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Tackling key issues in infection prevention

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19 CQC launches new five year strategy

Faced with having to ensure quality, with fewer resources, the CQC plans to make more use of targeted, unannounced inspections, focusing on services where care quality has been identified as 'poor'.

23 Driving improvement in screening and scoping

High on the agenda at this year's annual conference for the British Society of Gastroenterology was discussion of the UK's bowel cancer screening programme, including opportunities for improved cancer detection.

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Work-based degrees help to develop high performing employees and have the potential to drive quality improvement, argues KLAUS MUECHER.



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Lord O'Neill has set out the final recommendations of his review, which are aimed at delivering action on what has been described as the 'biggest threat posed to mankind' of antimicrobial resistance.

37 Tackling key issues in infection prevention

CSJ provides an insight into the Infection Prevention 2016 conference and exhibition. High on the agenda will be strategies for preventing surgical site infection, emerging threats, and the latest guidance for infection prevention and control teams.

46 Reshaping the workforce to meet future demand

Various reports have examined how the NHS could re-evaluate traditional staffing roles to ensure sustainable delivery of health services, as well as identifying key issues that need to be addressed.

53 Decontamination of reusable medical devices

PAUL JENKINS from the North Bristol NHS Trust provides an update of current issues and challenges relating to the decontamination of reusable medical devices.

57 Focus on improvement in clinical engineering

The National Performance Advisory Group for the NHS is hosting its annual Clinical Engineering conference. CSJ provides an overview of the themes and issues that will be discussed, as part of the educational programme, as well as the innovations and solutions that will be on show.

63 Ensuring efficiency and safety in theatres

Derby Teaching Hospitals recently provided an insight into implementing GS1 standards in theatres. Barcoding scanning is helping to improve clinical effectiveness and efficiency, as well as delivering financial benefits.



67 Mobile technology – a new infection risk?

The use of mobile technology at the bedside is increasing in hospitals, but does this present a new infection prevention risk and how should this be effectively managed?

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Optimising cleaning and disinfection processes

Andrea Ledgerton, Associate Director of Nursing Infection Prevention & Control at Wirral University Teaching Hospital NHS Foundation Trust, provides an insight into optimising cleaning and disinfection processes to tackle the problem of Carbapenemase producing Enterobacteriaceae.

Enterobacteriaceae are a large family of bacteria that usually live harmlessly in the gut of all humans and animals. However, these organisms are also some of the most common causes of opportunistic urinary tract infections, intra-abdominal and bloodstream infections.

Until recently, carbapenems, a family of antibiotics normally reserved for serious infections caused by drug-resistant bacteria including Enterobacteriaceae have been the antibiotics that doctors could always rely upon (when other antibiotics failed) to treat infections caused by Gram-negative bacteria. Carbapenemases are enzymes that destroy carbapenem antibiotics, conferring resistance. They are made by a small but growing number of Enterobacteriaceae strains. There are different types of carbapenemases, of which KPC, OXA-48, NDM and VIM enzymes are currently the most common.

The emergence of Multidrug Resistant Carbapenemase Producing Enterobacteriaceae (CPE) represents an issue to the entire country and the local health economy.

A National Security Risk Assessment undertaken with the Department of Health concluded that a scenario in which pan-resistance to antimicrobials among these organisms becomes widespread in the UK had a likelihood of occurring in the next five years of between 1 in 2 and 1 in 20, and that the estimated number of deaths over the first five years of such a scenario falls between one thousand and ten thousand deaths.

Over the last six years, the UK has witnessed a rapid increase in the incidence of infection and colonisation by Multidrug Resistant CPE. A number of clusters and outbreaks have been reported in England, some of which have been contained, providing evidence that, when the appropriate control measures are implemented, these clusters and outbreaks can be managed effectively.

A preventative strategy

A strategy for combating the threat of CPE at Wirral University Teaching Hospital (WUTH) was recommended following the first case in



May 2011 and has been carefully developed further based on available guidelines from Public Health England in its CPE Toolkit.

The strategy covers three key elements all necessary to prevent colonisation/infection:

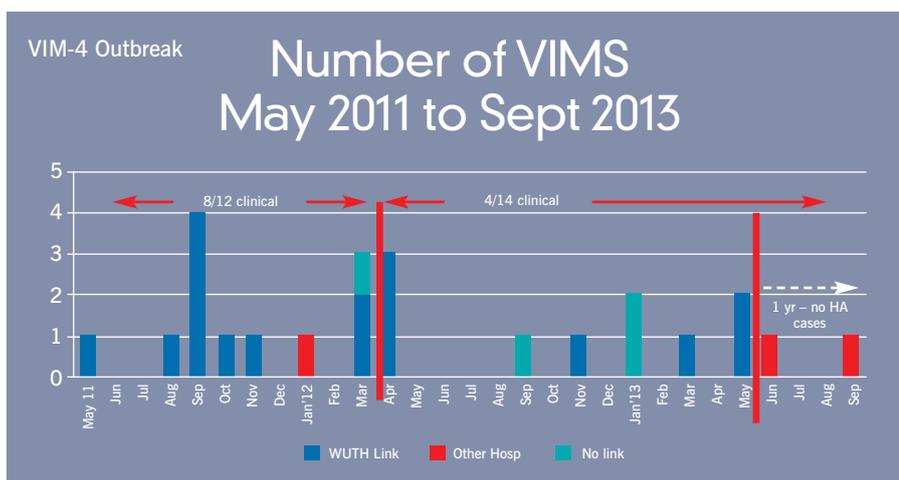
1. Rapid detection of colonised cases.
2. Prompt effective isolation.
3. 'Doing the basics brilliantly' e.g. antimicrobial stewardship, hand hygiene and enhanced cleaning and disinfection.

Promoting a care bundled approach whereby all elements of the bundle are needed to reduce the risk of infection required a significant amount of investment and planning. By 2014, although not fully implemented, WUTH had interrupted two VIM outbreaks and were managing to contain a protracted outbreak of the OXA-48 strain, significantly reducing clinical infection and preventing mortality associated with CPE.

Review of cleaning and disinfection process

Local epidemiology of the patients becoming either colonised or infected with CPE suggested the environment to be a source of transmission for CPE. This resulted in a review of the cleaning and disinfection processes and products used throughout the Trust.

In order to implement the third element of the strategy, 'doing the basics brilliantly', during 2012 the Infection Prevention and



Control Team (IPCT) performed a review of the cleaning and disinfection processes throughout the Trust, identifying significant gaps which would prevent optimal cleaning and disinfection from taking place.

Based on recommendations made by the IPCT, a gap analysis was performed to identify the required funding and a solution to deliver an enhanced cleaning programme.

Gaps identified included an insufficient resource within the Hotel Services Team (domestics) to respond to the increasing requests of the IPCT during the outbreak period. Nursing and domestic staff were unsure as to what their responsibilities were in relation to cleaning. There was a lack of clarity regarding the different types of cleans and what products should be used.

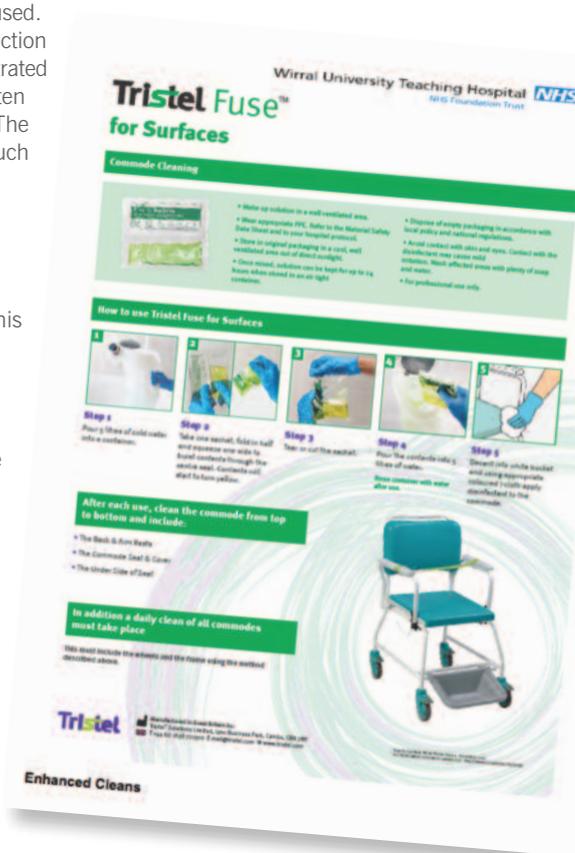
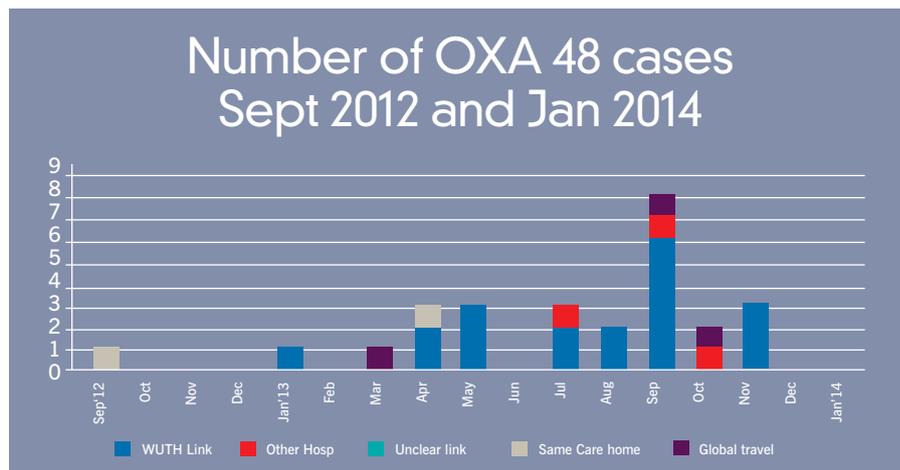
Reviewing the cleaning and disinfection products in the clinical areas demonstrated this lack of clarity with product use often inconsistent throughout the hospital. The IPCT identified a variety of products such as detergent liquid, detergent wipes, detergent and disinfectant wipes, sporicidal wipes and chlorine based disinfection products, the latter to be made up at the appropriate concentration by staff. How staff did this varied and the IPCT were not assured that the concentration was always sufficient to be effective.

The majority of wards had wipe dispensers within each bay and single rooms, this encouraging the use of wipes for cleaning and disinfection. However, some bays were found to have detergent wipes only while others had the detergent/disinfectant wipes. The lids to these wipe packets were almost always found to be open, with the wipes inside becoming dry and therefore ineffective. Staff were observed cleaning large pieces of equipment (e.g. mattresses) with an insufficient number of wipes – again resulting in ineffective decontamination.

Hydrogen Peroxide Vaporisation (HPV) had been introduced some years before to reduce and prevent *Clostridium difficile*, however an increase in the use of HPV had been reported, with ward staff often requesting an HPV clean when routine disinfection would have been sufficient. Not only was this extremely time consuming, it was also an expensive unnecessary option.

The IPCT recommended that in order to 'do the basics brilliantly' and optimise cleaning and disinfection practices, the products used should be standardised across the Trust. Clear concise protocols should be available to assist staff with product selection and how to use the product to achieve effective decontamination.

It was agreed that all wipes with the exception of a chlorine based cleaning and disinfecting wipe would be removed. The IPCT provided clear guidance on when HPV was deemed necessary e.g. should the



environment be suspected to have been contaminated with *C. difficile*.

Tristel Fuse for Surfaces, a chlorine dioxide-based high-level disinfectant solution was introduced for surface disinfection following approval by the Trust's health and safety manager, a pilot with a positive evaluation across several wards and departments, approval from the Hospital Infection Control Committee and final approval from the executive team of directors. Education and training regarding its use, efficacy and benefits was delivered throughout the pilot and the eventual Trust-wide launch of the standardised cleaning processes. Protocols were subsequently developed and made available on the staff pages of the hospital intranet. The protocols made it clear to staff as to what type of clean was required in which situations and which product should be used.

Posters were also produced and

circulated providing pictorial step by step guidance on how to clean specific pieces of equipment such as commodes.

Success of the strategy

WUTH is recognised as one of three Trusts in the North West of England having established problems with CPE since their first case in May 2011, yet now gaining control as other Trusts are considered at risk. Between 2011-2014, WUTH reported seven bloodstream infections, with an all-cause mortality of 50% and three protracted outbreaks.

A review of cleaning processes and the introduction of an enhanced cleaning and disinfection programme incorporating chlorine dioxide in combination with other control measures was considered a major factor in terminating a protracted Trust wide outbreak of CPE.

Staff at WUTH consider this programme to be as important as prompt identification and effective isolation of colonised or infected patients, understanding the impact of not delivering an optimal preventative strategy.

Ensuring that enhanced cleaning and disinfection remained a vital part of the preventative strategy, the subsequent containment and management of CPE resulted in zero tolerance to CPE bacteraemia, a reduction in all other clinical infections, and reduced bed days due to ward or bay closures.

Reference

- 1 Public Health England Guidance: Carbapenemase-producing Enterobacteriaceae: early detection, management and control toolkit for acute Trusts.

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