Learn more about hospital acquired infections as we take a look at ESBLs, *Acinetobacter* and PVL-Staphylococcus *aureus* with consultant microbiologist, Dr Steve Barrett • Find out how Oxoid M.I.C.Evaluators are in use in the Scottish MRSA reference laboratory • Learn more about *C. difficile* infection • We have new products for the rapid detection of *H. pylori* and *Legionella* • Read about our Infection Control Awards • An Italian hospital tells us why they like our Atmosphere Generation System … and much more.
For many years now, meticillin resistant Staphylococcus aureus (MRSA) and Clostridium difficile have been centre stage of Healthcare Associated Infection (HCAI). However, our focus on these organisms, whilst important and worthwhile, must not prevent us from being mindful of the broader HCAI picture. There are numerous other organisms responsible for HCAIs, old and new, which are waiting in the wings - ready to steal some of the limelight. Dr Steve Barrett, Consultant Microbiologist at the Imperial College Healthcare NHS Trust, London, discusses the current situation and some of the micro-organisms that are becoming increasingly important to hospital infection control teams.

The price of success

The problem of healthcare associated infections (HCAIs) is largely due to the success of modern treatments and interventions. We have become better at keeping patients alive and, as a result, our hospital population is older and sicker, with more immuno-compromised patients, than ever before. Each of these factors - increasing age, impaired immunity and underlying disease - increases the risk of acquiring an infection in hospital.

Furthermore, the medical treatments and interventions themselves (whether diagnostic or therapeutic) may increase the risk of an HCAI by compromising the body’s natural defences. Increasingly invasive modern procedures provide opportunities for micro-organisms to enter the body and increase the risk of infection, e.g. biopsies, endoscopic investigations, catheterisation, mechanical ventilation and surgery.

The very nature of the hospital environment, where there are both patients with infections and those that are susceptible to infections, presents the opportunity for cross-infection. This is increased by the movement of staff and patients around the hospital and the concentration of susceptible patients in one area (such as neonatal, burns and intensive care units). No matter how clean hospitals are, they will never be sterile, there will always be micro-organisms in the environment and carried by staff, patients and visitors. Good hygiene practices are, therefore, important in limiting HCAIs.

In addition to these factors, the use of antibiotics is a key issue when it comes to HCAI. The widespread use of antibiotics for therapy or prophylaxis is a major determinant in the development of antimicrobial resistance, and difficult-to-treat strains can result in becoming endemic in hospitals. We need to tighten up on policy and apply proper restrictions in order to limit the development of antibiotic resistant organisms. Judicious antibiotic prescribing and tight control on the length of treatment are essential.
Types of infection

HCAIs are a major cause of death and morbidity in hospitalised patients around the world, in both developed and under-developed countries, with an estimated worldwide prevalence of 8.7%. There are a number of different types of HCAI:

- **Urinary tract infections (UTIs)**
  The WHO (World Health Organisation) reports that UTIs are the most common HCAI worldwide. In the most recent HCAI prevalence survey in the UK, however, UTIs (at 19.9% of HCAIs) were second to gastrointestinal infections (at 20.6%). These UTIs are usually caused by organisms in the intestinal flora, most commonly *Escherichia coli*.

- **Gastrointestinal infections**
  Gastrointestinal infections were the most common HCAI in the recent UK prevalence survey. The most common pathogen associated with sporadic cases and outbreaks of gastroenteritis is norovirus. This virus is extremely infectious and is transmitted via the faecal oral route. Although norovirus infections are rarely life threatening, outbreaks in hospitals can cause severe and costly disruption to services.

- **Surgical site infections**
  Surgical site infections (SSIs) are also a significant problem. The SSI is usually acquired during the operation and can be of an exogenous (from air, equipment or staff) or endogenous (skin or operative site flora) source.

- **Lower respiratory tract**
  A significant number of cases of nosocomial pneumonia are associated with ventilated patients in ICUs. This type of infection has a high case fatality rate and the organisms responsible may be endogenous (from the digestive tract, nose or throat) or exogenous (from contaminated equipment).

- **Blood stream infections**
  Although bloodstream infections represent a small proportion of HCAIs (around 5% worldwide, 7% in the UK) they have a high case fatality rate. Many bloodstream infections are associated with the insertion of intravenous devices and the organisms responsible usually originate from the patient’s skin flora. Risk increases depending on the length of catheterisation, aseptic technique and indwelling catheter care. Surveillance of MRSA bacteraemias in the UK shows that the incidence of this particular organism is decreasing. However, bloodstream infections caused by other micro-organisms, in particular multi-resistant coagulase negative staphylococci (CNS) and *Candida* spp, are increasing. It is important to remember that the most common cause of bloodstream infection is *E. coli* and that meticillin-susceptible *Staphylococcus aureus* (MSSA) is also an important cause of bacteraemia.

Other HCAIs include skin and soft tissue infections, sinusitis and endometritis (associated with childbirth). Although there may be some common practices in addressing HCAIs generally, each of these different types of infection requires special consideration and may need more specific precautions and/or infection control actions.

To date, there has been much attention focussed on meticillin-resistant *Staphylococcus aureus* (MRSA) bacteraemias and, more recently, *Clostridium difficile* associated disease (CDAD) as important healthcare associated infections, with much time and resources devoted to the surveillance and eradication of these organisms. Whilst addressing these particular infections has had some positive knock on effects for HCAIs in general, other micro-organisms and types of infection have not received the same attention and are in danger of becoming more serious problems in the future.

The prevalence of hospital-acquired MRSA infections in the recent UK survey was just 1.15% (15.8% of the total system infections) and included surgical site, skin and soft tissue infections as well as primary bloodstream infections. The prevalence of *C. difficile* in this survey was 1.21%.

**Other important micro-organisms**

HCAIs are caused by many different micro-organisms; bacteria (both commensal and pathogenic), viruses, fungi (yeasts and filamentous fungi) and parasites. In addition to MRSA and *C. difficile* there are a number of organisms that are of particular interest and increasing concern at the moment. The steering group on healthcare associated infections in England recommends that certain micro-organisms require particular attention: ESBL producers, *Acinetobacter* and PVL-producing *S. aureus*. 

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ESBL producers

Some of the most important emerging organisms associated with HCAIs at the moment are the extended spectrum beta lactamase (ESBL) producing microorganisms. The ability to produce the ESBL enzyme confers resistance to cephalosporins. ESBLs have been recognised since the 1980s and, in the past, were found mainly in Klebsiella species, confined mostly to vulnerable patients in ICUs.

More recently, however, a new class of ESBL (CTX-M enzymes) has emerged. These new ESBLs have been widely detected in E. coli and are able to break down a wider range of antibiotics, enabling ESBL-producing strains to be resistant to both penicillins and cephalosporins - the two most important and widely used classes of antibiotics. This greatly limits treatment options.

ESBL-producing E. coli have spread rapidly in a short period, since 2003, and are responsible for bacteraemias in hospital patients in addition to community-acquired (CA) UTIs. Increased surveillance is needed to monitor ESBL-producing E. coli associated with these types of infections in addition to CA-UTIs. It is important, therefore, that all diagnostic laboratories can recognise ESBL producers.

Acinetobacter

Acinetobacter has become a significant nosocomial pathogen, frequently associated with mechanical ventilation in ICUs. Since this micro-organism is frequently found in the environment, in food and on human skin, clinical isolates were often previously mistaken as contaminants. Infections caused by A. baumannii include pneumonia, bacteraemia, wound infections, and urinary tract infections.

Certain extraordinarily resistant hospital isolates of A. baumannii are readily selected out in response to pressure from antimicrobial agents. Such strains can cause serious disease in critically ill patients. This species is also known for its persistence in hospital environments. It can survive for long periods in the environment and can resist exposure to disinfectants and radiation, making it difficult to eradicate. When outbreaks occur, they are often protracted and difficult to manage.

Certain clones that are widespread in the UK and throughout Europe exhibit resistance to almost all antibiotics, with the exception of colistin and, perhaps, tigecycline.

Those most at risk of infection include the elderly, those with underlying disease, those who have received broad-spectrum antibiotics and those requiring mechanical ventilation. Infection control procedures should include patient isolation, cohort nursing, enhanced IC compliance and enhanced environmental decontamination.

PVL-Staphylococcus aureus

Panton-Valentine Leukocidin (PVL) is a toxin produced by some strains of S. aureus and, in the past, has caused widespread disease in healthy individuals, hospital patients and healthcare workers. The rise of PVL-producing strains of S. aureus (PVL-SA) in some countries, although a small problem at the moment, is of growing concern.

PVL-SA was around before MRSA became an issue. It is significant because, unlike some other HCAIs that affect immuno-compromised and susceptible patients, this organism is particularly virulent and can cause death, even in healthy young patients.

Robust surveillance of PVL-SA will provide an early warning to changes in the epidemiology of this organism. Guidance on the diagnosis and management of PVL-SA is available from the Health Protection Agency (HPA).

A broader outlook

Until now, the focus for HCAIs has largely been on MRSA bacteraemias and C. difficile. Is the preoccupation with these organisms swallowing resources that could be used to address HCAIs more generally? Surely, with new problems on the horizon, it’s time that we adopted a broader approach.

Prevalence of actual clinical infections, whilst resource demanding, is extremely helpful in obtaining a true picture of HCAIs, since laboratory reports depend on samples being sent for analysis. Patient surveillance helps to target interventions, prioritise resources and inform governments, hospitals and other agencies in the continued effort to reduce HCAIs.

We should also be aware of new technologies that might prove useful in preventing HCAIs. Recent developments include the use of probiotics, silver-impregnated pyjamas, air sterilisation devices, bare-below-elbow initiatives. Introduction of preventative measures should be evidence based, however, so as not to drain and divert resources from addressing the wider HCAI problem.

There is no doubt that the attention paid to MRSA and C. difficile has had a positive impact on patient safety and quality of care, but it is now necessary to extend activities more broadly. The HPA in England has identified a number of areas for further action (table 1). Such measures, in addition to clinical prevalence studies, are important if we are to remain on top of HCAIs other than MRSA and C. difficile.

Table 1. Areas for further action identified by the HPA, England

| 1. | Surveillance of infections in special units, e.g. critical care, renal, haematology and oncology units. |
| 2. | Improved reporting of outbreaks and untoward events. |
| 3. | Enhanced surveillance of surgical site infections, including following discharge. |
| 4. | Routine monitoring of case fatality rates. |
| 5. | Improved surveillance of pathogens causing common infections, such as UTIs. |
| 6. | Further development of the current mandatory surveillance system for Staphylococcus aureus. |
| 7. | Improved surveillance of PVL-positive Staphylococcus aureus to provide an early warning of epidemiological changes. |
| 8. | Enhance the existing mandatory system for Clostridium difficile. |
| 10. | External validation of reported data. |

The Scottish MRSA Reference Laboratory, based in the Microbiology Department of NHS Greater Glasgow and Clyde at Stobhill Hospital, provides a national MRSA reference service and accepts isolates from laboratories throughout Scotland. The service they provide includes confirmation of MRSA status, antibiotic sensitivity monitoring, detection of toxin genes and epidemiological typing of strains.

The laboratory has used Oxoid vancomycin and oxacillin M.I.C.E.™ strips in the investigation of suspected MRSA strains since July 2007.

“We liked the fact that the M.I.C.E. strips are individually wrapped,” explains Bonnie. “We are able to just use what we need and the other strips are not compromised. Also, if the pack is spilled for any reason, the wrapping protects the strips. With our previous method, we would have lost the spilled strips.”

Easy to read
The design of the M.I.C.E. strips has been enhanced to provide greater contrast with the media, using a larger font size to make it easier to interpret results.

“With the new format,” Bonnie continues, “the scale is really clear and we find it easier and quicker to read the endpoints, giving us greater confidence in the results.

“M.I.C.E. strips are easy to use and the instructions that come with the pack are useful and easy to follow. Oxoid has even provided posters for our wall which provide simple instructions and are helpful in training staff to use the product.”

For further information about Oxoid M.I.C.Evaluator strips and a full product listing, please speak to your local Oxoid representative, tick 1 on the reply paid card or visit www.oxoid.com.
Introduction
At any one time, 9% of inpatients suffer from an infection following hospital admission. The effects of these hospital-acquired infections (HAIs) for the patient vary from discomfort to prolonged or permanent disability and in more severe cases even death. High standards of infection control practice can minimise the risk of occurrence, but antibiotic use can increase a patient’s susceptibility to HAIs.

In the past, the significance of HAIs has largely focused on MRSA bacteraemias. Data generated via the mandatory surveillance of these MRSA bloodstream infections, however, show a continued downward trend in recent years. The emphasis is now turning to hospital-acquired C. difficile infections, the scale of which now overshadows that of MRSA bacteraemias.

Clostridium difficile
C. difficile can reside in up to 3% of healthy adults and 66% of infants as part of their normal intestinal flora. However, when certain antibiotics disturb the balance of bacteria in the gut, C. difficile can multiply rapidly and produce toxins which cause illness.

Patients staying in hospitals or nursing homes long term are more likely to be colonised by the bacterium. These same patients are also more likely to be on long term antibiotic therapy and as a result are more likely to suffer from the toxic effects of the bacterial in balance. But C. difficile infection (CDI) in the community and outpatient settings is also on the increase.

Symptoms of infection include diarrhoea, nausea, abdominal pain, loss of appetite, and fever. In some cases - particularly in the elderly and those with serious underlying disease - the bacterium can be life-threatening causing bowel inflammation, perforations of the colon, sepsis and occasionally death.

The disease spreads by cross-infection between patients and healthcare staff. C. difficile produces highly-resistant infectious spores that are shed in the faeces of infected individuals. These spores survive on surfaces and floors for months, resisting many disinfectants and antiseptics, including alcohol based hand gels.

Rising numbers
C. difficile accounts for the majority of HAI outbreaks in the UK. In 1990, the number of C. difficile cases was around 1,000 annually. Now around 50,000 patients aged 65 years and over contract CDI in England each year.

Deaths from CDI are also rising. The Office for National Statistics found that there were 6,424 deaths from C. difficile in 2006 in England and Wales, almost double the 3,719 deaths caused by the infection in 2005.

Annual figures indicate that the number of C. difficile cases decreased by 9% in 2007 compared to the previous year. National targets and increased infection control measures could have contributed to this fall. However, Latest figures from the Health Protection Agency (HPA) show there were 10,586 C. difficile cases in patients aged 65 and over between January and March 2008 - a 6% rise on the previous quarter.

Outbreaks
At Stoke Mandeville Hospital, over 30 people died as a consequence of two outbreaks of infection by C. difficile in 2004 and 2005. The Healthcare Commission, which investigated the outbreaks, said poor infection control practice and lack of facilities to isolate patients were two of the reasons that led to the first outbreak in the hospital. The Trust’s focus on service reconfiguration and in meeting government targets led to its failure to quickly control the second outbreak.

Similarly, two outbreaks of C. difficile infection at the Maidstone and Tunbridge NHS Trust between October 2005 and September 2006 caused more than 500 patients to develop CDI. There were 60 deaths where C. difficile was cited as a probable cause. A review found several examples of unnecessary antibiotic prescribing, delays in sending stool samples for testing and misdiagnosis from failures to repeat stool testing when clinical symptoms persisted.
Serious Consequences for Patients and Hospitals
The impact of CDI is considerable and can result in: increased morbidity and mortality among hospital patients, increased numbers of investigations and therapeutic interventions, increased length of stay for affected patients and increased costs of patient care.

Each case of CDI is estimated to cost around £4,000 and results in an average increase in hospital stay of 21 days.

The UK government is consulting on whether to impose fines of up to £50,000 in penalties if hospitals fail to meet the levels of cleanliness required. Inspectors will also have the ability to close wards if deemed necessary.

Laboratory testing for C. difficile
The laboratory diagnosis of C. difficile relies on detecting the presence of the bacterium and/or detection of toxins A/B in stool samples. Testing should be carried out within 18 hours of the onset of diarrhoea or 18 hours after admission. A number of methods are available to microbiologists, but essentially the test methods fall into two major categories, detecting the toxins produced by the bacterium and detecting the organism itself.

Cytotoxin assay (CTA) is the “gold standard” for detecting C. difficile toxin (CDT) in stool samples. The assay tests for the effects of cytotoxin on cultured human cell lines. When exposed to toxin purified from the stool sample the cells change shape from flat sheet-like (healthy) to rounded (stressed). These changes in the shape of the cells are observed with a specialized inverted microscope. Although sensitive at detecting toxin, CTA is labour-intensive and requires up to 48 hours of incubation to obtain a final result.

CTA also requires special expertise and tissue culture facilities and is not, therefore, offered routinely by most laboratories. As a consequence, many laboratories have turned to less labour intensive toxin detection methods based on more modern immunoassay technologies. Toxin detection immunoassays generally come in two formats, Enzyme Immunoassay (EIA) or microplate (up to 96 tests at a time) and lateral flow (single test). Both formats rely on specific binding of specially produced antibodies to the C. difficile toxins A/B.

Although the sensitivity is lower than that of CTA, EIA is favoured by laboratories for its rapid turnaround time (results are available in less than 4 hours), ease of use, lower cost, and ability to easily batch specimens. Several EIA kits are available on the market although some detect only toxin A. Others detect both toxins A and B, which is clinically important given the emergence of toxin A/B- strains.

EIA tests such as the Oxoid ProSpecT® assay for C. difficile toxins A and B can be run alongside ProSpecT® microplates for other enteric pathogens, using the same procedure and reagents, and with convenient room temperature incubations. This can be beneficial since the symptoms of CDI are often not easily distinguishable from other gastrointestinal infections.

The second immunoassay format, lateral flow, provides speed and accuracy to detect C. difficile toxins and allows smaller laboratories to offer C. difficile testing. Any size laboratory can offer short turnaround times (STAT) with lateral flow tests. For example, the Oxoid Xpect™ Clostridium difficile Toxin A/B test offers results in 10 to 20 minutes. It also has the advantage of being able to detect both toxins A and B in stool specimens or in isolates of toxin-producing C. difficile strains. These tests are very useful for out-of-hours testing, where a single test can be prepared in less than a minute with a 20 minute time to result.

As it is the toxins produced that ultimately cause the illness, many laboratories choose to use only toxin detection and overlook more traditional culture. However there is a growing body of support for the routine use of culture in parallel with toxin detection.

The importance of laboratory culture
Detecting bacteria is traditionally achieved by culturing the microorganisms direct from stool samples. Stool specimens are cultured under anaerobic conditions for at least 24 hours to enhance the growth and recovery of C. difficile. The samples are cultured on a selective differential medium, such as Oxoid Clostridium difficile Agar Base with Oxoid Clostridium difficile Selective Supplement. Presumptive identification can be made directly from culture, based on colony morphology, a characteristic ‘horse manure’ odour, a positive Gram stain and yellow-green fluorescence under ultraviolet light. In addition to a presumptive identification, culture is important when investigating antimicrobial susceptibility testing (AST), to ensure prudent use of antibiotics; patients who have severe disease; the epidemiology of outbreaks, by ribotyping in specialist reference laboratories; and suspected cases where the stool toxin test is negative. Unlike most of the other methods, culture may also be used on environmental samples to monitor the effectiveness of cleaning or to validate cleaning or decontamination protocols.
Glutamate dehydrogenase (GDH) is a relatively new immunoassay, also known as the Clostridium difficile common antigen. GDH is an enzyme present in both C. difficile toxigenic and non-toxigenic strains. GDH is similar to culture in that it determines whether C. difficile is present in the stool sample, but not whether it is a toxin producing strain. The only commercially available GDH assay has a high negative predictive value but a positive predictive value of only 62% when compared to CTA gold standard and so is of little value when used in isolation.

Other methods of检测ing and identifying C. difficile include molecular methods such as polymerase chain reaction (PCR). These molecular methods are usually employed by reference laboratories to distinguish between C. difficile genotypes. These methods are of value in epidemiological studies, in identifying highly virulent strains, and in distinguishing between toxigenic and non-toxigenic strains.

**Mandatory reporting of cases**

Voluntary reporting of C. difficile started in 1990 in the UK. In 2004, surveillance of CDAI was included in the mandatory healthcare associated infection surveillance system for Acute Trusts in England and the community. This applies whether C. difficile is acquired in that Trust, in another hospital, or in the community.

In 2007, a new web-based system was introduced to allow Trusts to report C. difficile infection in ‘real-time’. Each Trust’s Chief Executive is required to sign off data regarding C. difficile on a monthly basis. Additional requirements were set out in 2008 to refine this surveillance system. Positive results obtained from the same patient more than 28 days apart must now be reported as separate episodes, irrespective of the number of specimens taken in the intervening period. Patients will be identified by their National Health Service (NHS) number on the system to flag episodes of multiple infections. The web-based system will also be expanded to cover the independent sector.

Other changes, including reporting the date of admission, date of onset of diarrhoea and previous interactions with acute healthcare environments, will allow identification of the most probable location where the C. difficile infection was acquired.

**Conclusion**

Mandatory reporting of CDI and internal monitoring measures now in place in NHS Trusts have highlighted the extent of the disease in both hospitals, tertiary care facilities and the community. Current diagnostic methods allow for diagnosis within the hour however 44% of reported CDI’s are still detected more than two days after admission. Prompt identification of an outbreak of C. difficile is essential to allow early implementation of the necessary precautionary measures to minimise transmission. Trusts must ensure that their laboratories are well equipped to undertake the necessary identification, to aid diagnosis and to comply with mandatory reporting requirements, thus protecting patients and themselves.

References


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Rapid detection of Helicobacter pylori antigen in stool samples

An enhanced range of Oxoid products for the detection of *H. pylori* from stool samples is now available. Using a combination of unique amplification technology and monoclonal antibodies, IDEIA™ Hp StAR and RAPID Hp StAR™ can be used to detect active infection and to confirm the eradication of *H. pylori* following antibiotic therapy.

IDEIA Hp StAR
IDEIA Hp StAR is a highly sensitive and specific enzyme immunoassay that is easy to perform using standard equipment, allowing the ‘test and treat’ policy recommended by the European Helicobacter Study Group1 to be implemented in routine laboratories. It is suitable for both manual and automated testing and has demonstrated excellent performance when compared to the urea breath test and alternative enzyme immunoassays2,3,4. It can be used to monitor eradication therapy in both adult and paediatric patients.

Diagnosis in Paediatric Patients2

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Diagnosis in Adult Patients3

Reference tests culture and histology

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Effectiveness for monitoring post-eradication therapy4

Reference test UBT

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RAPID Hp StAR

RAPID Hp StAR is a rapid immunochromatographic membrane based assay that provides reliable results in just 15 minutes, without the need for special equipment. The speed and simplicity of this method make it suitable for small volume testing within the laboratory, or for near patient testing in gastroenterology clinics and doctors’ surgeries. Such convenience is ideal for monitoring the efficacy of antimicrobial treatment without the need for return hospital visits.

Primary diagnosis in adult patients

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Sensitivity = 91.2%  Specificity = 82.4% Data from external study. Further information available on request.

Control of eradication therapy in adult patients

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Sensitivity = 100%  Specificity = 92.3% Data from external study. Further information available on request.

Cost effective, non-invasive

The Hp StAR tests provide cost effective, non-invasive alternatives to the more invasive methods offered by many hospitals. They involve minimal discomfort for the patient, making them particularly suitable for paediatric use. Furthermore, the ability to detect active infections also helps to avoid the unnecessary administration of antibiotics.


5 MINUTE GUIDES LAUNCHED

We are pleased to announce the launch of our 5 Minute Guides. These educational materials are designed for use by infection control professionals to help them explain hospital acquired infections to their patients and non-medical personnel.

The 5 Minute Guide to MRSA is now available to download from www.oxoid.com.

A guide to *C. difficile* will shortly be available and other guides will be added in the future, so please check our website regularly.
New Oxoid Brilliance™ MRSA is a selective chromogenic medium that permits the growth and differentiation of MRSA colonies on a single culture plate (figure 1), allowing the accurate isolation and detection of MRSA in just 18-24 hours. The medium is quick and easy to use, providing a reliable and cost-effective method for MRSA screening in the hospital setting.

Routine screening of patients for MRSA is one of the measures that has been identified as fundamental in the fight against hospital-acquired MRSA infections. As a result, many UK hospital trusts are now screening new admissions routinely. Among them are the Royal Berkshire NHS Foundation Trust and Heatherwood and Wexham Park Hospitals NHS Foundation Trust.

Royal Berkshire NHS Foundation Trust

The Royal Berkshire NHS Foundation Trust screens patients for MRSA prior to surgery and upon emergency admission. When they first began screening for MRSA, they were testing 50 swabs per day. Now they are receiving in the region of 250 swabs every day; it is important that the method they use is fast and convenient enough to cope with the high throughput.

In October 2007, the Microbiology Laboratory began using a chromogenic medium for MRSA screening. Laboratory Manager, Richard Willis, explains:

With 200-250 plates to examine every day, 7 days a week, it is much quicker and easier to look for coloured colonies. However, with the chromogenic medium we used initially, we had to wait 48 hours for a result as the negative plates had to be re-incubated after 24 hours. So, earlier this year, we evaluated Brilliance MRSA, comparing it to our existing chromogenic medium and two MRSA broth media.

Following this evaluation, the laboratory decided to adopt Brilliance MRSA as their screening method.

“We particularly like Brilliance MRSA because it is validated for a single 18-24 hour incubation,” Richard continues. “The MRSA colonies are easy to spot (they are a distinct blue which stands out easily against the cream background of the medium) and there is no need to re-incubate - we only need to look at the plate once. With such a large workload, the convenience and fast turnaround we can achieve with Brilliance MRSA are extremely important.

“For screening, you need speed, reliability and accuracy - and Brilliance MRSA delivers these for us.”

Faster reporting

The laboratory’s screening protocol requires two swabs from each patient (nose and throat). These are used to inoculate one plate per patient and the combined growth is examined. Presumptive positive colonies are confirmed using latex agglutination and a provisional, electronic report is released in just 18-24 hours. Further confirmation and antibiotic susceptibility tests are then performed on positives and a full report can be delivered the following day.

“Brilliance MRSA allows reporting a day earlier,” Richard concludes. “This is a great advantage for infection control teams as it allows them to identify infection risk factors sooner. They can also use the information to assist in bed management, identifying whether the patient needs isolation or cohorting. Initiating these measures after the provisional report helps to stop the spread of MRSA at an earlier stage.”

Heatherwood and Wexham Park Hospitals NHS Foundation Trust

The Microbiology Department at the Heatherwood and Wexham Park Hospitals NHS Foundation Trust began using the Oxoid MRSA Chromogenic Medium over 18 months ago when Chief Biomedical Scientist, Jamie Laughlin, joined the team.

“I performed a trial in my previous position at Frimley Park Hospital,” explains Jamie. “We compared Brilliance MRSA with another chromogenic medium and a non-chromogenic alternative. We were very impressed with the Oxoid product, particularly since it gave us a turnaround time of 18-24 hours compared to 48 hours with the other products. We switched to Brilliance MRSA when I joined Heatherwood and Wexham Park as we were offering a 7 day service and the faster turnaround time was important. We’ve now been using Brilliance MRSA for the last 5 months and it suits our needs very well.”

Quick and easy to use

“We use Brilliance MRSA for screening all new admissions, weekly screens and pre-admission clinics” continues Jamie. “We prepare one plate per patient and then examine them for growth. Where there are positives, we are able to pick colonies directly for further identification and sensitivity testing.

“The method is extremely easy to perform, which is important from a staffing point of view. We are able to delegate the task to associate practitioners under the supervision of a biomedical scientist, which makes better use of staff and is more cost efficient.

“It is also important to us that we can report results in 18-24 hours - both positives and negatives! This keeps our infection control team very happy as they can respond straight away. It’s a very efficient system.”

To find out more about the use and performance of Brilliance MRSA visit www.oxid.com

The Oxoid Xpect™ Legionella test is a rapid immunochromatographic test for the direct detection of *Legionella pneumophila* antigen in human urine samples. Designed to detect both serogroups 1 and 6, it has excellent sensitivity and specificity, is easy to use, and can be stored at room temperature.

Pneumonia caused by *Legionella pneumophila* was first recognised in 1977 after an outbreak among attendees at the 1976 American Legion convention. Since then infection by *Legionella* spp. has been found to be an important cause of community-acquired and nosocomial pneumonia. The number of cases of Legionnaires’ Disease reported by the European Working Group for Legionella Infections has increased in recent years. In 2007, 946 cases were reported, compared to 360 in 2000. In the UK, figures have more than doubled with 236 cases reported in 2007, compared to 107 in 2000. Due to the epidemic potential and high case fatality rate of Legionnaires’ Disease, surveillance is important to detect, control and prevent further outbreaks.

*Legionella pneumophila* serogroup 1 is the most frequent among human isolates, followed by *L. pneumophila* serogroup 6 according to the frequency of isolation from clinical samples. Pneumonia caused by *L. pneumophila* has no particular clinical features to distinguish it from other pneumonias.

Traditional methods for the confirmation of *Legionella* species are lengthy and laborious, and tend only to be performed in larger central laboratories. This causes considerable delays in obtaining results.

The use of Xpect Legionella allows early diagnosis and initiation of appropriate antibiotic therapy.

<table>
<thead>
<tr>
<th>Laboratory Diagnosis</th>
<th>Xpect Legionella</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>+ 48</td>
</tr>
<tr>
<td>Negative</td>
<td>- 3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>51 86</td>
</tr>
</tbody>
</table>

Positive laboratory diagnosis was determined by a positive urine antigen test and at least one of the following: seroconversion in an IgM and/or IgG assay, a positive culture on a lower respiratory tract sample, and/or PCR on a lower respiratory tract sample.

Sensitivity: 94.1%
Specificity: 100%
Positive predictive value: 100%
Negative predictive value: 96.6%

To order Xpect™ Legionella (code: R24680) please speak to your local Oxoid representative, tick 5 on the reply paid card or visit www.oxoid.com

References:
3. WHO Recommended Surveillance Standards, A48.1 Legionellosis
We were delighted to present winners of the 2007/2008 Oxoid Infection Control Team of the Year Awards with their prizes at a celebratory dinner, held in their honour, at the beautiful Walton Hall Hotel, Wellesbourne, Warwickshire, UK.

As first prize winners, Worcestershire Acute Hospitals NHS Trust, UK received a cheque for £5,000 and the Oxoid Infection Control Team of the Year Award 2007/2008 from Judy Potter, chair of the Infection Prevention Society and director of Infection Prevention and Control, Royal Devon and Exeter NHS Foundation Trust.

East Kent Hospitals NHS Trust, UK was awarded the second prize of £1,000 and a framed certificate by Dr. Tim Boswell, NHS lead consultant in Microbiology, Queen’s Medical Centre, lead clinician, Infection Control, Nottingham City Hospital, and representative of the Hospital Infection Society.

Dr. Nizam Damani, Clinical Director Infection Prevention & Control, Southern Health & Social Care Trust, Northern Ireland and representative of the International Federation of Infection Control, presented Sheffield Teaching Hospitals NHS Trust with a framed certificate and a cheque for £500 in recognition of their third-place win.

“We are delighted to publicly recognise the important work in infection prevention and control undertaken by our three winning teams,” says Ali Ball, vice president, marketing and new product development, Oxoid. “The fight against healthcare-associated infections can only be won through the dedication of infection control teams consisting of microbiologists, infection control doctors and nurses, and laboratory staff. We are proud to recognise their achievements and to support them in their daily work through our range of products for the detection and diagnosis of infections such as Clostridium difficile and MRSA.”
WOULD YOU LIKE TO BE AMONG THE WINNERS?

The 2008/2009 Oxoid Infection Control Team of the Year Awards, which are supported by the International Federation of Infection Control, Hospital Infection Society, and the Infection Prevention Society are now open. Make sure you get your team’s entry in soon if you want to be in with a chance of winning. As well as being rewarded with one of the monetary prizes - 1st prize: £5,000, 2nd prize: £1,000, 3rd prize: £500 - the winning teams will receive a trophy or framed certificate to mark their achievements and be given worldwide publicity.

To find out more visit www.oxoid.com or contact Fiona Macrae, Awards Manager on +44 (0) 1256 841144, email: fiona.macrae@thermofisher.com
Dr Romano Mattei explains. “I use AnaeroGen, CampyGen and CO₂Gen, designed for use in the 2.5 litre AnaeroJar, AnaeroGen Compact, CampyGen Compact and CO₂Gen Compact for the incubation of plates in plastic pouches.

“We started using these products because they could rapidly generate a non-aerobic environment without the addition of water and without the need for a catalyst to activate the reaction. We feel that this system is more convenient and efficient than the commonly used borohydride systems, and offers increased safety. Oxoid AGS facilitates the work of our technicians, speeding up their routine, and enhances security in the handling of bacterial cultures. We prefer to use the Oxoid AGS Compact products when we are analysing a small number of plates.”

Whereas anaerobic jars are designed to hold 12-15 plates at a time, the Oxoid AGS Compact products are more convenient for individual or small numbers of plates: Oxoid AnaeroGen Compact can hold up to 4 plates; Oxoid CampyGen Compact and Oxoid CO₂Gen Compact will hold 1-2 plates.

After 10 years of using the Oxoid AGS products, Dr Mattei is very pleased with their performance, concluding, “I would be happy to recommend the Oxoid AGS products for their convenience, safety and easy of use, and also because of their rapid ability to generate non-aerobic environments.”

For further information about the Oxoid AGS product range, please speak to your local Oxoid representative, tick 7 on the reply paid card or visit www.oxoid.com.
Estonian microbiologist wins iPod at ECCMID

We are pleased to announce that the lucky winner of an iPod Touch in the prize draw run from our exhibition stand at the European Congress of Clinical Microbiology and Infectious Diseases, was Dr Valentina Kolesnikova.

The European Congress of Clinical Microbiology and Infectious Diseases is an important forum for the exchange of views and latest thinking between microbiologists and clinicians from all over the world. On our exhibition stand at this year’s event, three new Oxoid products - M.I.C.Evaluators™, Brilliance® MRSA Agar and Xpect™ C. difficile - drew many visitors, where they were invited to tell us more about their current testing methods and to enter our free draw.

Dr Kolesnikova was visiting the Congress from Estonia, where she is Doctor Microbiologist at the at 560-bed East Tallinn Central Hospital (ETCH). The Diagnostic Clinic at ETCH performs tests for the East Tallinn Central Hospital and other medical institutions and consists of three centres - Central Laboratory, Pathology Centre and Radiology Centre - each equipped with modern technology and with highly qualified staff. The goal of the Diagnostic Clinic of the ETCH is to offer the best diagnostics services in Estonia.

The Central Laboratory uses testing methods and equipment that correspond to the requirements of contemporary laboratory medicine. The number of tests available at the Central Laboratory is increasing constantly and the annual number of tests has exceeded one million.

1,115,930 laboratory tests, 144,070 radiology studies, 46,566 pathology tests and 329 autopsies were performed at ETCH in 2006.

For more information about M.I.C Evaluators see page 5 or tick 8 on the reply paid card, Brilliance® MRSA Agar see page 10 or tick 8 on the reply paid card, Xpect™ C. difficile see page 6 or tick 8 on the reply paid card or visit www.oxoid.com.

Please help us to make Setting Standards better, would you like to see:

1. More technical articles, and if yes on which subject
   Yes □ No □ ________________________________

2. More customer case studies/user stories
   Yes □ No □

3. More stories from laboratories in your country
   Yes □ No □

4. Information about Oxoid people/departments
   Yes □ No □

5. Product offers or competitions
   Yes □ No □

6. Setting Standards is published twice a year, would you like it to be more frequent?
   Yes □ No □

   If yes: I would like to receive Setting Standards (tick one only): 3 times a year □ 4 times a year □ 6 times a year □

7. How do you receive Setting Standards?
   Post □ Oxoid Representative delivers □ Pick up at Exhibitions □

8. Would you like to receive Setting Standards electronically rather than as a printed copy?
   Yes □ No □

9. Would you like to contribute to, or be featured in, Setting Standards?
   Yes □ No □
Seasonal influenza causes a substantial burden of disease and deaths every winter.

High risk groups including the elderly and immuno-compromised individuals are advised to be vaccinated before the flu season starts, but in February 2008 the World Health Organisation reported higher rates of resistance to oseltamivir (Tamiflu®) in seasonal influenza A(H1N1) virus compared to previous seasons in several European countries. Additional data from other regions of the world indicated varying levels of resistance, with a wide variability between countries.

According to the European Centre for Disease Control, Influenza A virus has the most significant impact on humans. The disease can range from mild to very severe and although death is more common in the elderly and those with other illnesses, severe disease and some deaths occur each year in healthy adults and children.

Laboratories therefore need to be well prepared for epidemics.

The Xpect™ Flu A & B rapid lateral flow test gives results in 15 minutes and can be performed in a near patient or laboratory setting. The IMAGEN™ Influenza Virus A and B qualitative direct immunofluorescence test can be used for clinical specimens or for the confirmation and differentiation of Influenza virus A and B in cell cultures.

For more information please speak to your local Oxoid representative, tick 9 on the reply paid card or visit www.oxoid.com