The trinity of infection management: United Kingdom coalition statement

“This coalition statement, on behalf of our organizations (the UK Sepsis Trust, Royal College of Nursing, Infection Prevention Society, British Society for Antimicrobial Chemotherapy, British Infection Association, British Association of Critical Care Nursing and Antibiotic Action*), addresses the real and urgent need for collaboration in reducing the incidence and impact of life-threatening infection and ensuring that we have effective antimicrobial agents to treat such infection, now and in the future.”

*Antibiotic action is a global initiative of the BSAC

Infection is a natural process that occurs when micro-organisms (bacteria, viruses or fungi) breach our body’s defence mechanisms. Many infections such as chest infections develop in people living in community settings and occur independently of interactions with healthcare/hospitals. Whilst most people will recover well from illness, some go on to develop complications as a result of infection which can be life threatening.

To achieve sustainable reduction in harm from infection demands an unprecedented heightening of awareness among health workers, government, commissioners and the general public, and for stakeholders to unite with one voice to disseminate a comprehensive and wide-ranging call to action.

In November 2011, the Department of Health published guidance on antimicrobial stewardship in secondary care in the document ‘Start smart- then focus’ (DoH 2011, Gateway ref. 16853). Antimicrobial stewardship is an inter-professional effort in infection management, across the continuum of care, requiring timely and optimal selection of drug, dose and duration for the best clinical outcome; with minimal toxicity to the patient; and minimal impact on microbial resistance and other ecological adverse events such as C. difficile.
The key messages from *Start smart- then focus* were:

1. Avoid antibiotic use in the absence of evidence of bacterial infection (unless used for evidence-based procedural prophylaxis).

2. If there is evidence/suspicion of bacterial infection, use local guidelines to initiate prompt, effective antibiotic treatment after obtaining cultures. Review the appropriateness of ongoing therapy within 48 hours and seek opportunity for de-escalation or cessation.

This coalition welcomes this guidance, and seeks to ensure its wider application to ensure effective antibiotic treatments remain available. Success demands that strategies to reduce unnecessary antimicrobial use and initiate prompt, appropriate treatment where there is evidence of infection be addressed with equal vigour to those employed to reduce the incidence and spread of infections, and be complemented by urgent investment in the development of existing and new classes of antibiotics.

Furthermore, the coalition recognizes a need for improved antimicrobial and infection management outside acute hospitals - in Primary Care, Community Residential Care, and dental practice and in non-human use. The coalition supports the TARGET (Treat Antibiotics Responsibly, Guidance, Education, Tools) resource launched as part of European Antibiotic Awareness Day 2012 assisting clinicians, practitioners and commissioners in effective, appropriate and responsible prescribing in primary care.

To this end, we have come together to promote a holistic approach to infections management across three key domains, each of which is of equal and urgent importance:
1. Recognition of and rapid response to severe sepsis

*Identifying and responding rapidly in cases of severe sepsis is of equal importance to reducing healthcare-associated infection rates*

Not all infections are preventable, and many of the most immediately life-threatening infections arise as a consequence of infections acquired in the community. The emphasis on improving the quality of antibiotic use through reduced consumption, has been driven by the need to reduce two important ecological side effects of antibiotic overuse or misuse: resistance and *C. difficile* infections. This emphasis or focus has perhaps reduced awareness amongst healthcare professionals of the need to prescribe and administer antibiotics in a timely manner to those who really need them— in particular patients with sepsis.

Sepsis is the body’s response to an infection. Triggered by a disordered immune system response, the body’s tissues and organs become inflamed. Unchecked, this will lead to organ failure (known as severe sepsis), septic shock (where blood flow to vital organs fails), and ultimately death. Strong evidence exists that, in patients presenting with severe bacterial infection, delays of just a few hours can have significant impact on a patient’s chance of survival. Unfortunately in the U.K at present, only 27% of patients in Emergency Departments and 15% of inpatients with severe sepsis receive antibiotics within the vital first hour.

A more robust mechanism by which healthcare staff and systems can recognise sepsis and respond appropriately is required. In response to this some healthcare systems have identified sepsis as a core patient safety concern. The attendant response has been to promote or mandate a range of quality improvement interventions. For example, this occurs in Scotland through the Scottish Patient Safety Programme and Wales through the Saving 1000 Lives programme. Furthermore, to be able to measure the impact of a range of interventions the current lack of accurate admission or discharge coding for sepsis within healthcare systems needs also to be clarified and optimised.

The National Institute for Health and Clinical Excellence (NICE) is developing guidelines for the management of pneumonia, urinary tract infection and surgical site infection, but these guidelines will not cover sepsis as a complication of these infections. We call for a bespoke NICE Quality Standard on sepsis (the body’s uncontrolled response to infection which causes injury to its own tissues and organs); a condition which claims 37,000 lives annually in the U.K and leads 20% of survivors to suffer long-term sequelae.

**CALL TO ACTION:** We recommend that performance indicators be developed (or, where practicable, existing indicators be refined) and that these should be reinforced by a NICE Quality Standard. Indicators should be designed to aid organizations in improving the recognition and management of sepsis, including reducing time to initiation of treatment.
through performance measurement and improvement initiatives. Organizations should be encouraged to undertake measurement and to provide information on these measures to the public domain.

Indicators will need to be underpinned by improvements in organisational care and sustained educational delivery to improve awareness, retention and application of knowledge.

We also recommend 1] the development of accurate and consistent recording of hospital coding for sepsis and 2] that consideration be given to development of a national audit and registry in order to measure the acute and long term disease burden of sepsis.

**AMBITION:** By 2020, 90% of patients with symptoms of severe sepsis in the UK will receive assessment, appropriate antibiotics and fluids within one hour following presentation to the healthcare system (whether to General Practice, Ambulance Service, NHS telephone advice or Hospital)

*Key stakeholders: Global Sepsis Alliance, U.K Sepsis Trust, Surviving Sepsis Campaign, Royal Colleges, specialist societies, NHS England, Scottish Antimicrobial Prescribing Group, Scottish Patient Safety Programme*
2. Prevention of infection

**No patient should suffer harm due to a preventable infection.**

It is important that this message is not misinterpreted as claiming that all infections- or even all healthcare-associated infections (HCAI)- are preventable, including those that result in sepsis.

Infection prevention strategies are well established in the NHS, and include general principles in hand hygiene and cleanliness, use of standard precautions, building design, and decontamination of equipment and medical devices, together with specific programmes in vaccination, education and practice improvement and awareness campaigns. Surveillance, auditing and mandatory reporting, coupled with intense action dedicated to improvement and profiling of the topic by infection prevention specialists, have proven invaluable in galvanising political and strategic support, and in targeting priorities and resources for infection reduction programmes. This must continue.

Mechanisms to prevent infection are applicable not only in hospitals. Infections acquired in the community following interaction with health care and social services are amenable to prevention strategies. The provision of infection prevention education, strategies and equipment in long term care facilities including nursing and residential homes, and in pre-hospital care providers including ambulance services and the voluntary sector is equally important.

**CALL TO ACTION:** We now call for the current emphasis on reduction in rates of *Clostridium difficile* and meticillin-resistant *Staphylococcus aureus* (MRSA) infection to be expanded to include more known or potential health care associated pathogens and events. This should include standardised reduction and improvement programmes targeted at key interventions which can result in HCAI; including sepsis from a range of pathogens, ventilator associated pneumonia, surgical site infection surveillance (enhanced monitoring including post discharge surveillance where applicable), and catheter-associated bloodstream and urinary tract infections in both acute and community settings. We also seek active support to ensure standardised application of evidence based infection prevention guidance, including standard precautions, related to preventing HCAI and also to address any circumstances in which infection could occur now or in the future. This aspect strongly supports the rapid response to severe infection, and demonstrates the importance of this joint statement. The importance of improving or maintaining health as part of preventing infection and achieving good health outcomes should be emphasised and supported by Government.
**AMBITION:** By 2020 there will be national standardised reduction and improvement programmes as described above, either initiated or embedded throughout the NHS, as well as recommendations for standardised application of evidence based infection prevention guidance issued at national level.

3. **Antimicrobial preservation**

*The preservation of effective antibiotics to treat patients with known or suspected bacterial infection is of the utmost importance.*

Resistance is an ever-increasing problem in our microbial flora, and is developing faster than our ability to manufacture new agents. In 2011, the World Health Organization’s World Health Day focused on antimicrobial resistance in recognition of its global impact on human health. More recently, Professor Dame Sally Davies compared the antimicrobial resistance to terrorism in terms of the magnitude of the threat to humanity.

Successful antimicrobial preservation is underpinned by stewardship. Within the NHS, this has been addressed in recent years through the efforts of microbiologists, antimicrobial management teams, infection control teams and the impact of ‘Start smart-then focus’ within hospitals, and more recently in Primary Care through initiatives such as the TARGET antibiotic guidance produced by the Health Protection Agency (now Public Health England). Such initiatives have equal relevance in other sectors of healthcare, particularly long term care facilities and pre-hospital services. National campaigns in Wales and Scotland have focused on stewardship across all healthcare facilities as a core component of patient safety programmes.

It is also important to remember that human consumption accounts for only 50% of antimicrobial use in the UK, and as per a recent Soil Association report detailing evidence of resistance transfer from animal to human pathogens, it is essential that we address antibiotic use in agriculture and veterinary practice. In particular, the use of antibiotics as prophylaxis against disease in animals and poultry subjected to intensive farming techniques requires urgent regulation. Antimicrobial preservation can also be supported through prevention of infection measures, for example when addressing catheter-associated bloodstream infections, recommendations to remove unnecessary lines and promoting stop orders on IV antibiotics; demonstrating that this joint statement is both appropriate and critical.

**CALL TO ACTION:** We recommend that the remit of the document ‘Start smart-then focus’ be reviewed and consideration given to providing good practice guidance in primary care and long term care facilities. TARGET guidance designed for use in primary care, in conjunction with tools from Public Health England and the UK Sepsis Trust should be reviewed and refined to guide antibiotic decision making in pre-hospital and long term care environments.

In agriculture and veterinary practice, we call upon the Department for the Environment, Food and Rural Affairs to issue guidance and consider regulation on the routine use of antibiotics in livestock in intensive farming.
We further strongly support action on investment in the development of new antibiotics. This should either be in the form of financial incentives to pharmaceutical companies based within the U.K to divert their resources toward antimicrobial development, or the establishment of a dedicated and resourced national research funding stream.

**AMBITION:** By 2020, robust electronic prescribing should be available as the standard throughout the UK to support antimicrobial stewardship and infection prevention programmes across all sectors of healthcare. Medicines safety and management programmes should embrace strategies to ensure reliable and rapid delivery of life-saving medication as an equal priority to risk mitigation from drug errors. The use of antimicrobials in agriculture should be subject to regulatory supervision by 2020.

*Key stakeholders: British Society for Antimicrobial Chemotherapy, Antibiotic Action, Soil Association, Scottish Antimicrobial Prescribing Group, UK Sepsis Trust, Veterinary Medicines Directorate, Royal Colleges, specialist societies, NHS England, Department for the Environment, Food and Rural Affairs, Academy of Medical Royal Colleges, Royal Pharmaceutical Society*