

Digital Transformation of a Multidisciplinary Diabetes Foot Service in South Derbyshire, UK.

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Background

The National Health Service (NHS) in South Derbyshire (UK) has a well-established, integrated multidisciplinary diabetes foot team (MDFT) service, with care delivered to patients across acute, community and primary care settings.

Guidelines set by the National Institute of Clinical Excellence (NHS England, NICE) recommends that all patients with diabetes and active foot ulcers are referred to the multidisciplinary diabetic foot team (MDFT) within 24 hours of the diagnosis of a diabetes foot ulcer.

With more widespread awareness of these guidelines, the number of patients being seen in MDFT clinics is rising and many NHS Diabetes services are now struggling with capacity.

In Southern Derbyshire, UK, the MDFT foot clinic is based at the Acute Hospital Trust, University Hospitals of Derby and Burton NHS Foundation Trust.

The continued rise in the number of patients seen in this service was considered unsustainable and was leading to a poor patient experience with long waiting times in the out-patient clinic (Figure.1).

For this reason, a change in the organisation of the service was sought, with an emphasis on patients being seen closer to home in a time appropriate manner and without any loss of quality of service.

Diabetic Foot Patients Presenting 2011 - 2022

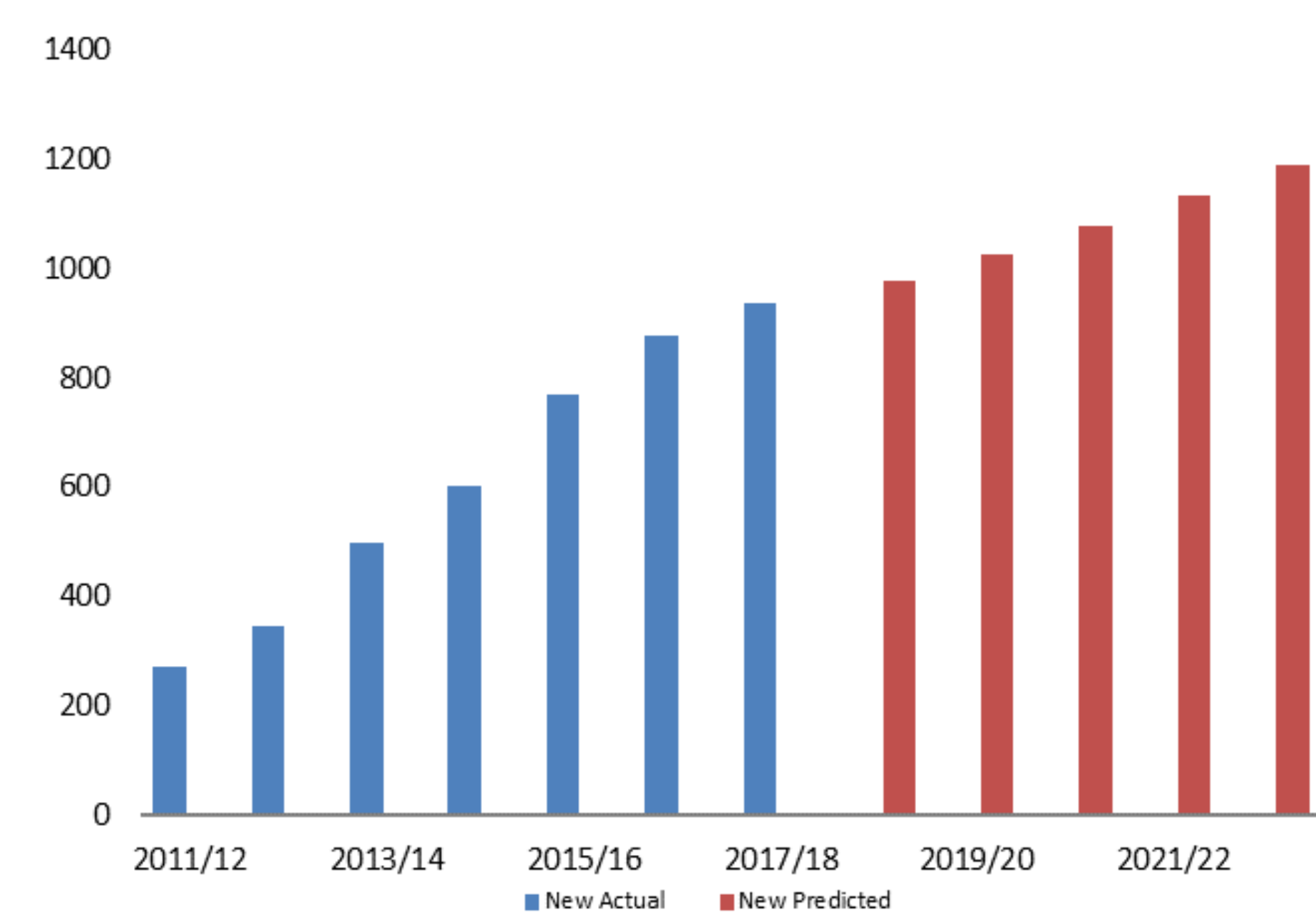


Figure 1: Increase in New Diabetes Foot Patients presenting to the service 2011 – 2018 (New Actual) and 2019-2022 (New Predicted), with technology-enabled MDFT model of care in place.

Aim

To describe our experience with developing and delivering a technology-enabled new model of care for an integrated diabetes foot service, using a digital wound imaging and data management system (Silhouette®, ARANZ Medical Ltd). The system design and wound assessment summary screen is shown in Figure 2.

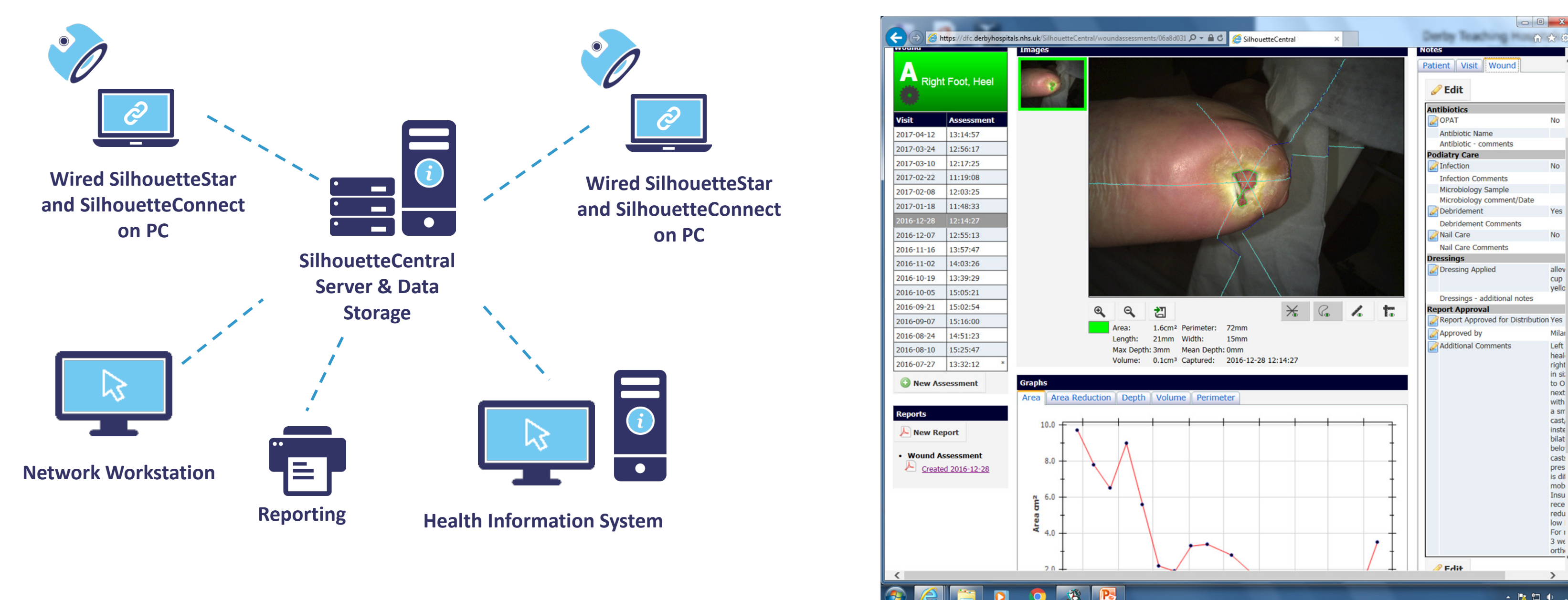


Figure 2: Digital wound assessment and data management system (Silhouette, ARANZ Medical) deployed for the new model of care.

Method

Digital Diabetic Foot Ulcer (DFU) monitoring has been established with a web-enabled digital wound monitoring, reporting and communication solution (Silhouette®, ARANZ Medical Ltd). The DFU assessments are conducted with a digital wound imaging and 3D wound measurement device (Figure 3).

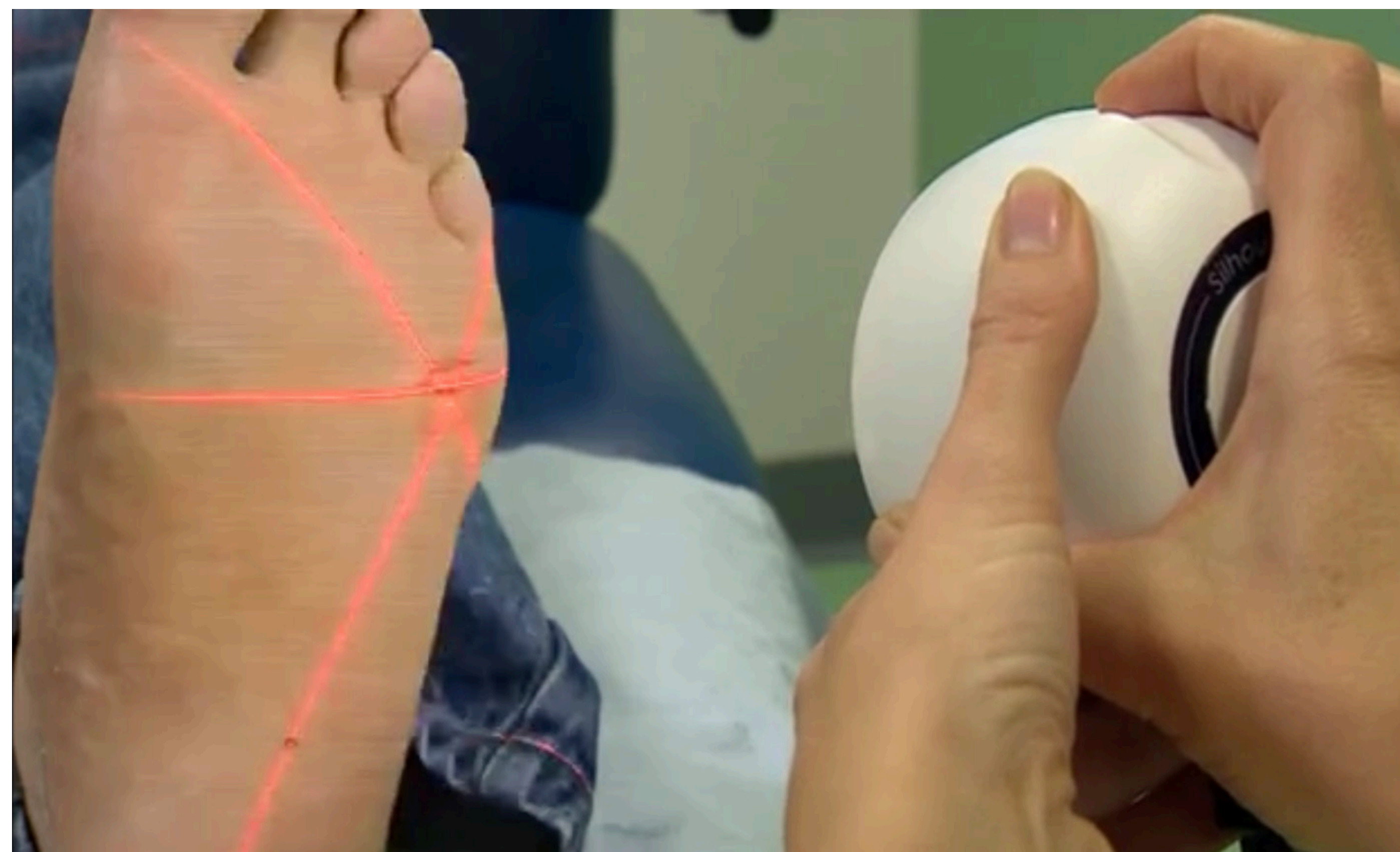


Figure 3: Non-contact, 3D digital imaging and measurement of the diabetes foot ulcer at point of care.

The adoption of the technology has allowed health care professionals at different sites to share objective DFU data, simultaneously review ulcer status and offer advice on management of the patient. This virtual MDFT capability has enabled care closer to the patient. Once stable, patients are seen in community clinics by specialist diabetes podiatrists with distant monitoring support from consultants.

Rapid escalation of patients back to the MDFT, if necessary, is facilitated by the availability of data and reports across all settings and integration of the system with the Trust electronic medical record system (EMR) and electronic document management system.

An evaluation was conducted throughout the initiative to monitor and measure the impact of the new model of care, using surveys and collecting data on patient activity by care setting.

This has involved joint work in planning and implementing a new model of care, led by the University Hospitals of Derby and Burton NHS Foundation Trust and involving the Derbyshire Community Health Services NHS Foundation Trust, NHS Derby and Derbyshire Clinical Commissioning Group, East Midlands Academic Health Science Network and industry partners.

NHS
University Hospitals of
Derby and Burton
NHS Foundation Trust

NHS
Derbyshire Community
Health Services
NHS Foundation Trust

**East Midlands
Academic Health
Science Network**
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Results

- The new model of care was implemented in September 2016. Prior to this, the service's New-to-Follow-Up appointment ratio at the out-patient clinic was 1:10. This has since decreased to a 1:6 ratio due to increased capability to deliver care in the community (Figure 4).

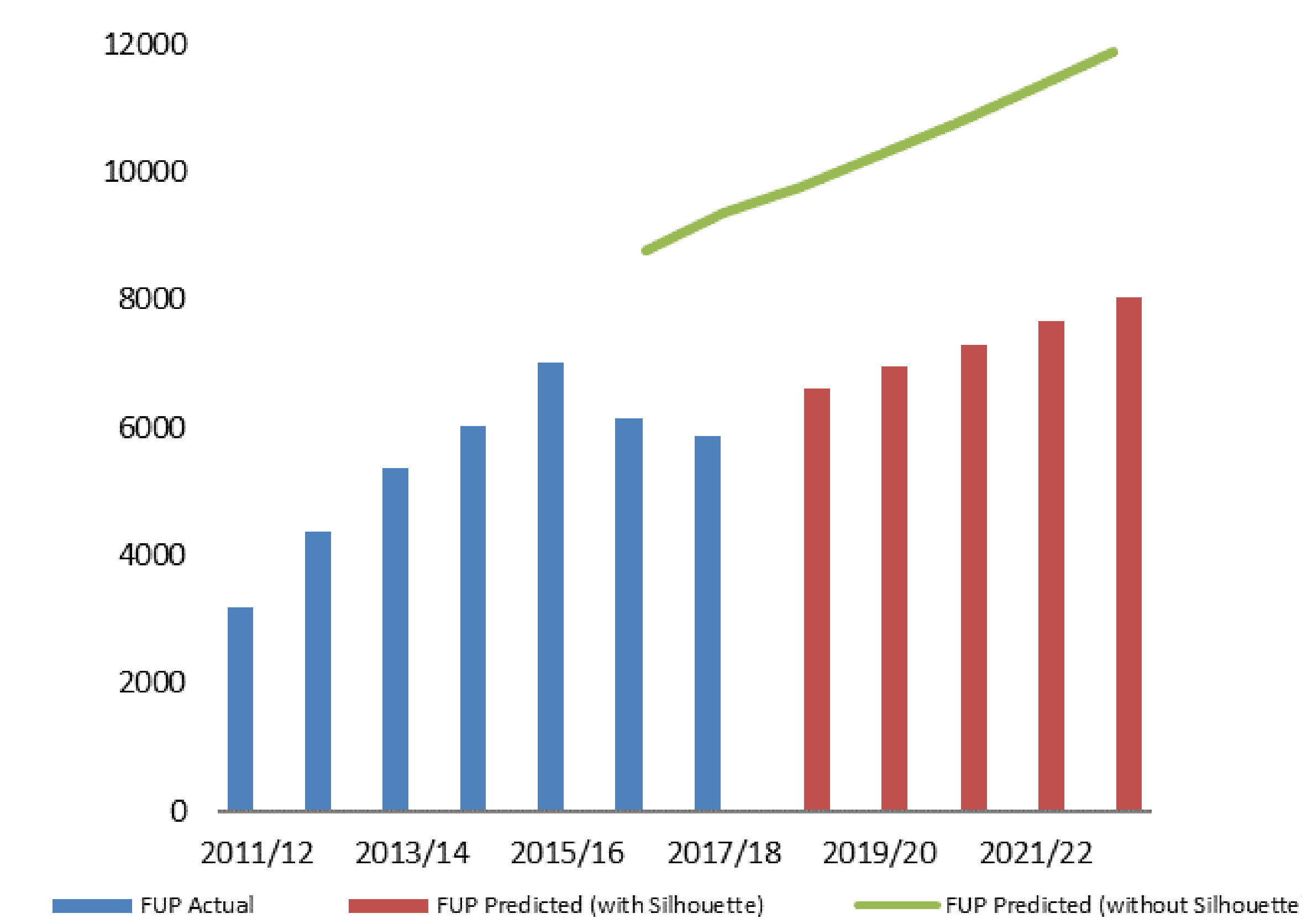


Figure 4:
Follow-up demand (FUP) predicted in future has been reduced, with Silhouette in place (red bars) compared to higher level of FUP predicted without Silhouette deployed in service (green line).

- Improved access to clinical data and co-ordination of patient cases, with associated time savings.
- The acute MDFT can manage appointments for new and higher risk patients at a faster rate due to the reduced bottleneck in the hospital clinics.
- Manual writing of reports and letters has been replaced with automated, digital reporting, releasing staff time for other activities.
- On average from January 2019 to December 2019, 19% of patient appointments were delivered in community relative to the baseline (September 2016). This is contributing to a reduced cost of service delivery per patient based on payment by results tariff and localised community tariff (Figure 5).

% Reduction

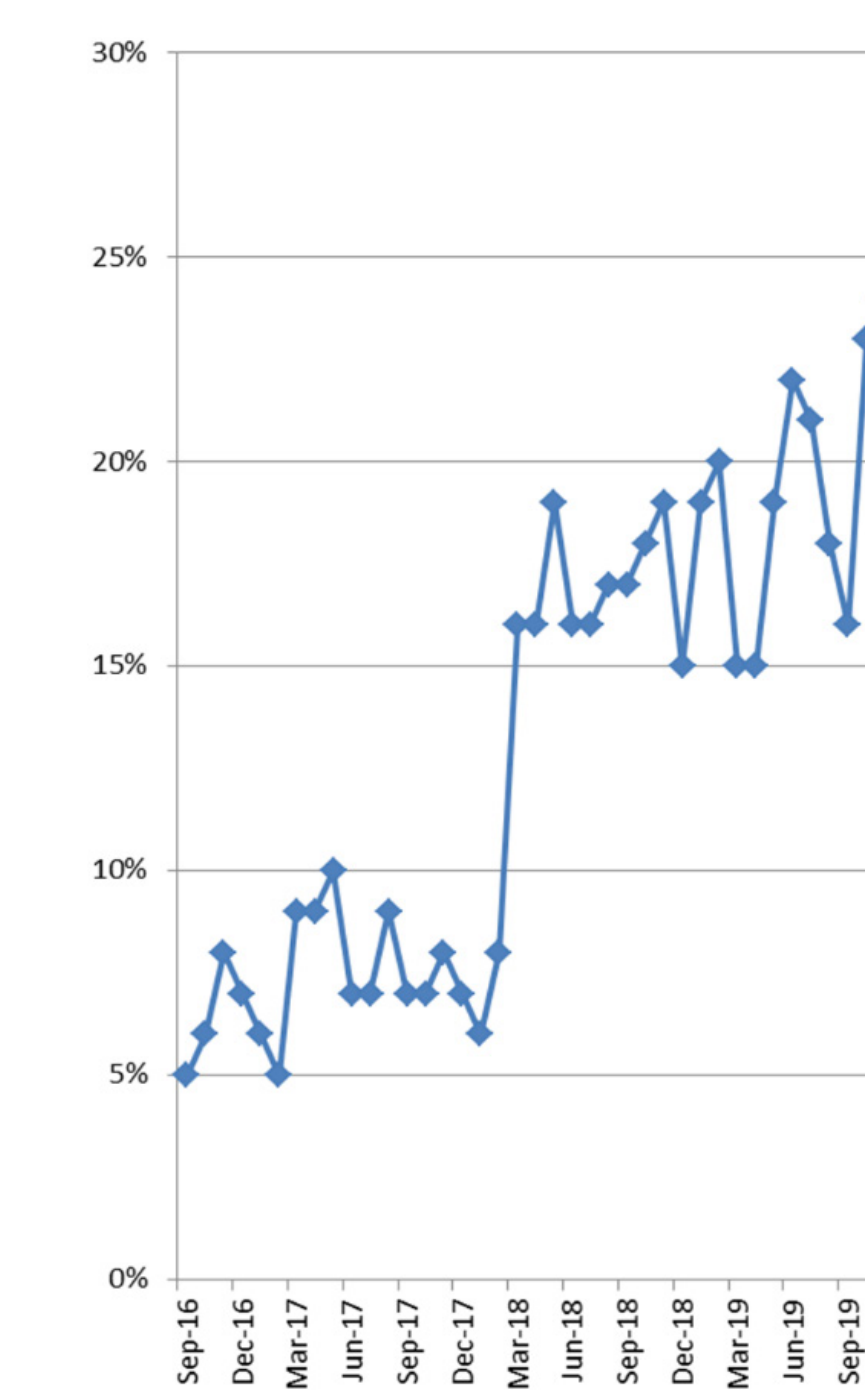


Figure 5:
The initiative reduced acute out-patient appointments by an average of 19% by transferring to community clinics between Jan 2019 and Dec 2019.

- Patient feedback is positive, with the availability of community clinics increasing convenience and access to the service. 72% of patients are being seen within 30 minutes of their planned appointment time, compared to only 3% at baseline.
- 85% of patients advised that the technology has increased their confidence in the care that they receive.
- 71% of patients feel better informed about their foot care.
- Preliminary review of National Diabetes Foot Audit data indicates that there has been no deterioration of amputation rates with this new pathway which relies on greater levels of community-based care. Further analysis is being undertaken.

Conclusion

Several positive outcomes have been delivered by the new model of technology-enabled diabetes foot care established in South Derbyshire:

- The service has built capability to manage diabetes foot patients in the community safely, combined with improved operational efficiencies and a lower cost of service delivery across the whole system.
- Remote monitoring of ulcers, with rapid escalation and de-escalation of care means that patients can be seen closer to home. The ability to refer high risk patients to a virtual MDFT minimises risk of deterioration of the ulcer.
- Service access has improved for patients, with higher satisfaction scores from service users due to improved service experience (Figure 6).
- The service has achieved the key goal of developing a sustainable model of care in a challenging UK health system which is seeing a rising diabetes patient population and constrained professional and financial resources.



Figure 6:
“Being able to have my check-ups at my local clinic is great. I have less distance to travel and it makes getting to appointments much easier. The process of being scanned using Silhouette is also quick and I can see how my ulcer is progressing at each appointment.”

Patient DH, Service User Feedback Survey, 2018.

Key Learnings

- It was critical for the service to identify the purpose of the transformation and to have agreement across the health system on the expected benefits of the initiative. This impacts the scope and return on investment expectations.
- The stakeholders involved in this service transformation were required to provide considerable commitment, time and effort towards communications, clinical workflow planning and leading change.
- Integration of the digital wound assessment system with our electronic patient record system was critical for connected care and required effort and time from clinical and IT leads. This needs to be anticipated and planned in advance.

For Further Information

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