

# The Bone and Joint Infection Registry (BAJIR) and its role in supporting the Bone and Joint Infection MDT in our institution

Michael Petrie and Pedro Foguet



**Michael Petrie** was the Senior Clinical Fellow at University Hospitals Coventry and Warwickshire and is currently the Cavendish Arthroplasty Fellow in Sheffield. He sits on the Executive Committee for BAJIR and is the Engagement Lead. His clinical focus is revision arthroplasty with a special interest in periprosthetic joint infection.



**Pedro Foguet** is a Consultant Orthopaedic Surgeon at University Hospitals Coventry and Warwickshire. He is a lower limb reconstruction surgeon with a special interest in the management of periprosthetic joint infection. Fifteen years ago he was one of the founding members of the local MDT known as Bone Infection group Coventry & Warwickshire (BIGCOW).

The UK Bone and Joint Infection Registry (BAJIR) is a national project established in 2018 with the aim of collecting information about demographics, co-morbidities, pathogens, treatment strategies and outcomes on all patients who are diagnosed with, and treated for, a bone or joint infection in the UK with the objective of providing an understanding of the burden of disease. In time these data will be used to inform best practice, direct research and provide information for commissioners of healthcare<sup>1</sup>.

The registry is hosted by Northumbria Healthcare NHS foundation trust and overseen by a steering committee (Figure 1) of medical professionals consisting of orthopaedic surgeons and microbiology doctors who specialise in treating bone and joint infections. The registry is funded by contributions from industry partners<sup>2</sup>.

However, consensus agreement has been reached over the past few years on diagnostic criteria for a variety of bone and joint infections such as periprosthetic joint infection (PJI)<sup>3-6</sup> and fracture-related infections (FRI)<sup>7</sup>. Greater clarity on the diagnostic criteria for bone and joint infection has provided some standardisation between units and allowed for the establishment of BAJIR.

Bone and joint infections present a significant challenge to both patients and clinicians alike. Not only are they associated with significant morbidity and mortality but also they are the source of a considerable burden of cost to the health economy. Despite the continuous development of new diagnostic and therapeutic modalities, the progress in improving clinical outcomes had been hampered by the lack of standardised diagnostic criteria that made comparing differing treatment strategies between units difficult.

## Steering Committee



The BAJIR Executive are grateful to the following members of the steering committee for their help and guidance in continued growth of the registry

### BAJIR STEERING COMMITTEE 2020

Mike Reed (Chair)	Luke Farrow (BAJIR Fellow)
Tim Petheram (Treasurer)	Mike Petrie (Engagement lead)
Iain McNamara (Secretary)	Anji Kingman (Clinical Outcomes Manager)
James Masters (Governance)	Helen Vint (BAJIR)
Andy Toms (BASK)	Simon Jameson (BHS)
Mike Hutton (BASS)	Amar Rangan (BESS)
Rhidian Morgan-Jones (BOA / PJI UK)	Jan Sharpe (BOFAS)
Will Eardley (BTS)	Setor Kunutsor (Scientist)
Lucinda Barrett (Microbiologist)	Neil Jenkins (Microbiologist)
Martin Sarungi (Scotland)	Nigel Westwood (Patient representative)
Jamie Ferguson (Member at large)	Abtin Alvand (Member at large)
Pedro Foguet (Member at large)	Email: <a href="mailto:nhc-tr.bajir@nhs.net">nhc-tr.bajir@nhs.net</a> / Twitter: @BAJIR_UK

Figure 1: BAJIR Steering Committee.

Since 2018 the number of sites that have been contributing to the BAJIR has been growing, with a corresponding increase in the number of patients being included in the registry. The registry is now beginning to achieve numbers of confirmed infections great enough to allow for data analysis, with early results being presented at the BOA Congress this year. To date, there are over 900 patients within the registry, including more than 360 confirmed bone and joint infections. BAJIR currently has 20 collaborating Trusts with a similar number of Trusts having engaged in the information governance process that will hopefully soon be able to go 'live'. At this point in time, a registry such as BAJIR is unique in the world.

The significant morbidity and mortality of PJI meant that a great deal of the initial work when setting up the registry was devoted to these patients and BAJIR engaged with the relevant specialist societies (BESS, BASK, BHS) in order to support them in their drive to develop regional networks centred around MDTs. Data submission to BAJIR is a recognised standard of the recently published Revision Knee BOASTs<sup>8-10</sup> and the recently launched MDT module provides a record of the decision making and outcomes of the regional MDT meetings.

### How BAJIR supports the management of bone and joint infection and our institution

For well over a decade we have been running a MDT meeting on musculo-skeletal infections at University Hospitals Coventry and Warwickshire (UHCW). Our group is known as the Bone Infection Group Coventry & Warwickshire (BIGCOW).

Since its inception in 2015 our MDT has increased in size and scope of practice. Currently, we manage both elective and trauma patients from the two hospitals within our Trust, one of the busiest Major Trauma Units in the UK, and from our neighbouring Trusts.

The meeting is run fortnightly and routinely includes revision arthroplasty surgeons, infectious disease and microbiology consultants, specialist trainees, specialist nurses and a specialist pharmacist. Increasingly, other subspecialty orthopaedic and plastic surgery colleagues can be in attendance.

When the possibility of engaging with BAJIR presented, it was an easy decision for us to go with it. As proud and comfortable as we felt about the BIGCOW meeting and its achievements, collaboration with other units from across the UK that specialise in the management of PJI and other bone and joint infections seemed the optimal path to further improve the quality of the care we offer to our patients. Our BIGCOW database has

been re-designed to align with BAJIR and we have been submitting data to BAJIR for over two years.

Prior to our BIGCOW meeting, all patients to be discussed are entered onto BAJIR by the clinical fellow or specialist nurse and their patient record completed to include referral details, site and type of infection, chronicity, details of any surgery, microbiological sampling for diagnosis and antibiotic treatment; both local and systemic (Figure 3).

As is the case when managing patients with bone and joint infection, their clinical journey

evolves with time, for example narrowing the spectrum of parenteral antibiotics following microbiological culture results. A patients' record often requires multiple visits to ensure it remains contemporaneous.

The diagnosis of infection must be confirmed according to the recognised diagnostic criteria appropriate to their infection. Currently, the criteria for PJI are MSIS 2013<sup>3</sup> and IDSA<sup>4</sup>; for fracture-related infection and osteomyelitis we use the FRI Consensus 2018<sup>7</sup> and for native joint septic arthritis we follow the Modified Newman's criteria.

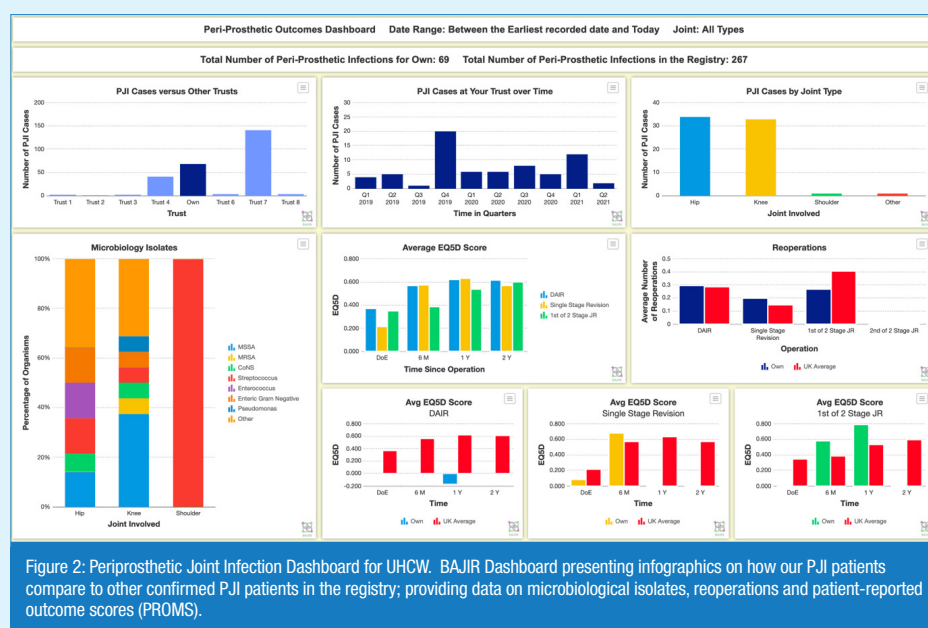


Figure 2: Perioperative Joint Infection Dashboard for UHCW. BAJIR Dashboard presenting infographics on how our PJI patients compare to other confirmed PJI patients in the registry; providing data on microbiological isolates, reoperations and patient-reported outcome scores (PROMS).

Figure 3: Screenshot of a demo patient to highlight the clinical information included.

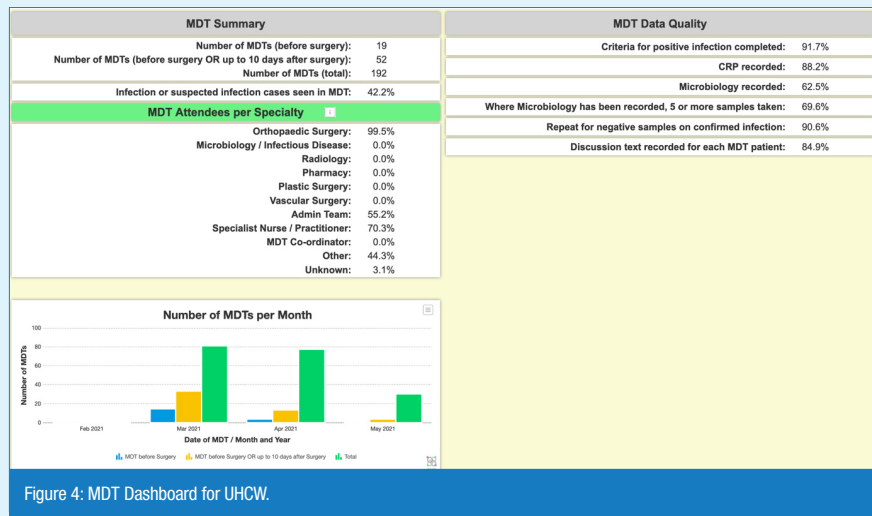


Figure 4: MDT Dashboard for UHCW.

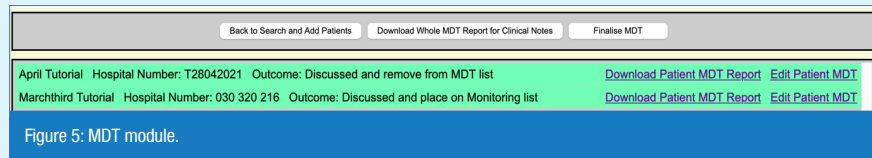


Figure 5: MDT module.

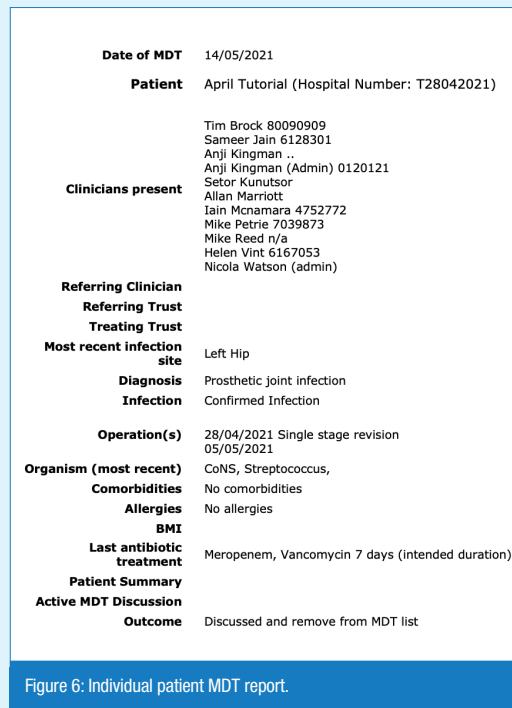


Figure 6: Individual patient MDT report.

It is the responsibility of the clinical team to obtain baseline PROMs (EQ5D-3L and EQ VAS)<sup>11</sup> at the time of a patients’ infection diagnosis. Once confirmed as an infection, the BAJIR team contact the patients to obtain their consent and follow up PROMs at six months and then annually.

**The BAJIR MDT module**

Recently BAJIR have launched their MDT module which we have used to support both our BIGCOW and Complex Hip and Knee Arthroplasty (CHAKA) MDT meetings. The module is user-friendly and provides a comprehensive summary of the meeting which can then be inserted into the patients’ paper or electronic record. The MDT Dashboard provides an audit trail of the meeting to satisfy individual revalidation and the revision arthroplasty BOASTs (Figure 4).

Any patient uploaded to BAJIR from an individual Trust can be added to their MDT list for discussion. The software also allows for patients to be referred to the BAJIR MDT module of their Major Revision Unit to support the imminent hip and knee revision networks. However, for this to be possible all the units within a given network need to be registered with BAJIR.

During MDT discussion the patient’s record can be accessed and updated accordingly, the discussion is summarised and a patient outcome confirmed (Figure 5). At the conclusion of the meeting the MDT is finalised and a summary document produced

for each patient (Figure 6). BAJIR provides an audit log of all MDT meetings, including all patients discussed, their outcomes and the clinicians present.

**Challenges of BAJIR**

In spite of our unit’s enthusiastic support of BAJIR we have encountered a number of challenges with incorporating it into our practice and we have a number of concerns that will need addressing going forward.

In our unit, the administration of the registry is reliant upon the clinical fellow and specialist nursing team. An investment of clinical time is required that is currently approximated at three to four hours every fortnight. Although financial incentive has been promised to Major Revision Units through the Revision Knee Network this will only apply to a small number of Trusts in the country. Until adequate financial support for all units across the UK is agreed, BAJIR engagement will continue to rely upon enthusiasm and good will alone, which will impede its universal adoption.

Despite BAJIR being well-established within our unit, we do not have the buy-in from all of our subspecialty colleagues and we are working on increasing engagement to ensure we capture all bone and joint infection managed at our Trust.

Similarly, our sub-regional revision network involves units who are not yet registered with BAJIR. Currently, we are only contributing

those patients who are referred to our unit with PJI, rather than all bone and joint infection within the network.

**Summary**

- The number of Trusts registered with BAJIR continues to grow but work is required to achieve the ultimate aim of adoption by all Trusts in the UK.
- As the number of participating Trusts increases, so too will the number of submitted patients with a confirmed bone and joint infection.
- The evidence thus generated will be a powerful tool to inform best practice, direct research and provide information for commissioners of healthcare.
- Securing financial support to all units for the administrative provision of the registry should promote BAJIR engagement.
- At this point in time, there is no other registry comparable to BAJIR in the world.

**Disclosures**

Mike Petrie sits on the BAJIR Executive Committee; Pedro Foguet sits on the BAJIR Steering Committee. ■

**References**

References can be found online at: [www.boa.ac.uk/publications/JTO](http://www.boa.ac.uk/publications/JTO).