



# Public Health Wales Bronglais Hospital

## Case Study

### Overview

Bronglais in Aberystwyth, is one of four Hospitals within Hywel Dda Health Board. In January 2020, the lab went live with testing on ePlex® as part of Public Health Wales' implementation across all sites. The Microbiology Department originally implemented the technology for rapid Blood Culture Identification, and this was shortly followed by the addition of the Syndromic Respiratory Panel. The ePlex has revolutionised the Hospital's approach to the management of positive blood cultures, and is now paramount in their rapid diagnosis.

### What problems were you facing?

What concerns did you have, and what pain points were you facing, before the ePlex was implemented in the lab?

Prior to the ePlex we experienced only limited ID from Gram stain on Day 1, and had to wait until

bacteria grow before being able to ID (which could take another 24 hours) as we are a small lab without a rapid ID system such as a MALDI-Tof. There was also an increased risk of missing scanty or mixed organisms in the Gram.

*Fay Gittins and Gary Thapa, Biomedical Scientists*





Dr Mike Simmons (Consultant & Clinical Lead)



Fay Gittins (BMS)

Gary Thapa (BMS)



## How has ePlex solved any of these pain points?

We are able to give the clinician a definitive ID on Day one, which helps guide treatment more effectively even before the antibiotic sensitivities are available (e.g. an Enterococcus with resistance genes detected as opposed to a Streptococcus).

The ePlex is also helpful to exclude organisms when a False positive – we are able to run it through anyway just to be sure. It also helps the BMS choose correct antibiotic sensitivities, e.g. gives guidance on the need for Enterococcus, Streptococcus or Strep pneumoniae sensitivities.  
*Fay Gittins and Gary Thapa, Biomedical Scientists*

## How did the solution help?

### How did you feel about the decision to implement ePlex in your Microbiology department?

The laboratory was very positive and looking forward to using an innovative molecular identification system. Main concerns included the amount of time needed to verify the process and ongoing maintenance and quality control required. However, the process was so simple and quick that verification was relatively straightforward. Maintenance is specific but non-invasive and just involves external cleaning.  
*Fay Gittins and Gary Thapa, Biomedical Scientists*

## What are the main positives you have seen since using ePlex?

The ability to identify an organism in a blood culture within 2 hours of the sample flagging positive can have a huge impact on patient care. It provides information that guides the consultant regarding additional resistance genes to a directed therapeutic regime, and steers the BMS to set up the appropriate sensitivities. Infection Control Teams can be informed should there be a clinical need.

Additionally, occasional gram films can be innocuous and the ePlex can provide a clearer picture of organisms present (or not), which is especially useful for mixed cultures or possible false positive cultures.  
*Fay Gittins and Gary Thapa, Biomedical Scientists*

## How has the ePlex impacted patient care?

ePlex BCID has revolutionised our approach to the management of positive blood cultures. I now review the microscopy findings but normally will wait for the ePlex before instigating my first clinical contact. When the appearance suggests a Staphylococcus, we know that perhaps up to 50% will be coagulase negative, with most then being contaminants. As a result of our narrative reporting programme across Hywel Dda University Health Board (ref:

<https://adopt-and-spread.bevancommission.info/narrative-reporting-in-microbiology/>), the quality of the clinical information with the test request gives us insight into the clinical picture, such that we can risk assess whether the coagulase negative staph might be significant or not and only 'phone those that are likely to be significant. Those assessed non-significant are reported out with all the relevant details and our assessment but with an invitation to 'phone for further advice if necessary.

With speciated Staphylococci, we get a heads up of what might be unfolding and an informed discussion can take place. The ability to spot the Staph aureus and with the mecA gene detection, we can immediately offer very informed guidance about appropriate antibiotics 24 hours earlier than had been in the past.

Similarly, with the Gram negatives and resistance gene detection, we are 24hours ahead of the previous curve, able to influence the clinical guidance.

*Mike Simmons, Consultant*

## What are the benefits of rapid, molecular testing with ePlex?

The benefits apart from patient based, include targeting appropriate culture media, incubation or atmospheric requirements and sensitivity testing for the laboratory that may aid diagnosis. *Fay Gittins and Gary Thapa, Biomedical Scientists*

## Execution

### How easily did the team adapt to the ePlex in their routine?

The simplicity of the process of using the ePlex meant that minimal training was required for experienced members of staff, so adapting to the new system was positively and enthusiastically received by all.

### What difficulties (if any) did you face during the transition process?

Adjustments required included having to change the blood culture reporting process to include an interim and definitive ePlex result. BMS staff need to be aware as to whether the consultant has checked the report prior to the ePlex result being added, and a few instances have occurred resulting in accidental authorisation by staff.

## What has your experience been working with us?

AB Molecular have been receptive and engaging throughout and I have had experience of having to troubleshoot on many occasions and have always received an excellent service. The technical engineers are readily available, amiable and professional and I have met a few of them when they have been visiting our laboratory. They have been quick to resolve errors and happy to replace parts when required and as a laboratory we are very satisfied with the service.



# Outcome

Can you provide a patient story which benefited from a bacterial ID solution? What outcome did this story result in?

Not an individual patient story but the story of what sold it for me: Soon after it became part of routine practice and at the start of the pandemic, with a busy take from the A&E department in Bronglais on a Saturday morning, I had 3 blood culture positives coming off the incubator. The team used ePlex to identify 1 x Staph epidermidis, 1 x Staph aureus (no resistance genes) and 1 x E coli (no resistance genes). The first allowed an immediate assessment with the team that this was a contaminant. The second had a working diagnosis of urosepsis but with a past history of endocarditis suggested an alternative diagnosis and a course of investigation and the third allowed me to continue the current appropriate antibiotic.

The impact was so immediate and different from the previous way of working that it prompted me to write a management paper advocating the need for rapid introduction of the technologies across all our service areas in Wales, so we would have the tool at our disposal at the start of the pandemic. This did happen and from my service perspective, instead of the technology only being available at the Bronglais trial site, it was deployed in all 3 labs to the benefit of patients across our health board. During the pandemic, we have seen quite a bit of Staph aureus bacteraemia, where we could not find a source other than chest associated as a secondary bacterial pneumonia. *Mike Simmons, Consultant*



Anna Dickens (Trainee BMS)

How has ePlex impacted the escalation and de-escalation in patient management?

The rapid diagnosis provided by the ePlex has improved patient care and prognosis, and allayed complications in many with underlying health problems. Many positive BCs are caused by skin-type organisms, and so excluding e.g. S.aureus on Day 1 can be crucial for patient management. *Fay Gittins and Gary Thapa, Biomedical Scientists*

The impact is more around escalation than de-escalation. However, the ability to be able to ignore a coagulase negative staph has meant there has been less need to offer the option of, "if you are not happy with progress, consider adding vancomycin," as the mecA gene is detected regardless of the underlying species. The decision to de-escalate includes many more factors than just the blood culture result. *Mike Simmons, Consultant*

How has the ePlex supported the work of the Consultants and Clinicians at Bronglais Hospital?

Consultants are able to advise clinicians not only on the result of the Gram stain, but give a diagnosis of the organism and direct therapeutic advice accordingly in a very short space of time from the initial flagged positive. Resistance genes are detected alleviating inappropriate antimicrobial therapy, and the Infection Control Team can be notified at this early stage, if warranted. *Fay Gittins and Gary Thapa, Biomedical Scientists*



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