines reconciliation through pharmacist involvement and documentation
- Deteriorating patient bundles
- Enhanced AKI care pathways
- Standardised data collection
- Developing educational packages including e-learning
- Work with Quality Improvement champions.

The charts below show collaborative-level outcome data from teams that submitted a minimum of 12 months of results during the 22-month collaborative. The process measures and outcomes can be found in appendix I.

In total, 1029 AKI episodes were reported, of which 950 were included in the analysis.

AKI mortality

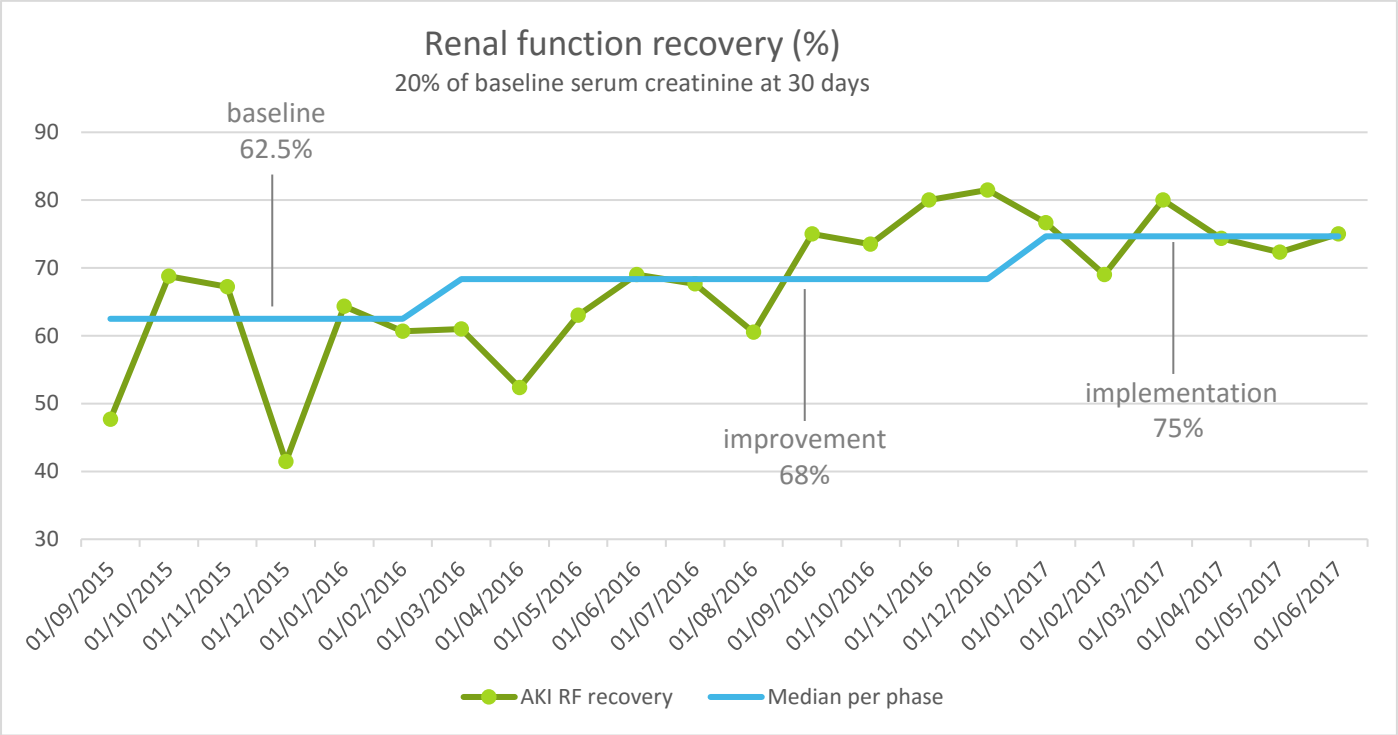
Over the course of the collaborative, the median AKI 30-day mortality per phase of the programme decreased from 30 per cent to 16 per cent. This is a reduction of 47 per cent, nearly double the collaborative's target of 25 per cent.



Renal function recovery

Serum creatine levels are generally considered the best measure of kidney function and the most important indicator of whether a patient has AKI.

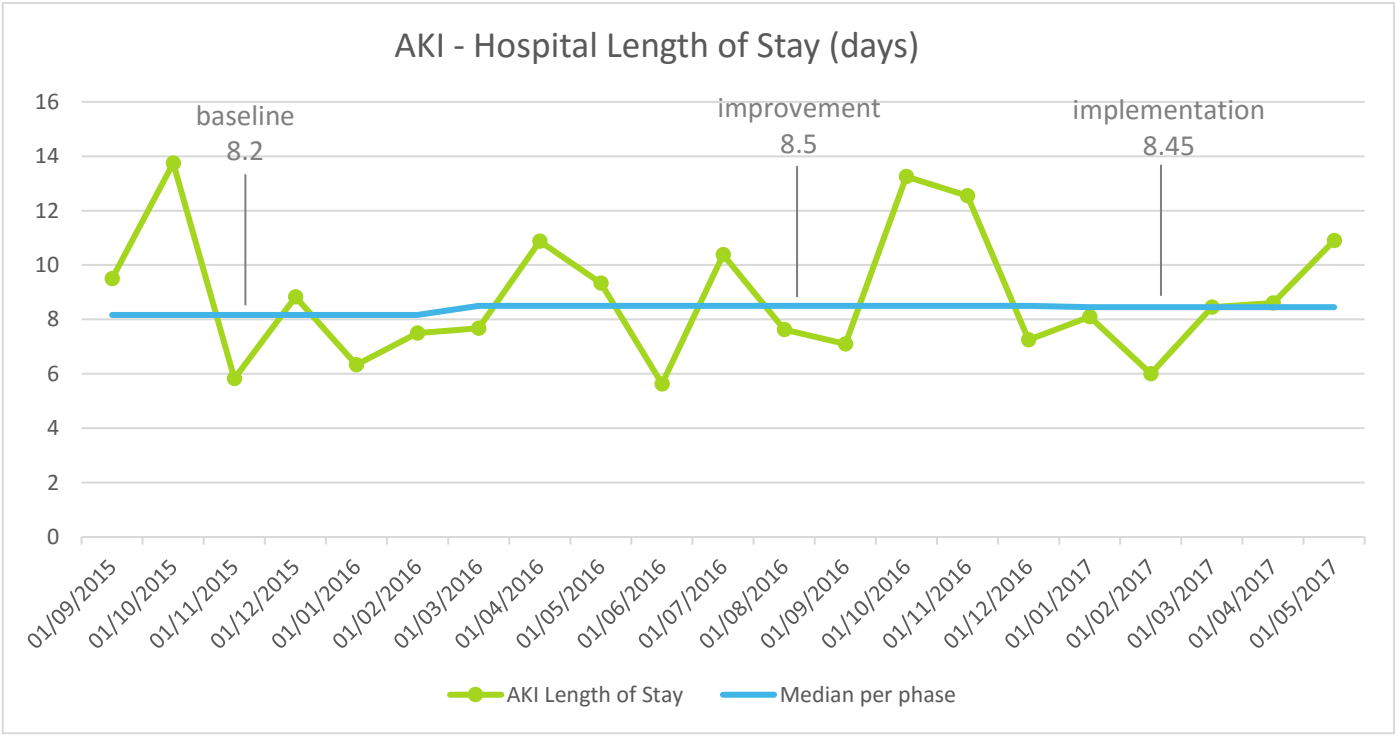
Renal function recovery (to within 20 per cent of baseline) at day 30 following a hospital admission increased from a median per phase of 62.5 per cent to 75 per cent (rounded). This represented an improvement of 19.5 per cent, very close to the target of 20 per cent.



Hospital length of stay

Reduced length of hospital stay is considered to be an indicator of good care. The collaborative aimed to reduce hospital length of stay, however the data shows a slight increase of 0.25 days, from a median per phase of 8.2 to 8.45 days.

Please note that for June 2017 only one NHS trust provided data, so the final month has been excluded.



AKI challenges

Throughout the early stages of the collaborative, trust teams presented several key challenges as part of their storyboards. Some challenges could be addressed by adapting AKI quality improvement strategies, while others could not easily be addressed and had to be worked around. The identified challenges to improving AKI care were:

- Appropriate recognition and treatment of AKI
- Poor documentation of cases and activities such as medication reviews
- Training and compliance with new procedures
- Time required to test and implement changes
- Effective communication between emergency departments, labs and other stakeholders
- Comorbidities affecting blood tests and delaying AKI recognition
- Difficulties with timely engagement of all stakeholders (e.g. junior doctors, nursing staff, clinical commissioning groups and GPs)
- Data collection because of lacking IT systems and poor record keeping
- Team resource and conflicting priorities
- Difficulties separating AKI and sepsis work

The sepsis collaborative

The sepsis collaborative achieved significant improvements in care, and were successful in reducing mortality and ICU transfers.

Nine of the 12 hospitals in the sepsis collaborative were actively involved throughout. A total of 45 storyboards were presented during the sepsis collaborative, out of a potential maximum of 60. The storyboards recorded a wide range of activities undertaken by teams to deliver improvements in sepsis care. These included:

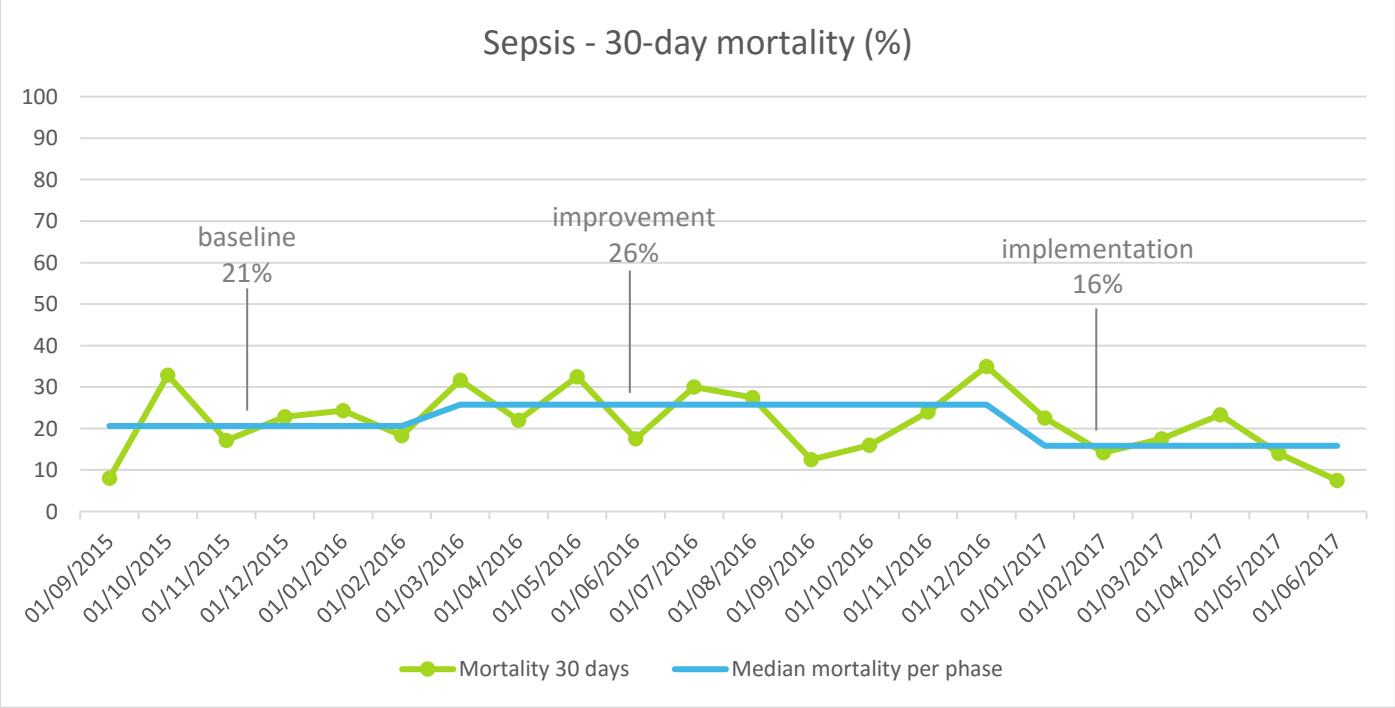
- Recruitment of dedicated sepsis nurses and training of sepsis champions
- Provision of additional and new sepsis training
- Raising awareness of sepsis through sepsis campaigns and patient education leaflets
- Implementation of new clinical processes such as sepsis 6 bundles, sepsis checklists, electronic and manual flagging, and the use of early warning scores
- Revision of sepsis policies and guidelines

The charts below show collaborative-level data from teams that submitted a minimum of 12 months' worth of data during the 22-month duration of the collaborative. The data for process measures can be found in appendix II.

In total, 1267 sepsis episodes were reported to the programme team, of which 1197 were included in the analysis.

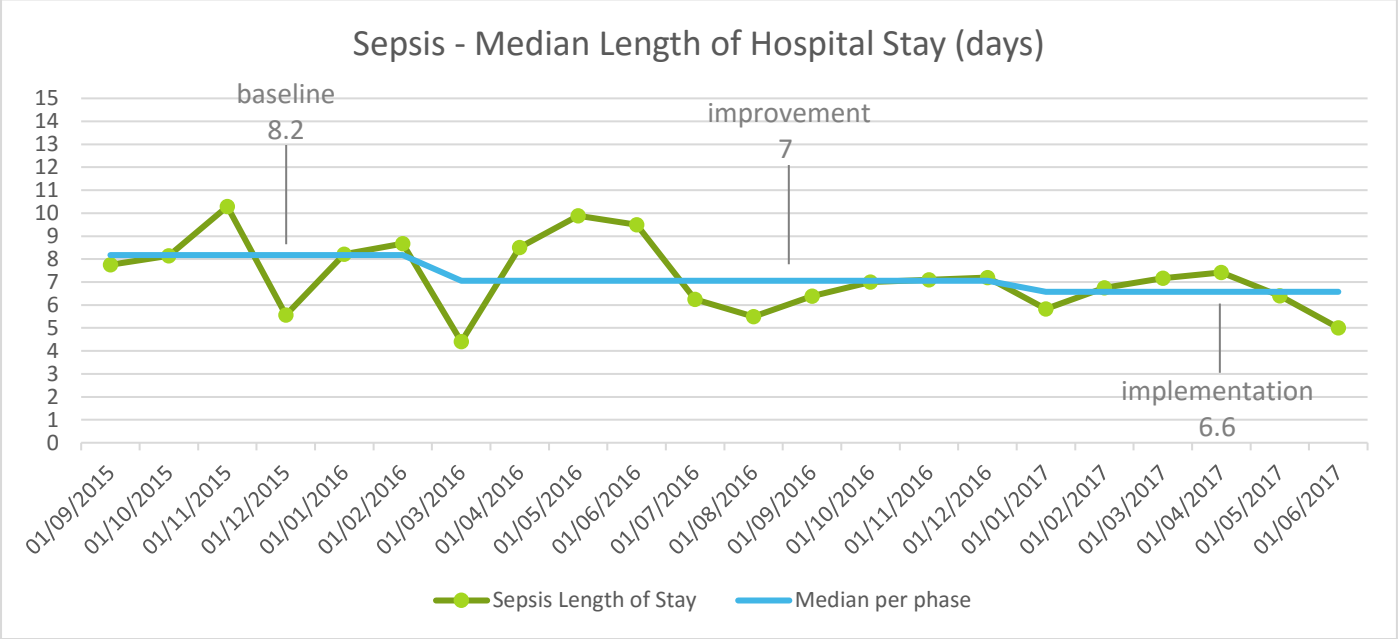
Sepsis mortality

Over the course of the collaborative, 30-day sepsis mortality reduced from a median per phase of 21 per cent to a median per phase of 16 per cent. This is a reduction of 24 per cent, which exceeds the original target of 20 per cent and is well below the 2015 NCEPOD audit, which estimated a sepsis mortality of 27 per cent.



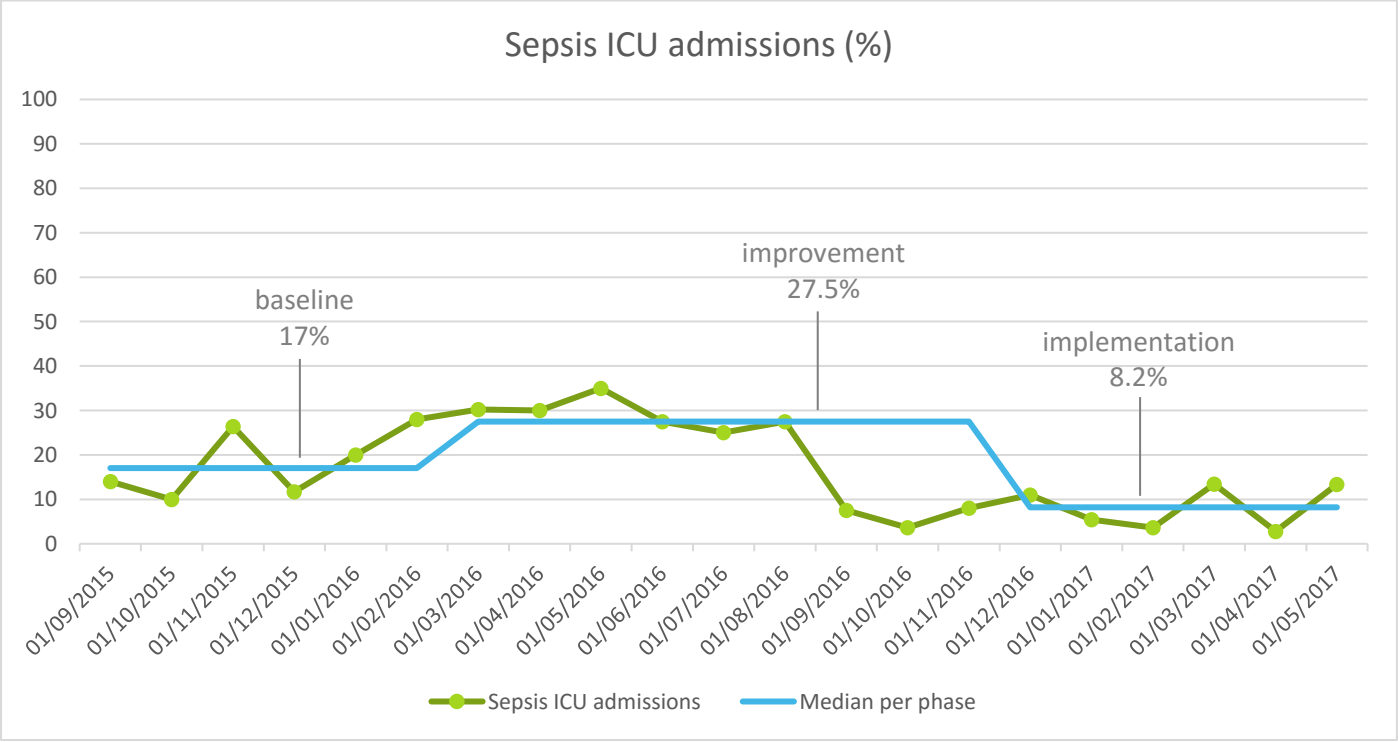
Hospital length of stay

In the sepsis collaborative, median length of hospital stay per phase reduced by 19.5 per cent (1.6 days) from a median of 8.2 days to 6.6 days.



ICU transfers

ICU transfers for sepsis patients reduced from a median of 17 transfers per month to 8.2 admissions per month, after first increasing to 27.5 transfers during the improvement phase. The overall reduction in ICR transfers was 52 per cent.



Sepsis challenges

Challenges that were identified by trusts throughout the early stages of the collaborative formed two major themes: project delivery or clinical. They included:

Project delivery challenges

- Data collection – identification of relevant records and access to some data was difficult at times for some trusts
- Multi-disciplinary working – processes sometimes crossed disciplines and teams, which made the embedding of improvements more challenging
- Team communication – some teams felt that better communication within teams could have aided improvement efforts
- Learning from others – although it was easy to be inspired by others in the collaborative, some felt it was hard to translate learnings into lasting improvements
- Keeping the momentum – conflicting priorities and workloads affected some teams' capacity to keep testing and implementing improvements in complex settings
- Sustaining and spreading of achieved improvements – some improvements were difficult to spread from one unit to another
- Staff turnover – loss of expertise or momentum may have limited some improvements.

Clinical challenges

- Sepsis education – training all required staff may have not been possible or took longer than expected
- Early warning scores – the appropriate use of early warning scores and the calculation of scores may have been challenging and required improvement itself
- Sepsis awareness – despite concerted efforts colleagues and other teams may have been less aware of sepsis that expected
- Anti-biotic / sepsis 6 compliance – at times some teams felt it was hard to comply with sepsis 6 requirements and meeting of target times
- Sepsis CQUIN – may have affected the collaborative data collection because of its higher priority and requirement for additional data
- Time required to engage and set-up – involving other clinical colleagues in improvement projects was more timely and complicated than initially expected

Programme learnings

Throughout the programme, UCLPartners has learnt lessons about the smooth and successful delivery of quality improvement collaboratives. These are grouped into three themes:

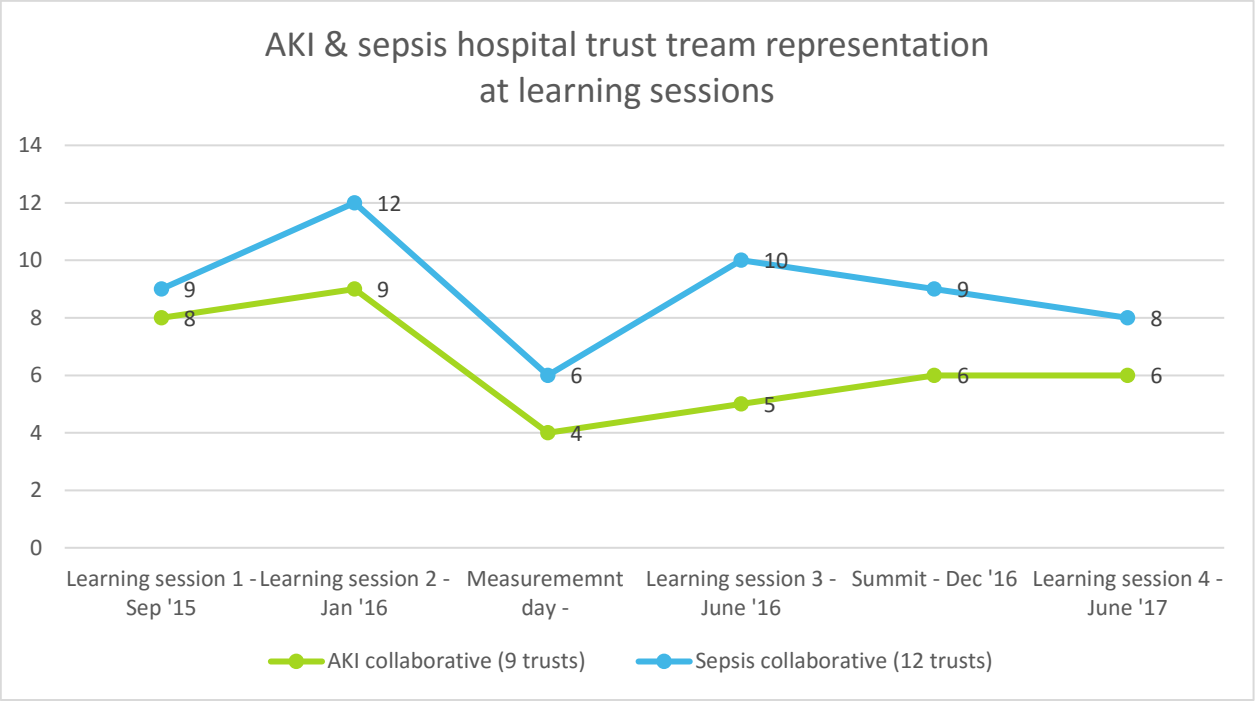
- Engaging in collaboratives
- Data collection and measurement
- Impact on quality improvement capability and culture

Engaging in collaboratives

Consistent engagement of all stakeholders, including patients and board-level personnel, throughout the programme may help to overcome many challenges. As the researcher-in-residence evaluation highlighted, senior support means that trusts are more likely to be able put sufficient resources into place and utilise systems (e.g. information, operations, procurement) effectively (Lalani et at, 2018). Supporting trust teams to secure board and executive support could therefore make the difference between success and failure.

Despite limited resources and conflicting priorities, teams' participation at learning sessions, the continuous testing of improvements and sharing of learnings suggested significant cultural and clinical improvements had been achieved. Ultimately, more patients' lives were saved. Furthermore, collaborative participants have shared their learnings through other regional and national networks or policy advisory groups, which has contributed to national policy developments in AKI and sepsis.

However, keeping teams engaged was a challenge at times. Quality improvement and data collection often had to be done on top of day-to-day responsibilities, and a small number of trusts reduced their engagement over time (see graph). The attrition was in line with drop-out rates in improvement collaborative reported by Wells et al (2017), where approximately 70 per cent of participating organisations maintain their engagements. Understanding broader challenges such as the timing of Care Quality Commission inspections and seasonal spikes in demands, may help the programme team to define strategies and means of support to keep all trusts involved. This includes preparing for changes within trust teams and actively supporting handovers internally and externally (Lalani et al, 2018).



Data collection and measurement

Data collection, which is essential for measuring improvement, is often identified as one of the more difficult elements of running an improvement project. The UCLPartners team provided support for collecting data and applying the data collection tools, through regular site visits and email contact, webinars and a training day. The measurement and data collection strategy, including a streamlined data collection tool, was designed to help trusts to collect data easily and get live feedback on their data entries. However, the level of data submitted by the trusts indicates that this was not sufficient to overcome all the teams' challenges, such as lack of human resource and time, and availability and quality of data for all the measures. Consequently, some of the AKI and sepsis outcome and process measure data was fragmented.

Teams were asked to report monthly data through the data collection tool. However, some trusts did so less frequently and not for all months, while a small number of trusts only submitted data at the beginning of the collaborative. Some trusts reported data to the programme team using a different format, more in line with their in-house data reporting processes. This made the collaborative analysis more challenging.

Recommendations for future projects include: allocating data collection responsibility to enthusiastic team members, and making sure they have sufficient time set aside for this task; making use of the trust data analysts if available; collecting data little and often; and working with a tool that makes data collection as simple as possible may help as much as collecting data as frequently as possible.

Since the start of the collaborative in 2015, data collection methods and availability have improved (Wells et al, 2017), which means that similar future projects may use different approaches to those presented in this report.

Impact on quality improvement capability and culture

As well as improving the care provided to patients with AKI and sepsis, the collaboratives set out to improve the capability of trusts to develop and deliver quality improvements. For example, in addition to learning about quality improvement at learning sessions, 95 participants started the IHI Open School training programme in quality improvement and patient safety, of which 59 completed the certificate.

Storyboards, feedback and evaluation, as well as anecdotal evidence, revealed that improvements were not limited to the important clinical measures. Improvements were also reported in culture, communication, engagement and responsiveness within teams and across departments such as A&E, intensive care and maternal or paediatric specialities, who jointly provide care for AKI and sepsis patients.

For example, one trust adopted the idea of creating roles for dedicated AKI and sepsis nurses from other trusts, but eventually opted to employ a deteriorating patient nurse. The nurse is responsible for coordinating and communicating AKI and sepsis activities across the trust. Internal collaboration between audit, quality improvement and the deteriorating patient teams improved and deteriorating patients were discussed in multi-disciplinary team meetings, which led to better patient care.

A common sense of purpose across the collaboratives, and the growth of interconnected networks, positively affected the motivation of individuals and teams within and beyond their departments, units and organisations. Individuals appreciated having a safe platform for communication, assurance and escalation. This may have been aided further by trusts that created opportunities for and recognised the contribution of dedicated patient safety champions. The introduction of dedicated AKI and sepsis nurses at some trusts may have also helped this due to their role of driving improvements across teams as well as education and training for nurses, healthcare assistants and doctors.

Conclusion

The UCLPartners patient safety AKI and sepsis collaboratives led to measurable improvements and highlighted that a regional collaborative approach to improving the quality of healthcare can be powerful. Over the course of 22 months, the collaboratives led to improvements that were sustained at least until the end of the programme. Data, storyboards and feedback clearly show that the collaborative was a success for those who participated throughout. Consequently, patients with AKI and sepsis being cared for at those trusts are likely to experience better care than prior to September 2015.

The AKI and sepsis collaboratives enabled positive change clinically and culturally. The decision to align the two collaboratives more closely during the implementation phase was well received because of the close interrelation between sepsis and AKI care clinically, and at some trust participants being involved in both collaboratives. Some trusts decided to bring AKI and sepsis care together, focusing on improving care for patients at the risk of physical deterioration, providing trusts with another opportunity to learn from each other. This was timely and in alignment with changing national health priorities, where deteriorating patient care has subsequently become high on the national agenda.

In line with the improvement of sepsis and AKI care, the collaboratives also informed cultural change within hospitals. In particular, better communication within teams and across units was identified as well

as the development of internal and external peer networks that encouraged shared learning. This led to the sharing of ideas and adoption of successful improvements for the benefit of patients and their loved ones.

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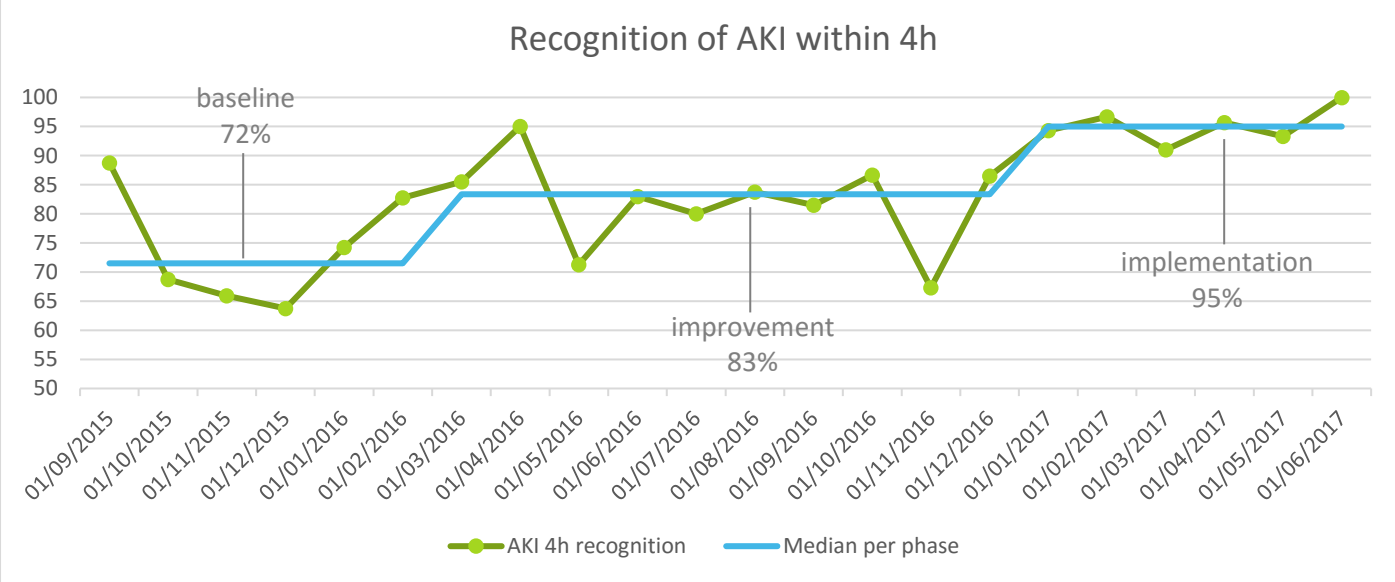
Appendix I

AKI – process measures

Process measures are an important aspect of any quality improvement project as they record changes in processes upon which improvements in clinical outcomes depend.

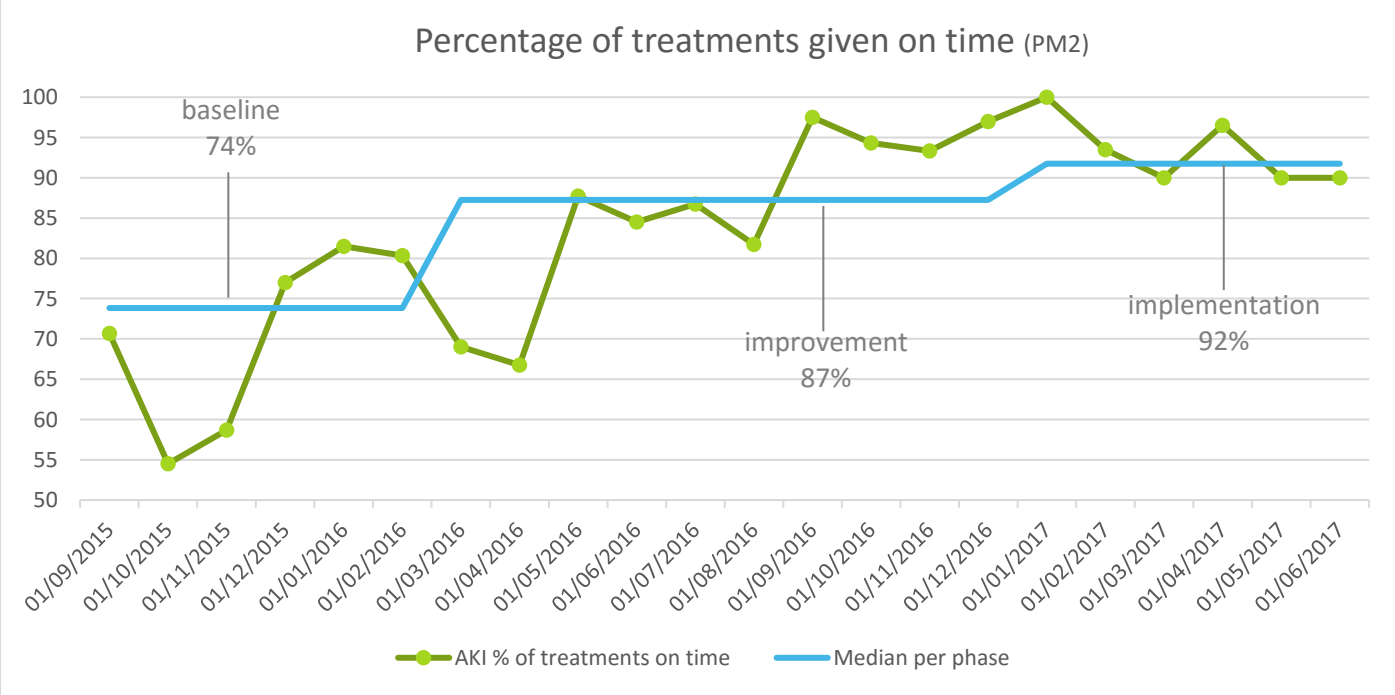
Recognition of AKI within four hours

Across the collaborative, the median recognition of AKI within four hours of a hospital admission increased by 33 per cent from a baseline of 72 per cent to 95 per cent in the implementation phase.



Percentage of treatments given on time

The proportion of treatments given on time to patients with AKI increased by 24 per cent from a median per phase of 74 per cent to 92 per cent across the collaborative. Trust level data was highly variable, but showed sustained improvements.



Other process measures

The AKI collaborative initially set out to measure the timeliness of treatments for sepsis, toxicity, obstruction and primary renal disease. These treatments are only appropriate to some but not all patients. Although all these process measures show improvements, the number of cases reported were very limited and the data is highly variable. Therefore, the data has not been analysed further, but data and charts are available upon request.

Appendix II

Sepsis – process measures

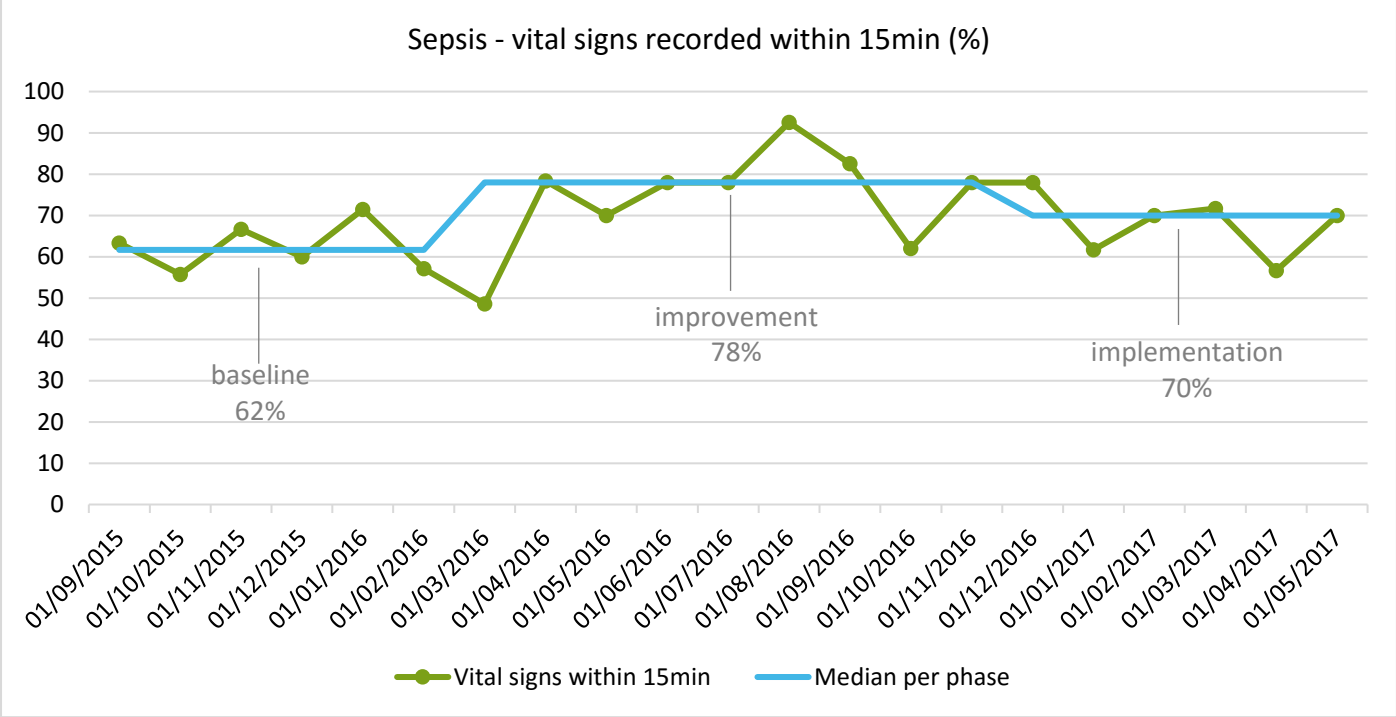
Process measures are an important aspect of any quality improvement project as they record changes in processes upon which improvements in clinical outcomes depend.

The collaborative aimed to improve eight processes related to sepsis care:

- Recording of vital signs within 15 minutes of presentation
- The word 'sepsis' written in patient record within one hour of presentation
- Documentation of intravenous antibiotics (IV AB) within one hour of presentation
- Documentation of blood cultures within one hour of presentation
- Documentation of ≥500mL intravenous (IV) fluids given within one hour of presentation
- Documentation of review within three hours of presentation
- Documented evidence of escalation if not improved within three hours of presentation
- Documented review of antimicrobial therapy within 48 hours of presentation

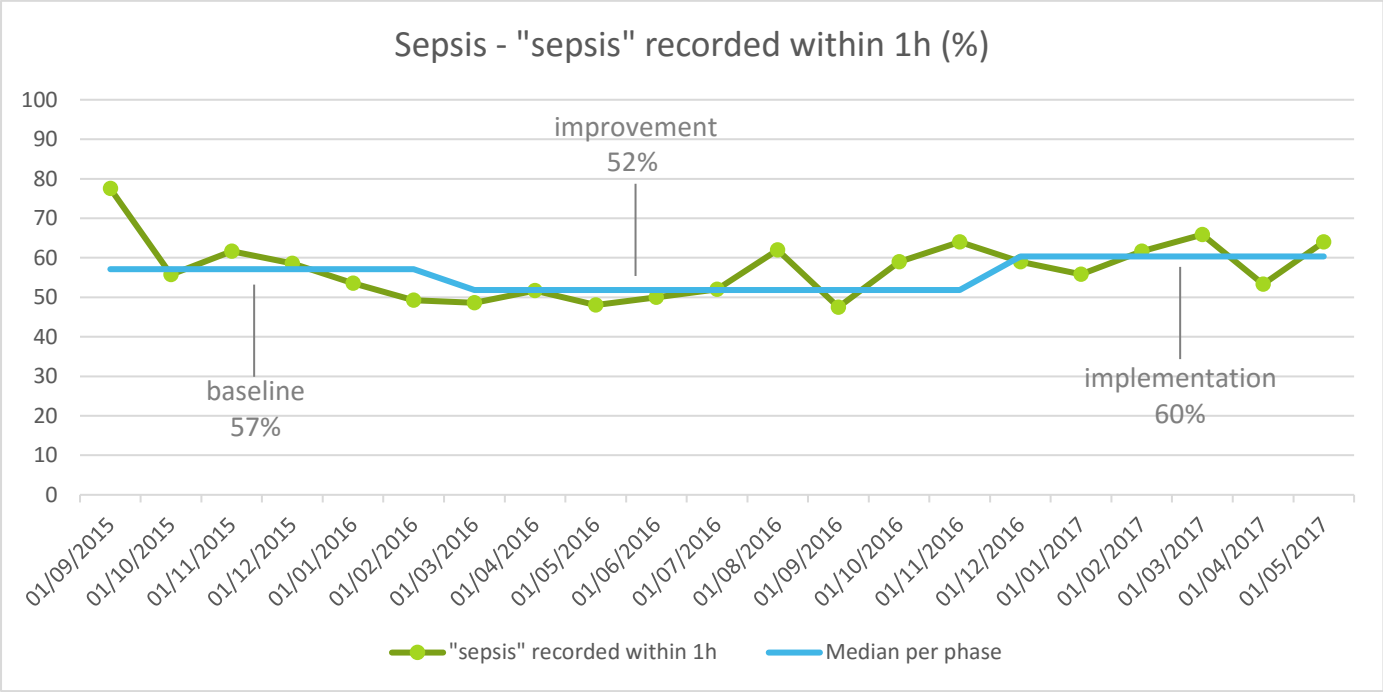
Vital signs recorded within 15 minutes of presentation

The median number per phase of patients whose vital signs were recorded within 15 minutes improved by 13.5 per cent from 62 per cent to 70 per cent.



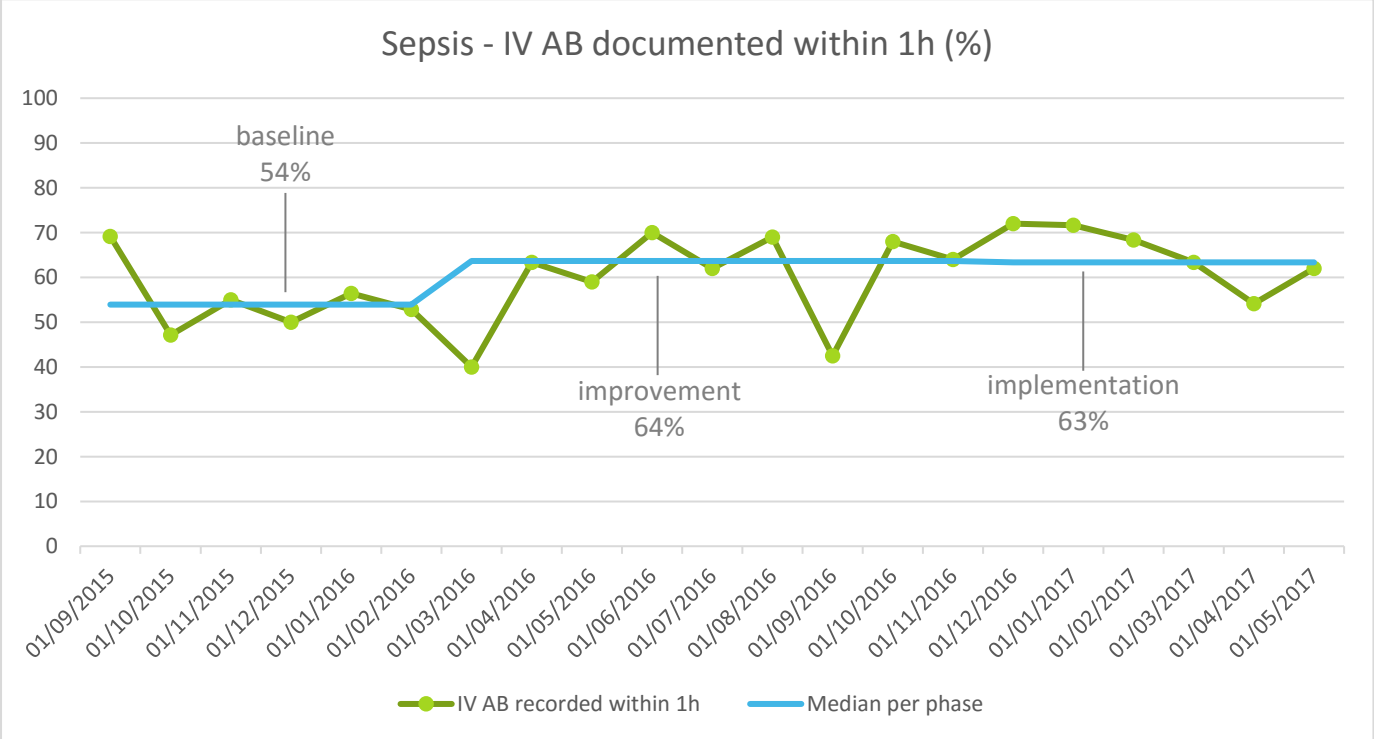
The word ‘sepsis’ recorded in patient record within one hour of presentation

The median frequency of the word ‘sepsis’ being recorded in patient records within one hour was 57 per cent of all cases during the baseline phase. This fell to 52 per cent during the improvement phase before rising to 60 per cent in the final phase of the collaborative. This constitutes an overall improvement of 5.6 per cent from start to finish of the programme.



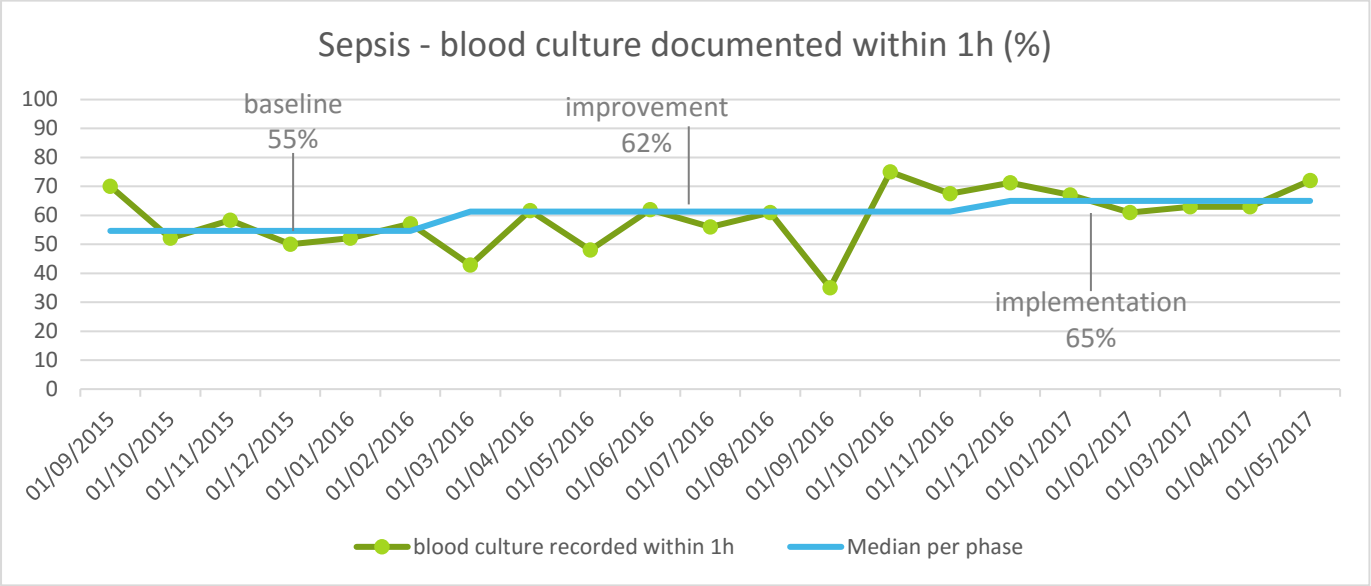
Intravenous antibiotics (IV AB) documented within one hour of presentation

Documentation of IV AB improved by 19 per cent from a median of 54 per cent to 63 per cent between baseline and implementation phases. The off-trend data point in September 2016 is explained due to a) fewer trusts reporting data that month and b) that half of those reported lower than average numbers.



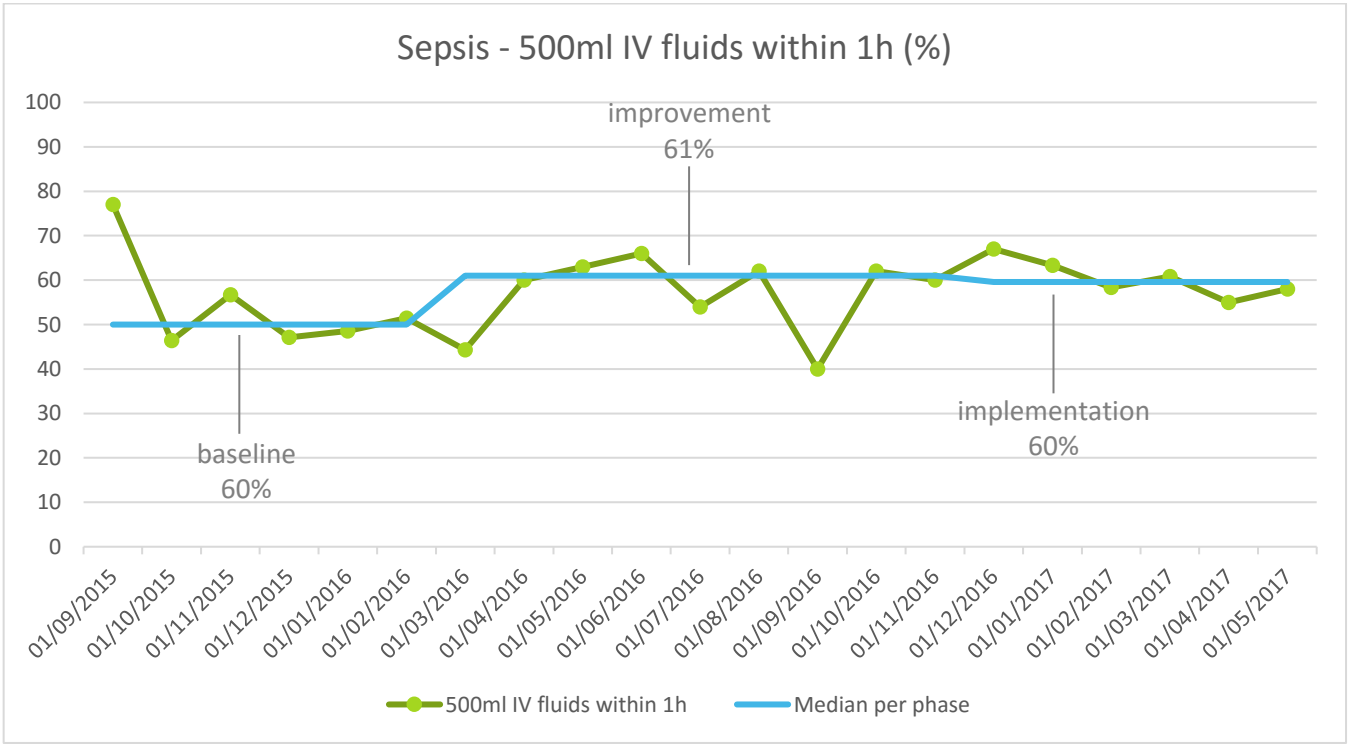
Blood culture documented within one hour of presentation.

Documentation of blood culture improved from a median of 55 per cent during the baseline phase, by 17 per cent, to 65 per cent during the implementation phase. The sudden drop in the data in September 2016 can again be attributed to a combination of underreporting and low values.



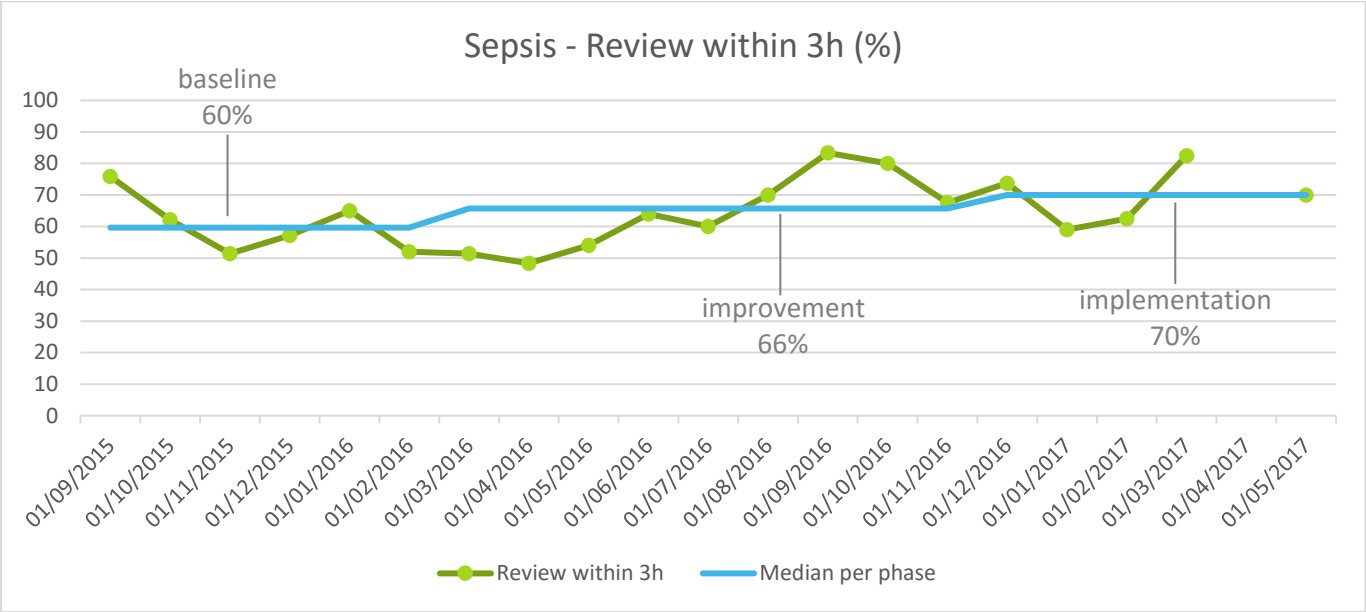
500ml IV fluids within one hour of presentation

The administration of 500ml of IV fluids within one hour increased from a baseline median of 50 per cent to 60 per cent in the implementation phase. This is an improvement of 19 per cent. As in the two previous measures, the data shows a drop in September 2016, which can be attributed to a reduced number of trust reports and not meeting the target.



Sepsis review within three hours of presentation

The review of patients with sepsis within three hours improved by 17 per cent, from a median per phase of 60 per cent to 70 per cent.

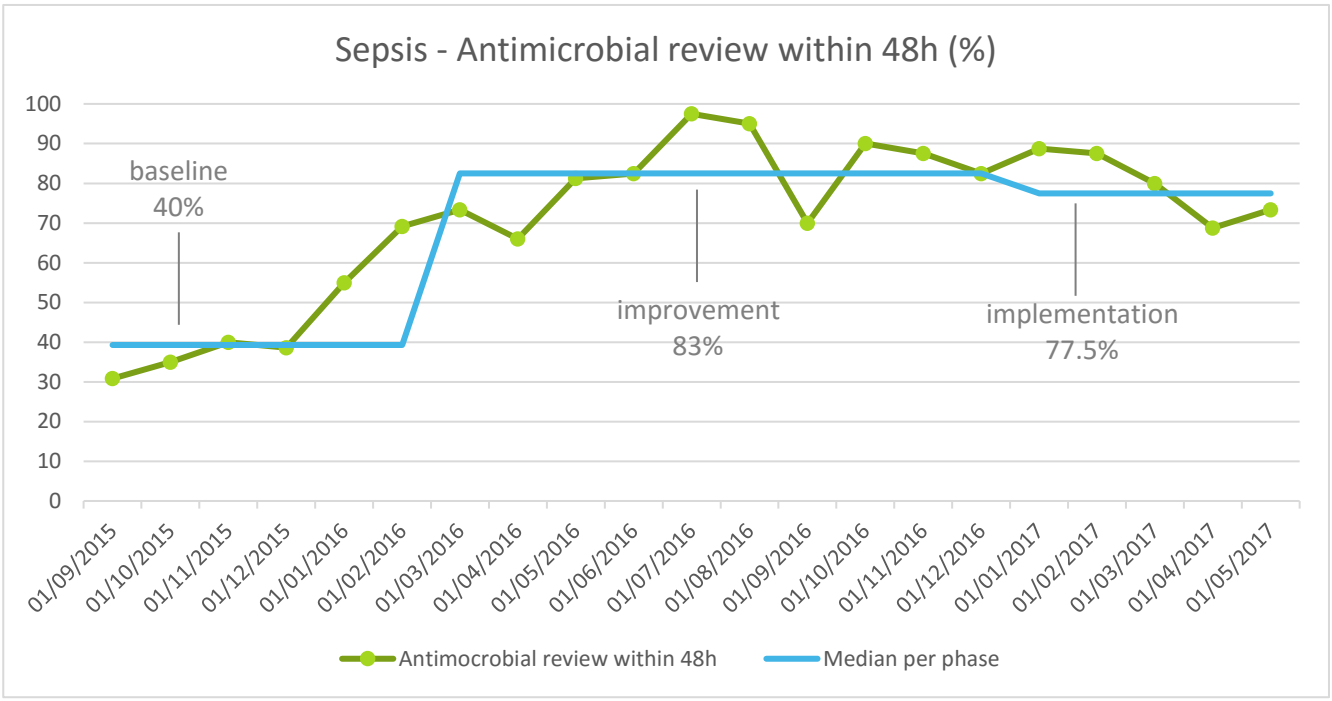


Documented evidence of escalation if not improved within three hours of presentation

This was one of the agreed process measures, data for this measure was rarely reported by participating teams. It is unclear whether this is because the data was not available or whether there were other causes for preventing the collection or reporting of this data.

Antimicrobial review within 48 hours of presentation

The antimicrobial review of patients improved from a baseline median of 39 per cent to a median of 77.5 per cent in the final phase. This huge improvement of 97 per cent could be explained by the fact that once sepsis has been recognised in a patient, the patient is under continuous inpatient care. Improved processes, pathways and policies introduced as part of the programme, as well heightened sepsis awareness among healthcare professionals and the benefits of electronic prescribing processes, most likely contributed to 48-hour antimicrobial reviews and documentation.


Sepsis - Antimicrobial review within 48h (%)
100
90
80
70
60
50
40
30
20
10
0
baseline
40%
improvement
83%
implementation
77.5%
01/09/2015
01/10/2015
01/11/2015
01/12/2015
01/01/2016
01/02/2016
01/03/2016
01/04/2016
01/05/2016
01/06/2016
01/07/2016
01/08/2016
01/09/2016
01/10/2016
01/11/2016
01/12/2016
01/01/2017
01/02/2017
01/03/2017
01/04/2017
01/05/2017
Antimocrobial review within 48h
Median per phase

UCLPartners is a leading academic health science partnership that brings together people and organisations to transform the health and wellbeing of the population. Working in partnership and at pace, its members from the NHS and higher education support the healthcare system serving over six million people in parts of London, Hertfordshire, Bedfordshire and Essex.

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