Appendix 7
Good Practice - Audiology Case Study

Objective
To learn from best practice by testing the concept that implementing a technical solution that meets the requirements of, patients, staff, Betsi Cadwaladr University Health Board (BCUHB) and Welsh Government (WG) is a sustainable solution.

Context
The audiology patient management system, Auditbase (AB), has a wide yet integrated set of functionalities that enable the processes that serve patients and service delivery. This includes clinical appointments, diagnostic assessment, identification and development of individual needs, hearing instrument provision, fitting and verification, patient reported outcome measures (PROMs) medical device stock management, audiology appliance ordering and fitting, onward referral and individual patient record including communication with others. Underpinning this patient service is a robust scheduling and racking system and an extensive and accessible set of data that supports comprehensive demand and performance management.

The solution is an example of best practice within North Wales demonstrating effective use of digital technology, superior business performance and harmony between activity and the technology that support the department.

System Users
The audiology patient management system has been in use in North Wales for more than 20 years and therefore many of the audiology staff will have never known anything other than a fully integrated and paperless audiology system.
Administrative staff use the system for all their activities from timetabling and booking clinical and non-clinical diaries to accessing individual patient records as part of the triage of patient phone enquiries.
Similarly many clinicians will have always used AB, those who remember a time before AB will report a huge change in the way we record and use information across the service and along the patient pathway, from accepting and recording referrals in, to measuring and recording patient reported outcomes (PROMs).
Currently, service users have minimal interaction with the system apart from use of the appointment checking in screens within our main out-patient clinics and appointment text

reminders generated by AB. However, recent innovative Auditbase and technological developments will lead to a more patient facing element to the system this year.

Influences
Auditbase has continued to evolve locally and nationally and changes have been influenced by a number of factors.

The merge of the three NHS Trusts in North Wales provided a significant opportunity to merge the three Audiology databases previously used within the old organisations. This provided an opportunity to align the use of the systems and redesign much of the functionality to better meet the needs of the service and patients. This includes national requirements around referral to treatment times and the improved use of the referral module within AB to enable more meaningful tracking and monitoring of patients through their various clinical pathways and providing the audiology leadership team with more detailed and accurate performance data.

Similarly a strategic focus on value based healthcare and the need for patient reported outcomes (PROMs), as well as local clinical research and development activity and the development of a new audiology PROM at BCU, has led to ABs most recent development and the inclusion of the BCUHB Individual Management Plan Outcome Score (IMP-OS) within the latest AB IMP module. The need for this development was identified locally and supported by IM&T capital investment.
These changes continue and the development of a patient facing App to enable people to record their progress and outcomes against their individualised needs, that then feeds back into AB, is an example of what is on the horizon.

Staff have been, and continue to be, able to influence the direction of development both through input as members of a UK wide AB user group and AB user forum but also through direct communications and commissioning of AB to develop modules to meet the needs of the service in North Wales. More recently a Wales AB user group has been set up that will be able to consider and suggest changes and developments that will be relevant and useful to services and Health Boards throughout Wales.

Changes
Audiology is unrecognisable in many ways from the time before Auditbase. The department is essentially paperless with most information integrated and reportable within AB. We have changed to a complete paperless system and patient record that is fully integrated with diagnostic test equipment and intervention technologies where diagnostic results are automatically pulled through to the system rather than having to be input manually.
The system also interfaces with other patient management systems so that core demographics can be transferred and with reporting software so that the database and the majority of its variables can be queried and reported on.

More recent changes have seen access extended so that ENT colleagues can access diagnostic assessment results with AB viewer licences and without the need to print paper copies of test results or reports. This has been piloted within certain clinical areas and provides ENT surgical colleagues access patient's latest results whether in clinic or in theatre.

Additionally, changes to hearing instrument technologies and their integration with AB is leading to a number of patient facing changes providing opportunities for a more direct interface between patients and their audiology record.

Benefits

There are numerous and varied benefits provided by Auditbase these include:

To the clinician:

- easy and efficient access to patient records; integrated systems, all accessed through the patient record for diagnostic assessment, fitting and verification of hearing instruments, stock management, onward referral, outcome measures (clinical and pathway).
- Ability to have clear timetable view to see their own and other colleagues work load, and be able to filter this easily across whole of BCU to enable available/appropriate appointment slots for patients and meetings with colleagues.
- Ability to log not only clinical but non clinical work and to be able to search for that.

To the Service:

- Reliable and robust performance data easily accessible for demand, waiting times and activity across all pathways, locations, appointment types and other variables.
- Use of a bespoke PAS link allows quick, efficient and accurate patient demographics to be transferred to Auditbase.
- Ability to limit functionality of users dependent on their role and also restrict access to particular patient data if required.
- Fully auditable regards users operations conducted.
- Most recent developments will enable reporting of PROMs and evaluation comparing outcomes for different variables such as patient demographics (e.g. age, location), condition (e.g. level of hearing loss), intervention (e.g. uni v bil, hearing instruments; access volunteer support). This information will help the service to focus service development activities where needs are greatest, to address health inequalities and to inform value based healthcare for audiology.
- Reliable stock management system recording serial numbered devices against individual service users, their device history and stock levels held within the service. With the possibility of automatic re-ordering or notifications when stock reaches minimal levels that the service can set.
- Robust integrated patient record system where no records are misfiled or lost and all are accessible from any location including home visits where an off line data base can be created and systems can be synchronised following the visit.

To the service user:

- integrated record meaning the clinician has all of their audiological information to hand when required.
- Service user appointment self-check in module when attending appointments.
- Direct service user benefits are increasing imminently as we implement significant service development changes from March 2021. The latest hearing instruments being fitted have the facility for hearing aid users to request remote support (asynchronous) via a smart phone App and an audiologist will be able to reprogramme their devices and send new programmes back to them for upload, consideration and use. This will also include live (synchronous) remote programming of hearing instruments during remote consultations.
- Further patient facing facilities are under consideration for development including a smart phone App that would enable service users to record and upload PROMs to the AB module.

Critical Success Factors

The success of AB is due to a number of factors. Direct input into the initial design and vision of the system to ensure it was fit for purpose and useable. It has also been essential that this input and development is ongoing to ensure that AB continues to meet the needs of services and adapts to the changes both within and external to audiology.

It was critical that audiology service had some 'ownership' as to the use and local set up of AB and this has required the development of an Audiology IT team who have AB system administration rights and who understand the system well enough to exploit its functionality and influence local and national developments.

Support from and good relationships with HB IM&T and a commitment to support the system was and will continue to be essential to AB success both day to day and as part of its evolution and development.

Lessons Learnt

There have been many lessons learnt, some of which we were fortunately able to respond to when we merged database across North Wales some years back.

Having a clear vision as to how the system looks and is operated by the user is important if you want to see the system fully used and valued. Involvement of as many people as possible in design and set up is key to that. Equally, fully understanding what information you want to extract from the system is essential to its set up. The information we are able to pull out is only as good as the information going in.

Whilst local development and set up is needed to maximise local use and value, there is a potential additional value in aligning systems across regions and nationally. If key elements of the systems had been more aligned across Wales, for example, we may have been able to access bigger data sets to better inform service evaluation and development. However, it is noted that opportunities to innovate and develop the system locally is essential and it would be important to strike the right balance between core set up regionally/nationally and local flexibility to support innovation and change.

In the early days it was important that we committed to the change and made the leap, as the temptation to run duplicate systems whilst you get things right is very strong. Taking time to prepare well and set things up is important so everyone feels comfortable and confident in the change.

Again and finally, strong relationships with local IM&T teams and the system provider has proved vital throughout our journey with Auditbase, so that issues can be resolved in a timely manner and so as not to disrupt service delivery, so that changes and development can be supported when they are required and so that the system remains sustainable and viable 20 years on.