

Sepsis Collaborative – May 2015 Report

Table of Contents

Background	3
Collaborative set up	3
Impact	4
Process measures	4
Outcome measures	4
1. Coding.....	4
2. Mortality in patients undergoing a blood culture.....	5
Sustainability	5
Evaluation results summary	6
Positive findings.....	6
Challenges.....	7
The future	7
Summary.....	8
Appendix 1; learning session delegate data	9
Appendix 2; process data	9
Appendix 3; outcome data.....	10

Background

The Sepsis Collaborative was launched in January 2012 to support the aim for the Acute Adult Scottish Patient Safety Programme of a 20% reduction in HSMR for patients in acute health care.

This programme was delivered within the existing SPSP framework as a 3-year Breakthrough Series Collaborative from 2012 – 2014 with the aim of reducing mortality from Sepsis by 10% by December 2014.

In the UK there are an estimated 37,000 deaths from sepsis annually¹ ²and this is greater than deaths from myocardial infarctions and deaths from the three commonest cancers (lung, breast and colon).

Evidence from the Scottish Trauma Audit Group (STAG)³ report of 2010 highlighted that only 25% of patients presenting in Emergency Departments with severe sepsis had IV antibiotics administered within 1 hour. This is in the context of evidence that each hours delay in the administration of IV antibiotics will increase mortality risk by 7.6%⁴. Anecdotal evidence from mortality & morbidity studies conducted within NHS boards as part of their HSMR reduction work has demonstrated that sepsis was a significant contributor to mortality.

Collaborative set up

The Sepsis Collaborative was funded by the HAI taskforce and delivered in partnership with the Scottish Antimicrobial Prescribing Group (SAPG).

Clear deliverables for this programme across the 3 year time frame were outlined in a Project Initiation Document (PID). The Collaborative was led by an improvement advisor, supported by a senior project officer and administrator from within the SPSP core team. A clinical lead was appointed to provide leadership and expert advice to the programme.

Each board in Scotland identified local clinical leads, executive sponsors and multi-disciplinary clinical teams from relevant specialties to attend learning sessions and test processes to deliver improvements. Local teams collected data for improvement and reported process measures, initially on the existing SPSP extranet and latterly via the SPSP reporting template. Support for clinical teams was provided by a series of monthly WebEx, site visits and use of a Community of Practice within the Knowledge Network.

5 national learning sessions were delivered over the 3 years to a varied audience of clinical and improvement teams, as seen in appendix 1.

¹ Survive Sepsis Campaign UK, <http://www.survivesepsis.org/favicon.ico>

² Marwick C, Watts E, Evans J, Davey P. Quality of care in sepsis management: development and testing of measures for improvement. J Antimicrob Chemother 2007; 60(3):694-7. <http://jac.oxfordjournals.org/content/60/3/694.full.pdf>

³ <http://www.stag.scot.nhs.uk/SEPSIS/Main.html>

⁴ <http://www.ncbi.nlm.nih.gov/pubmed/16625125>

Impact

The Collaborative has engaged effectively with NHS boards with excellent and sustained participation in Collaborative activities. The high level of data being reported demonstrates the ongoing engagement and infrastructure within NHS boards to deliver on this work. Sepsis learning sessions and local learning events have evaluated positively and provided an effective conduit for shared learning. The evaluation of final learning session held November 2014 showed that the event supported 81.3% of delegates to revisit previous challenges in improving care for patients at risk from Sepsis

A sepsis App, developed jointly by Healthcare Improvement Scotland and NHS Education for Scotland and has been downloaded over 5,000 times, winning the Innovation Award at the NHS Scotland Health Awards and the NHS Greater Glasgow & Clyde Chairman's Gold award for Clinical Practice..

Process measures

Acute hospitals continue to submit data on the reliable delivery of the Sepsis Six to patients who trigger Early Warning Scores and screen positively for sepsis. In the light of the evidence base around timely delivery of antibiotics, the measure of % patients who commence antibiotics within an hour of recognition is particularly encouraging and likely to lead to improved outcomes for patients. See appendix 2.

Outcome measures

At the time of the launch of this work, it was understood and documented that an outcome measure for sepsis was not available due to challenges with coding. Over the lifetime of the collaborative, two proxy outcome measures have been developed.

1. Coding:

Data has been collated from A40 & A41 as the codes most frequently used for sepsis. This data demonstrates a **19.9% reduction in mortality** from sepsis over the lifetime of this programme - See Appendix 3.

In understanding this mortality reduction it is important to note that, although A40 & 41 are the most frequently used codes to identify a patient with sepsis, a number of other codes are also used in this scenario.

The use of codes A 40 & 41 in clinical practice has increased by 38% over the last 5 years.

Thus, one of the potential challenges of the A40/41 (Streptococcal Sepsis and other causes of Sepsis) outcome measure for Sepsis is that the 19.9% reduction in mortality may be due to a number of causes including an effect of dilution from less severe cases of sepsis as clinicians are now coding sepsis more often. It is worth noting that the increased uptake of these codes can be seen as an indication of increased awareness as a result of the sepsis collaborative. Use of these ICD – 10 codes usually requires a positive microbiological diagnosis thereby giving a better estimation of the disease burden. In Scotland, there has been no financial reimbursement incentive for greater coding of sepsis, unlike some other countries.

The incidence and mortality data from Germany (population 82M) based on the same A40/A41 sepsis clearly shows a similar rise in the incidence of sepsis cases and a slight decrease of mortality.

Further work based on the clinically defined R-codes for sepsis (R65.0, R65.1, R57.2, severe sepsis and septic shock) in Germany suggested that the distinctive increase of cases is not accompanied by a substantially declining case fatality.

Similar work has been repeated in Scotland, from April 2013. In 2014, there were 1289 cases recorded with a code of R65.0, R65.1 or R57.2 in a secondary position of which 10 had a main diagnosis of A40 and 150 of A41. Over the 20 months, there is an increase in hospital stays for these clinically defined codes, the 30-day mortality is very high and has remained fairly consistent over the time period. The Sepsis collaborative has deliberately not focused on the more severe end of the disease. Therefore, it can be hypothesized that the growth of sepsis cases and the resultant decline in mortality is not just an effect of dilution from less severe cases of sepsis being coded more frequently.

2. Mortality in patients undergoing a blood culture:

A second proxy outcome measure has been developed for the sepsis programme. Studies have demonstrated that 50-60% of patients undergoing a blood culture have sepsis. Therefore, the programme has collated data from across Scotland on patients who have had a blood culture performed between January 2011 and December 2013. This data has now been linked to SMR01 and analysed for trends in both adjusted and unadjusted mortality. The outcome of this study is being considered by a steering group who will make recommendations via SPSP governance for publication. In addition, the programme is in early planning to collate blood culture data for 2014.

Sustainability

The Collaborative ended in December 2014, however support for boards is continuing within the Deteriorating Patient work stream of the Acute Adult programme. SPSP continues to support boards with a variety of networking opportunities and the submission and assessment of process and outcome data relating to sepsis. The Deteriorating Patient work stream is being delivered using the collaborative model and has benefited from joint learning opportunities with UCL Partners and Salford Royal NHS Trust. In October 2014, eleven health boards took the opportunity to send clinical and executive leads to a joint learning session hosted by UCL Partners. Further collaborative work is planned with these groups, including their attendance and participation in June 2015 at both a site visit and learning session.

The programme has facilitated other networking opportunities, for example, with the Deteriorating Patient and Resuscitation Team of Sandwell and West Birmingham Hospital NHS who are currently sourcing nursing colleagues leading on sepsis or deteriorating patient work within NHS Scotland boards to join a developing collaborative working group in NHS England. This represents an excellent opportunity for nurses working on sepsis in NHS Scotland to showcase their work and learn from others.

We continue to take opportunities such as World Sepsis Day to drive ongoing improvement and are planning to co host an evening reception with the Fiona Elizabeth Agnew Trust (FEAT) in September 2015 and have secured participation of the Cabinet Secretary for Health & Wellbeing.

Evaluation results summary

Evaluation of the Collaborative, conducted by researchers from the SAPPHIRE group, University of Leicester, has been ongoing throughout the programme. The draft of the final evaluation found there to be evidence of good uptake and sustainability of sepsis work, however work is needed to continue to build upon this, with challenges still to be overcome. The collaborative model delivered by the programme has in practice;

- Effectively used patient stories, credible clinical leads, and endorsement by high profile individuals to generate engagement of project teams in the collaborative endeavour, and motivation for improvement.
- Given focus and legitimacy to teams improvement work and provided recognition for local events as part of the national collaborative.
- Equipped teams with technical interventions to implement locally e.g. the Sepsis 6.
- Provided programme structure and activities.
- Provided multiple routes for sharing learning, the most effective of which was interactions between boards at learning sessions.
- Allowed participating teams to shift from being passive recipients of knowledge and training from the collaborative national team to being “experts” with personal experience of improvement work. This has allowed the Collaborative national team to move towards a “delegates do the work” model in learning sessions, maximising opportunities for interaction.
- Created normative pressure to improve; by doing improvement together with others and sharing progress through learning sessions, WebEx and comparative data.
- Encouraged boards to move towards being more open and learning from failure and sharing these experiences. This has been achieved through role modelling and explicit encouragement from faulty to shift norms.
- Encouraged boards and sites to take local ownership to generate and adapt solutions as required.

Positive findings

- Staff engagement with sepsis collaborative is strong. The change package is felt to have provided structure, improved efficiency and given staff confidence.
- The use of sepsis terminology, and well-structured safety briefs help raise and maintain sepsis awareness, and contribute to a culture of safety.
- Building nurses’ confidence to prompt doctors to consider initiating Sepsis 6.

- There is evidence of empowerment of nursing staff; through training and local directives, to administer fluids, prescribe antibiotics and take blood gas samples.
- The use of data is most powerful when it is active; when findings are communicated to staff, ideally by senior leaders, and accompanied with congratulations or encouragement to do better.
- There is evidence of engagement with the Scottish Ambulance Service to improve early detection and pre alert for sepsis.
- There is evidence of the use of visual aids, such as prominently placed whiteboards, displaying EWS scores.

Challenges

- The practicalities of delivering the Sepsis 6 are challenging, with each of the steps itself a complex procedure requiring a number of steps to be completed. Sepsis trolley/packs have been widely introduced to help tackle this.
- Workload, understaffing and availability of adequately trained staff could be a significant barrier to ensuring that raised early warning scores were acted on promptly.
- Emergency Departments face particular challenges implementing the Sepsis 6 in the face of 4 hour targets, which can directly conflict with providing good care.
- One source of delay in responding to patients with sepsis is ambiguity about how sure staff need to be that the patient has sepsis before they initiate the Sepsis 6.
- Efforts to create a sense of urgency have been effective in reducing time to first antibiotic dose (TFAD) but risk unintended consequences including poor prescribing decisions.
- Resistance to the adoption of EWS was noted in some clinical areas, e.g. emergency departments. The collaborative has provided evidence on the benefit of EWS in emergency departments and pre hospital settings.
- There is evidence of a need for ongoing education e.g. nurses were not always clear about the SIRS criteria, and could lack the skills to make sense of screening scores in the context of the wider clinical picture.
- Practicalities of widespread education and training such as difficulties of releasing staff to attend sessions, complexities of shift patterns, high staff turnover and staff rotation

The future

- Sustainability is dependent on maintaining the profile of sepsis in day to day work.
- Striking the balance between standardisation and local adaptability is key to successful uptake and functioning of the sepsis programme across different contexts.

- The active use of data is critical for improvement and the collaborative could consider ways of being more explicit about how data can be used as a driving force to drive improvement in the clinical setting.
- Strong engaged senior leadership (consultants and senior nurses) is critical to sustained improvement.
- Local, ongoing, education is critical for sustained improvement; a combination of regular formal training sessions (ideally multidisciplinary), with continuous informal reminders and updates as part of daily practice is likely to be the optimal approach.
- Continued use of tools that are user friendly, quick and clinically relevant.

Summary

Over the lifetime of the Collaborative, the work has enjoyed considerable support from the Scottish Government, including the Cabinet Secretary for Health & Wellbeing signing of the Sepsis Declaration on World Sepsis Day 2012, and support from the Scottish Antimicrobial Prescribing Group (SAPG).

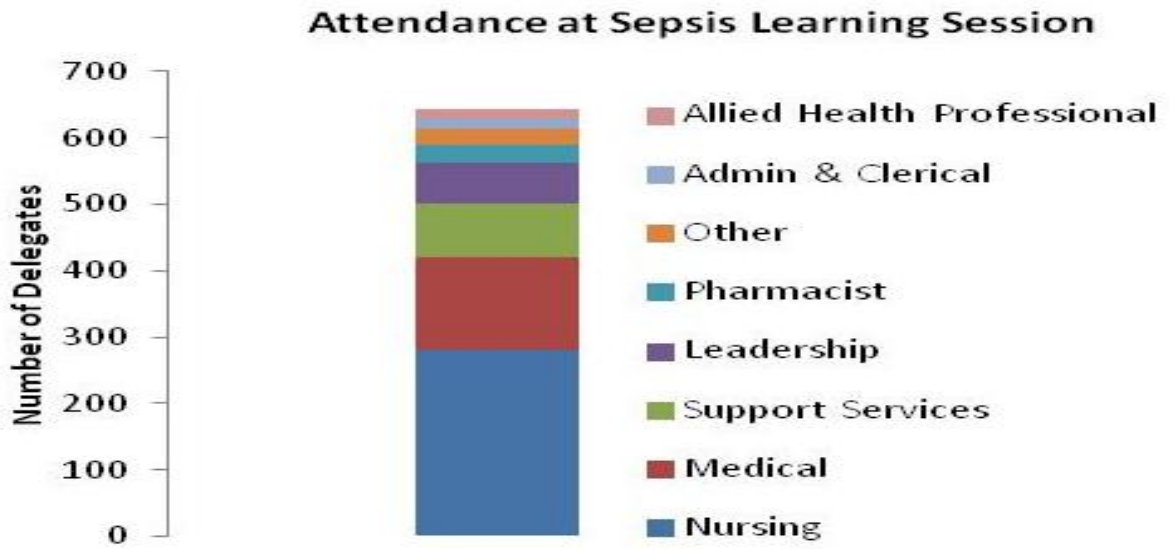
In addition to ongoing work in acute adult hospitals, there has been strong engagement, including reporting of process data from clinical teams in maternity and paediatric settings. A standardised screening tool has been developed for use in paediatrics and maternity.

The Scottish Ambulance Service has also engaged with the programme with a number of areas testing pre alert for patients with sepsis.

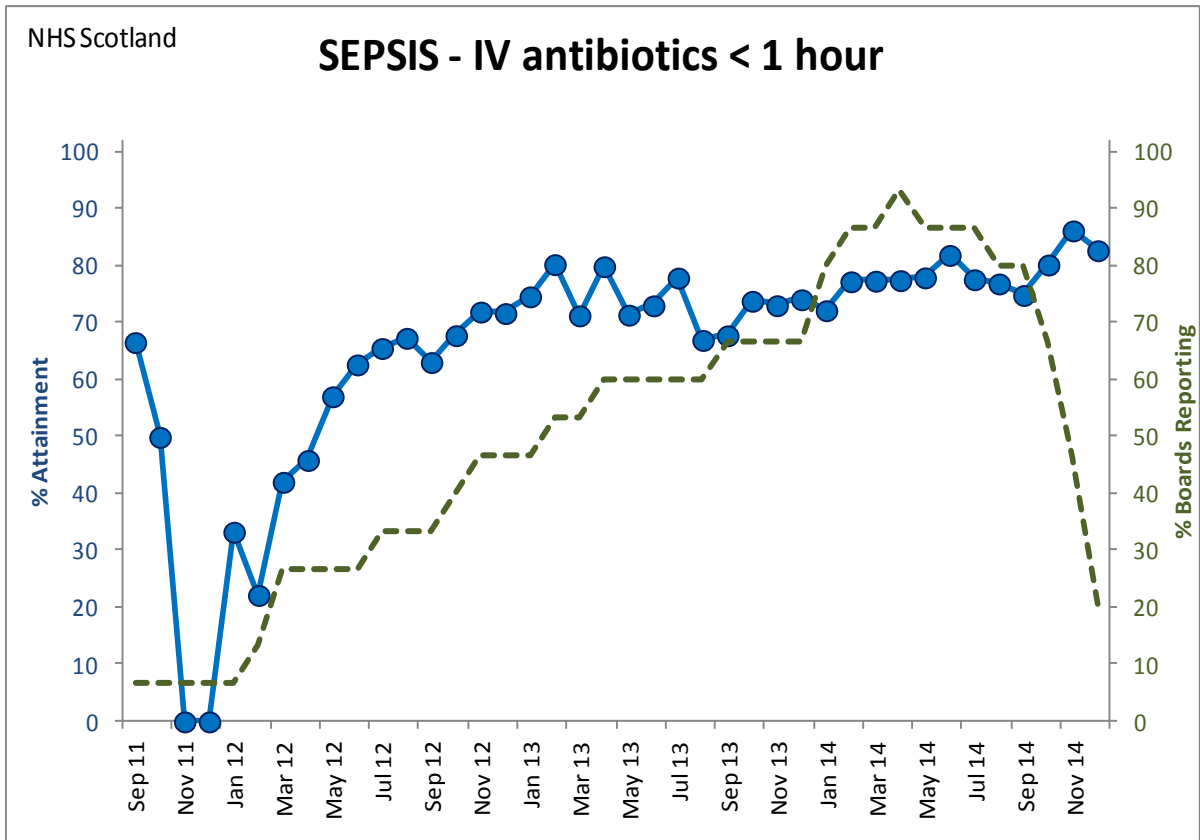
There is good evidence from both qualitative and quantitative data of the positive impact of the Sepsis Collaborative. The work in Scotland has generated significant interest from colleagues in the rest of the UK and beyond.

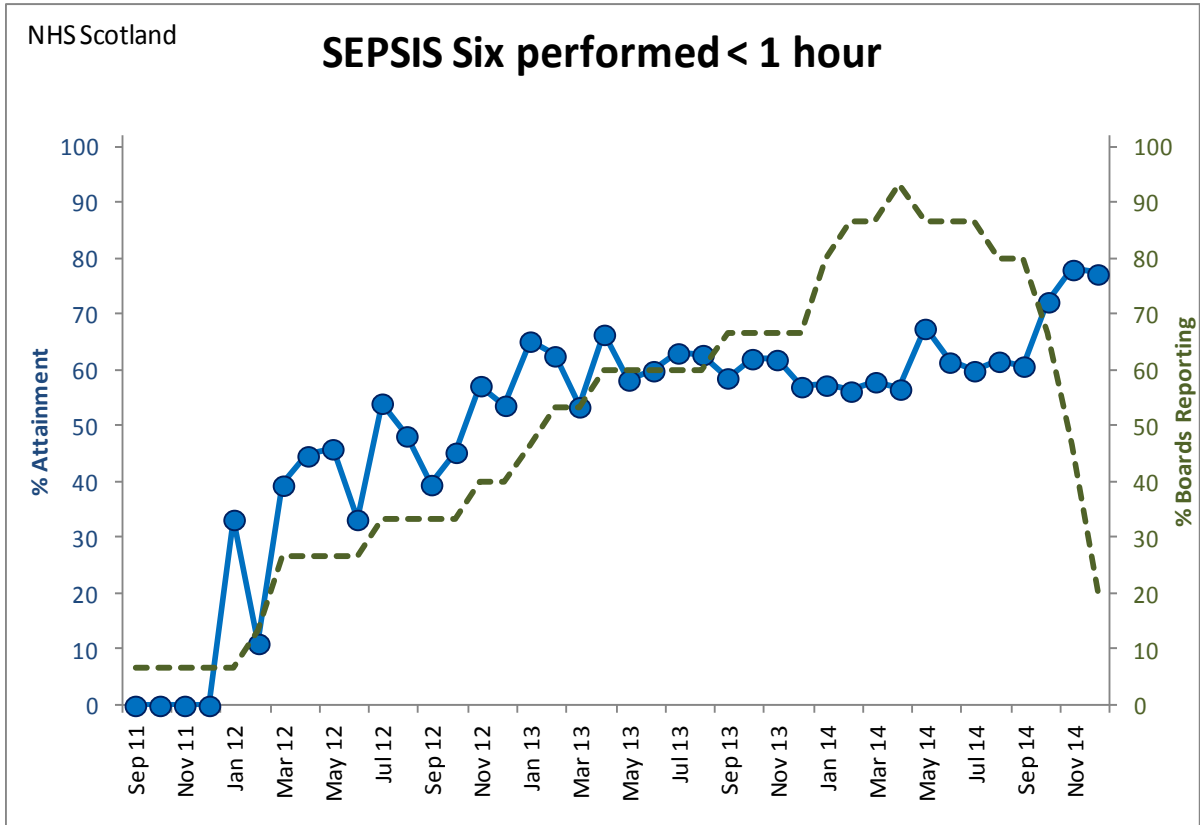
The sustainability of this work will be supported by SPSP through ongoing support with networking, process and outcome measurement.

Appendix 1; learning session delegate data



Appendix 2; process data





Appendix 3; outcome data

