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Barnsley Hospital – How to Improve Service and Reduce Costs

In December 2015 Barnsley Hospital's Executive Team commissioned a review, the objective of which was to deliver a comprehensive modernisation programme that would move Medical Imaging from a "support service" to an integral service within the hospital. It recognised Radiology's pivotal role in patient flow due to the potential to impact on (i) shortening length of stay through prompt diagnosis, (ii) improving patient pathway efficiencies and (iii) contributing to the Trust's income through increased market share.

At the time the department faced a combination of challenges that included insufficient investment, lack of service development, legacy equipment failure, increased demand and high staff turnover. The review proposed focus on four key areas: Workforce; Capacity and Demand; Patient Experience; and Facilities and Environment, with each workstream commencing in March 2016. Remarkably, despite higher than projected increases in demand and budget cuts in the Radiology workforce in recent years, the programme delivered increased capacity and significant reduction in costs.

In summary the following changes were implemented across the department as a result of the report:

- Adjustments to the skill mix and working patterns of staff resulted in significant cost avoidance, a more streamlined service and higher morale.
- Efficiencies were achieved through implementing new internal and external booking processes and electronic requesting, which improved relationships with other departments and GPs and also delivered cost savings.
- An update of the departmental footprint - that was made possible through an upgrade to DR equipment with a very cost effective retrofit investment - which improved patient experience and returned some space to Estates for re-purposing.

The DR upgrade consisted of retro-fitting three existing CR rooms and the addition of a new DR mobile unit. By reducing the number of x-ray rooms from five to four the department successfully phased out aged assets whilst upgrading residual functional CR equipment to DR. The programme also delivered cost savings on servicing and enabled the department to be re-modelled using the freed space. The retro-fit solution demonstrates how to achieve all the benefits of DR without the cost of a full DR upgrade, and with minimal disruption – installation of all three rooms was completed in just a few days. In addition, when the rooms eventually need to be replaced the detectors and software licences that have already been purchased can be incorporated, further reducing future capital requirements.

The DR retro-fit has transformed plain film activity at Barnsley, converting the department from being exclusively CR to almost exclusively DR. The new equipment has delivered significantly improved image quality resulting in greater accuracy in diagnosis, whilst achieving a 20% reduction in dose and more efficient patient flow. The number of examinations has increased by nearly 10% across the department, and the productivity uplift per room is over 36%, demonstrating the department's ability to increase efficiency whilst reducing the number of rooms. Radiographers have benefited from lighter, ergonomically designed equipment that allows them to image patients more quickly and deliver more efficient workflow as images are instantly available. The new DR mobile now performs almost 80% of the mobile examinations and is the clear favourite amongst the radiographers and ward-based clinicians, leaving the remaining 20% split between the 5 legacy mobiles.

The new equipment was a cost neutral solution for the department due to the significant savings in capital expenditure when compared to the cost of replacing with full DR rooms. Savings were

made by reducing the number of rooms and reducing the number of assets. Because the efficiencies delivered by the new equipment resulted in a quicker turnover of patients, the department was also able to make an adjustment in staffing levels and skill mix.

The NHS Benchmarking Network Toolkit 2016/17 results* show a dramatic improvement in Barnsley's service, ranking it as one of the top performing organisations for NHS Imaging Diagnostics. The service has maintained its commitment to reporting 95% of all examinations within 8 days, and whilst the average number of unreported studies across the NHS is 2725, Barnsley's numbers are consistently in single figures. The department is one of the leanest organisations across the group in terms of staffing and despite this only outsources 4% of its reporting, whilst the national average for teleradiology is 10%. Patient satisfaction is very high and the financial results demonstrate that this high quality service has been delivered within an average expenditure budget. These results reflect the successful implementation of a department-wide plan that delivered on every measurable metric.

* Draft results at the time of writing

Quick Reference Comparison

	Room Solution	Fujifilm Retrofit
Improved image quality	Yes	Yes
Reduced dose	Yes	Yes
Increased departmental throughput	Yes	Yes
Increased departmental capacity	Yes	Yes
Improved radiographer efficiency	Yes	Yes
Full range of image processing tools available	Yes	Yes
Full range of detectors available	Yes	Yes
Potential for detectors and console to be used in future room solution	N/A	Yes
Compatible for mobile units	No	Yes
Extend life of functioning CR equipment	No	Yes
Installation time	Weeks	1 day
Departmental disruption	Significant	Minimal
Turnkey costs	Significant	None
Turnkey disruption	Significant	None
Staff training required	Significant	Minimal
Capital expenditure	Significant	Minimal

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