

Fluorescent Technology at its Best.



Heatherwood and  
Wexham Park Hospitals  
NHS Foundation Trust



## BLOOD CULTURES: Transition

‘OCTOBER 2010



## Overview of Microbiology at Wexham

- In 2009 / 10 it is estimated that the department processed 317,706 samples.
- Of those 24 000 were blood culture bottles. Positivity rate of an adult set was 9.07% and for paediatric bottles 5.96%.
- Peak hours of work tend to be between 2pm – 6pm when GP requests arrive. There is an extended working day (8am to 8pm) which works well.
- Over the last 2 years we have dramatically increased our levels of automation and currently have BD FX blood culture system, Biomerieux TB liquid culture system, Diversilab for *C. difficile* strain typing, 2 x VITEK XL; Vidas 30 (Blue); Roche module for our serology (Blood Sciences); Urine analyser (Sedimax-Menarini), Inoqua (Kiestra Lab Automation) and electronic ordering (Sunquest ICE).
- At the same time we have increased our levels of associate practitioners (band 4) who have replaced the biomedical scientist on the Urine and MRSA bench.

# Tender Responses

- Two companies responded to the tender, namely Biomerieux and BD (as expected)
- Site visits were carried out.
- Consultants were involved in the site visits.
- Decision was based on a cost benefit analysis which involves a technical score divided by the 5 year costs of the tender.
- Costs include reagents, maintenance, interfacing, training and support.
- A reagent rent was deemed the most cost effective way forward.
- BD obviously won the tender and this was both from a technical score and financial point of view.

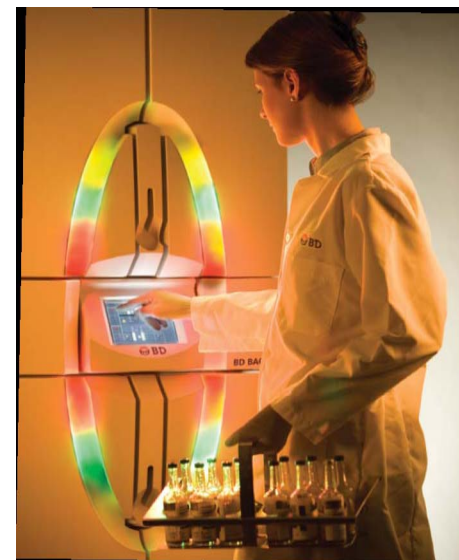


# Why did we choose the FX?

- Great ergonomics; ease of use
- Best footprint on the market. Of obvious importance if space is at a premium.
- Bottles supplemented with resin particles that are capable of counteracting the activity of antimicrobial drugs that frequently administered before blood culturing. Data demonstrated superior neutralization of  $\beta$ -lactam drugs and vancomycin compared to other systems.
- Resins are generally regarded as superior to the activated charcoal system and don't interfere with the Gram interpretation. Number of cases where charcoal was mistaken for Gram positive cocci.
- EpiCentre data manager was seen as a better system to the previous data manager (BacT View), we had. Far more user friendly and interactive. Can add other instruments to epicentre without any further interfacing costs.
- One-handed scanning of the vials into the instrument.
- Vial activated workflow with enhanced visual indicators specifically loading bottles is much simpler.
- Computer touch screen centralized, in direct view below or above barcode scanner for ease of vial management on each instrument or at the bench for multiple point data access.
- Distinctive and informative status colours, sample identification confirmation and "bottle anywhere capability"
- Very competitively priced

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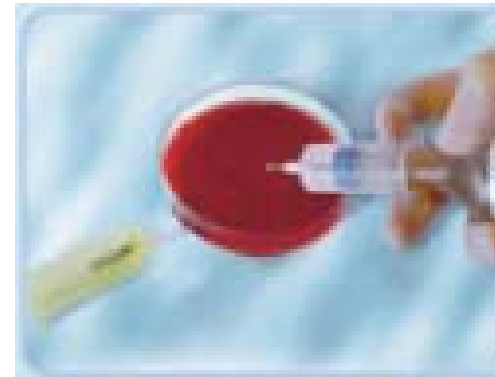
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# Safety

- Eliminated the need to purchase specialized adapters.
- No additional inserts required for additional laboratory tests i.e. vacutainers. In some instances nurses were drawing blood direct with a needle and syringe either because they could not find the adapters or did not like using them. This led to concern of potential needle stick injuries.
- Special safety devices, compatible with the long neck of the BACTEC bottles for sub-culturing of instrument positive vials.
- Glass bottles? Was this a step backwards? Ideally I would prefer a polymer however we have yet to have an incident over this.



# The Transition

- Of paramount importance was communication to our users. Use of the trust intranet was very useful, along with banners which were placed in corridors; BD road show and one-one communications to areas such as A&E and AMU where most of our blood cultures come from
- We ensured that there was a viable access route to the lab for installation.
- Our approach was simply to install the FX which went very smoothly and to run both our previous BacT/Alert 3 D with the FX. If one has the space it is the most effective method of carrying out a transition.
- We had the night before D-day, along with BD staff, canvassed the hospital and other sites for old bottles and replaced them with new bottles. Two members of staff were paid overtime to carry this out. We had a list of wards and simply visited them all, with a trolley and carried out the changeover.
- Communicated to staff **NOT** to send the bottles via the pod system. The only exception is paediatrics and ITU where BD SafePod system is used.
- As we did not want to waste the old bottles we specifically let our sister site use them for that month while we had 2 machines
- Interfacing was extremely simple and communication with our LIMS provider (Clinisys) was again important. The interface was up and running prior to D-day.
- Infection control had run a number of training days prior to D-day with regard to using the butterflies for taking the blood cultures. Feedback was very good. I know BD is working on an on-line interactive training guide for the FX.
- Staff within the lab find the instrument very easy to use. There was an offer of a bottle of Champagne from BD if we could cause an error.

# Summary

- Overall impressions after a year are very good
- Zero down-time
- Previously we had battled to grow our *Streptococcus pneumoniae*. We grow significantly more now that we have changed suppliers. Project for next year for one of our trainees.
- Very easy to load bottles and ties in very nicely with electronic ordering (Sunquest ICE). All our blood cultures are now requested electronically
- Did BD deliver on what was promised. Simple answer Yes
- Incredibly smooth transition
- Training was very good both from BD Oxford headquarters and on-site. However to be honest the system is so simple that training needed is minimal.
- False positives have decreased. Previously 2% false positivity rate. Currently 0.4%. Project is on-going.
- Decrease in contamination of approx 25%. We specifically looked at A&E. Probably due to the use of safety device.

# The Future?

Use of the BD FX blood culture system with the rapid MALDI Biotyper for pathogen identification directly from positive bottles is an exciting prospect.

It is expected to become clinically important in the future, as time-to-result for pathogen identification is critical to management of patients having potentially serious bloodstream infections.

