Vanguard Healthcare Solutions

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SOCIAL IMPACT OF VANGUARD ACTIVITIES

Report for Vanguard Healthcare Solutions

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EXECUTIVE SUMMARY

Vanguard Healthcare Solutions is a medical technology company, with 20 years of experience across a range of healthcare specialisms and services. Vanguard's mobile and modular capacity offers hospitals additional, flexible clinical space. Vanguard commissioned Frontier Economics to explore the social impact created by Vanguard's activities, in particular the benefits for patients and for the NHS.

Our analysis was underpinned by an impact framework. We identified two direct impacts of Vanguard activities:

- **health and wellbeing gains for patients** treated in Vanguard facilities; and
- **financial and operational benefits for Vanguard's NHS partners**.

These direct impacts are the focus of this analysis. We also identified potential indirect social impacts, including: reduced future use of NHS services; reduced care burden for patients' family/carers; and increased economic contribution of patients following treatment in Vanguard facilities.

Our results are summarised in the following figure:

Impact of a Vanguard facility across a year:

	Benefits to patients	Benefits to NHS partner	
	Health and wellbeing	Tariff income	Waiting times performance
Orthopaedics e.g. hip / knee surgery	**338 Quality-Adjusted Life Years** (QALYs) – equivalent to **375 additional years of life** **£6.8 million** social value	**£3.4 million**	**4.5%pt** improvement
Ophthalmology e.g. cataract surgery	**192 QALYs** – equivalent to **214 additional years of life** **£3.8 million** social value	**£3.2 million**	**10.8%pt** improvement
Endoscopy e.g. diagnostic colonoscopy	-	**£1.4 million**	**18.4%pt** improvement

1 Introduction

Vanguard Healthcare Solutions is a medical technology company, with 20 years of experience across a range of healthcare specialisms and services. Vanguard has supported more than 100 UK hospitals and is part of the NHS Supply Chain framework. Vanguard provides mobile and modular healthcare capacity, and has carried out the most clinical surgical procedures of all mobile healthcare companies in the UK: over 300,000 procedures.[1]

Vanguard's mobile and modular capacity offers hospitals additional, flexible clinical space. Vanguard facilities can include operating theatres, day surgery facilities, outpatient clinics, ward capacity, endoscopy suites and decontamination. Vanguard can provide staffed or unstaffed facilities, and these can be provided for shorter or longer periods. This flexible capacity supports NHS hospitals to deliver patient care and reduce waiting lists, even when existing hospital capacity is unavailable (for example, due to maintenance or refurbishment).

Vanguard commissioned Frontier Economics to explore the social impact created by Vanguard's activities. We were asked to focus on Vanguard's mobile facilities across three clinical areas, which account for the largest number of clinical procedures undertaken in Vanguard facilities:

- orthopaedics;
- ophthalmology; and
- endoscopy.

We were asked to explore the benefits for patients and for the NHS.

The following sections describe our approach and the results of our analysis. This report provides a robust starting point for future work by Vanguard, to further understand – and to increase – its social impact.

[1] https://www.vanguardhealthcare.co.uk/about/expertise/

2 Approach

This section describes the approach we have taken to explore the social impact created by Vanguard's activities.

2.1 Impact framework

Our analysis was underpinned by an impact framework. This describes clearly the range of potential impacts of Vanguard activities. We developed the impact framework based upon an initial literature review, our past experience of similar activities, and discussions with Vanguard.

The impact framework is shown in Figure 1. It shows that there are multiple potential drivers for an NHS hospital to consider a Vanguard mobile facility, such as requiring replacement capacity while an existing operating theatre undergoes maintenance, or requiring additional capacity to bring down patient waiting lists. In all these cases, the Vanguard mobile facility allows the NHS to care for patients, when absent the Vanguard mobile facility this would not be possible. The 'counterfactual' (what would happen absent Vanguard) is discussed more in section 2.3.

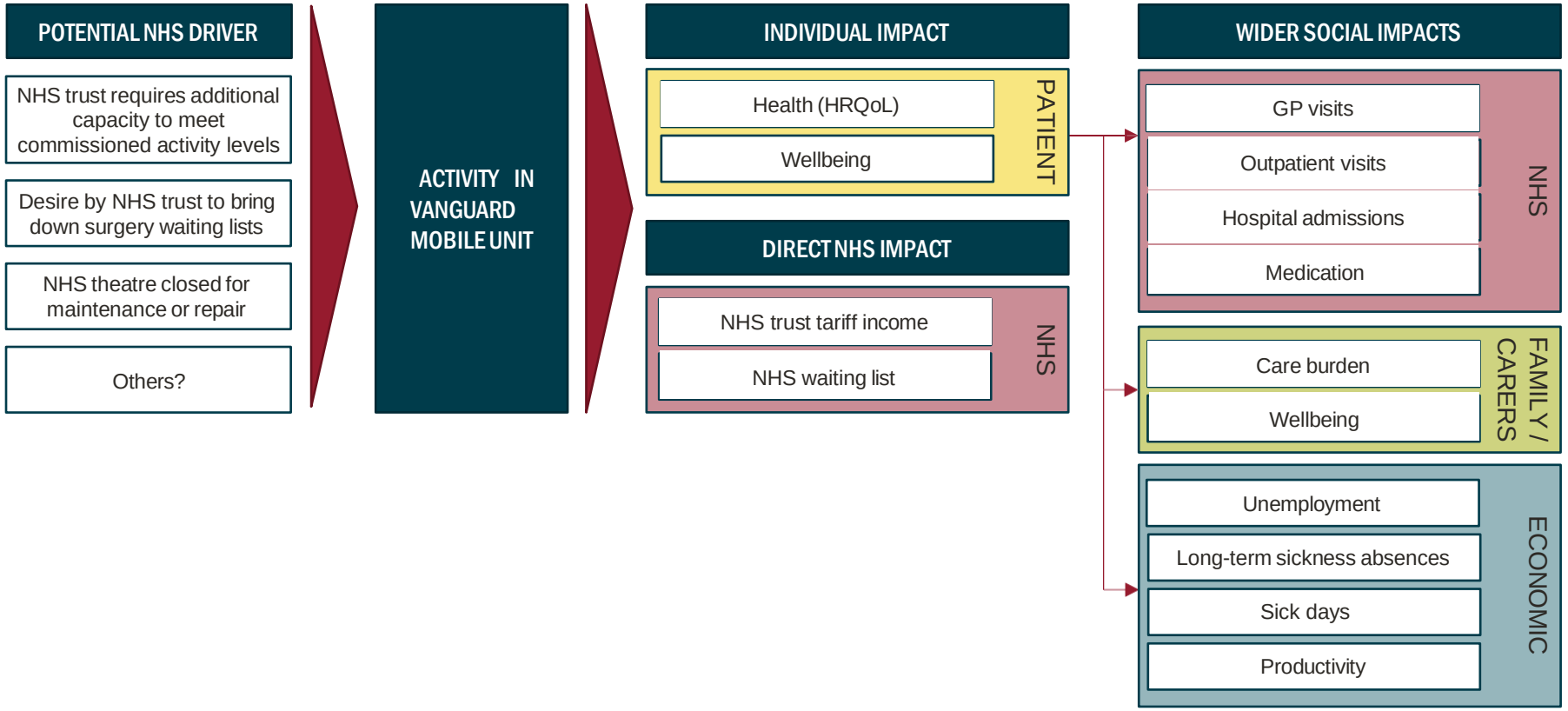
The impact framework illustrates two direct impacts:

- **Individual health and wellbeing impacts.** The primary benefit of delivering patient care is that those patients' health and wellbeing can be improved, perhaps by treating an existing condition, or diagnosing a new condition. This benefit is referred to as health-related quality of life (HRQoL) gain.
- **Direct financial and operational NHS impacts.** There is also a direct benefit for the NHS hospital. By maintaining (or increasing) patient care activity, this protects (or increases) the tariff income they receive, and contributes to reducing patient waiting lists.

The impact framework also illustrates three wider social impacts. These are indirect or 'knock-on' impacts, which occur as a consequence of individuals' improved health and wellbeing:

- **Indirect NHS impacts.** Individuals' use of NHS services may decrease, due to improved patient health e.g. they may require fewer GP appointments, outpatient visits, hospital admissions or medications.
- **Indirect family/carers impact.** Improved patient health may lead to improved wellbeing for the individual's family and/or carers, for example due to a reduced care burden.
- **Indirect economic impact.** Improved patient health may increase their economic contribution, for example due to moving into employment, or experiencing fewer sickness-related absences.

Figure 1 Impact framework



Source: Frontier Economics

2.2 Focus for this analysis

This analysis has focused on the two **direct impacts** identified in our impact framework:

- individual health and wellbeing impacts; and
- direct financial and operational NHS impacts.

2.2.1 Wider social impacts

This analysis has not explored the wider social impacts. However, our initial literature review suggests the potential significance of these impacts.

For the NHS, treating a patient today may reduce their ongoing and future healthcare needs. This could include reductions in GP visits, hospital visits or medications. A reduction in demand for these services creates a benefit to the NHS, either as a cash saving (e.g. reduced prescription costs) or a capacity gain (e.g. reduced demand for GP appointments or hospital beds, which can be used for other patients). Although the primary reason for undertaking any healthcare intervention is the benefit to the patient – rather than the impact on NHS costs – this impact is considered by the National Institute of Health and Care Excellence (NICE) in its assessments of treatments' cost-effectiveness.[2]

For family and carers, there may be a significant care burden, which can be reduced due to effective patient treatment. The size of this care burden, and the extent to which it can be reduced, typically depends upon patient characteristics and their medical conditions.[3]

For the wider economy, there is a well-established link between individuals' health and their economic contribution.[4] This may be due to the individual's ability to work, or long- or short-term sickness absences, or in-work productivity.

Ophthalmology provides an illustration of these potential costs. For example, untreated cataracts can lead to blindness.[5] Fight for Sight (2018) estimate that across the UK, sight loss and blindness lead to

- £3.9bn in health and social care costs (approximately £1,400 per visually impaired person)[6];
- £8.5bn in informal care costs (£3,000 per person); and

2 For example in orthopaedics, see NICE (2014) and NICE (2020).

3 See Lindt et al (2020) for a systematic review.

4 See Bloom and Canning (2003) and Bloom et al (2019).

5 The International Agency for the Prevention of Blindness (IAPB) reports that the proportion of blindness due to cataract among all eye diseases is 15% in high income regions. https://www.iapb.org/learn/knowledge-hub/eye-conditions/cataract/

6 We note that this includes the costs of intervention (such as cataract surgery), rather than just the costs of 'untreated' sight loss and blindness.

- £7.4bn in economic losses (£2,600 per person).

These costs indicate the potential harms that might be avoided by access to timely healthcare interventions, such as cataract surgery. Fight for Sight (2018) also estimated knock-on impacts on education, devices and welfare costs.[7] There are also other potential impacts which could be considered, such as the environmental impact[8], or impacts on inequalities[9].

2.3 Counterfactual

Our analysis compares the impact of Vanguard activities with 'what would have happened absent Vanguard'. This is called the counterfactual. Several alternative counterfactuals could be used when considering the impact of Vanguard activities. For example, considering an individual NHS patient's surgery delivered in a Vanguard mobile theatre, absent Vanguard the 'true' counterfactual might be:

- the surgery would not have taken place at all;
- the surgery would have been delayed;
- the patient might have chosen to receive the surgery privately;
- the surgery might have taken place in an alternative temporary theatre; or
- the surgery might have taken place in an NHS theatre.

For the purposes of this analysis, we have assumed that if activity had not been undertaken in a Vanguard mobile facility, it would be significantly delayed.

Importantly, we do not assume that Vanguard is solely responsible for creating the social impact identified in our analysis. We expect that this **social impact will always be created jointly by Vanguard and its NHS partner**. For example, sometimes a mobile facility is provided with staff, sometimes without; but it is always the combination of Vanguard and NHS resources being brought together which allows for the delivery of patient care and the creation of a beneficial social impact.

2.4 Measuring and valuing impacts

To measure and value the social impact of Vanguard activities, we have used the approach set out in the following sub-sections.

7 We note that welfare costs are a 'social transfer' rather than a 'social cost'.

8 For example, Phull et al (2023) explore the environmental benefits of day-case surgery compared with inpatient surgery.

9 For example, NHS England's (2019) Long Term Plan emphasises the importance of delivering care more flexibly, in a variety of settings, to meet specific local needs and to reduce inequalities.

2.4.1 Individual health and wellbeing impacts

To measure individual health and wellbeing impacts, we reviewed academic literature on the HRQoL gain associated with receiving healthcare interventions within orthopaedics, ophthalmology and endoscopy. This literature often reports HRQoL gain using a metric called Quality Adjust Life Years (QALYs). QALYs are used to measure how long someone lives, and the quality of this life. A value of 1 QALY is equivalent to one year lived in perfect health, whereas a value of 0.5 QALYs is equivalent to *either* six months lived in perfect health *or* one year lived with quality of life reduced 'by half'. QALYs are a widely-used and recognised measure of HRQoL. When patient care (e.g. a knee surgery) improves an individual's quality of life, this can be measured as a gain in QALYs.

In calculating the HRQoL impact due to activity in Vanguard mobile facilities, we assume that the patient gains 1 year of the 'QALY gain' of the healthcare intervention undertaken. This is equivalent to assuming a 1 year delay to the procedure, absent Vanguard. [10]

We value QALYs gained at £20,000 per QALY, following the approach of the National Institute of Health and Care Excellence (2013).[11] This is the standard 'threshold' value which is used by NICE to determine whether the NHS should be willing to pay for any particular treatment. Therefore if patient care achieves an increase in quality of life of 0.1 QALYs, this is valued at £2,000.[12]

We also illustrate the value of QALYs gained by reporting the equivalent additional number of years of life. We assume an average quality of life for the general population based on NHS England (2023c), at 0.9 QALYs per year. Using this measure, each 100 QALYs gained are equivalent to 111 additional years of life, each lived with quality of life equal to 0.9.

2.4.2 Direct financial and operational NHS impacts

We measure the financial impact on the NHS by using the national unit prices from NHS England's 2023-25 Payment Scheme.[13] This provides a description of the tariff income received by NHS hospitals for undertaking different types of healthcare intervention.[14] We use

10 In reality, rather than the delayed patient 'joining the back of the queue', it may be more likely that all patients on a waiting list are delayed by a shorter period (with priority given to more urgent or severe cases, etc.). This would imply a smaller QALY impact due to Vanguard, but applied to a much larger number of patients.

11 References are included at the end of this report.

12 An alternative value for QALYs is often used across Government. HM Treasury's 'Green Book' (2022) suggests a higher value of £70,000 per QALY, when calculating the social benefits of public policy interventions. However, since NICE and the NHS tend to use the lower value of £20,000, and because this is more conservative, we have followed NICE in this report.

13 NHS England (2023b).

14 We note that these national unit prices may not always reflect the income received by an individual trust, depending upon its individual commissioning arrangements. Nevertheless, we believe they provide a useful guide to this income in most cases.

this to estimate the income which would be received by NHS partners for the activity which takes place in Vanguard mobile facilities.

In our analysis we assume that activity which takes place in a Vanguard mobile facility will 'increase' NHS partner income. This is the case if the mobile facility's capacity is additional to the existing NHS capacity. We note that if the mobile facility is instead replacing existing NHS capacity (for example, to cover scheduled maintenance), then instead the Vanguard mobile facility will protect, or to maintain (but not increase) the NHS partner income. However, in either case, the NHS partner income is higher that it would otherwise be, due to the Vanguard mobile facility.

We measure the operational impact on the NHS by using data from NHS England's Referral to Treatment (RTT) waiting times dataset.[15] This provides information on the proportion of patients waiting for treatment, and the number of weeks they have been waiting. We use this to estimate the proportion of patients who would miss the RTT 18-week waiting time target if their care were delayed in the absence of the Vanguard mobile facility (or equivalently, the proportion who meet the target due to being treated in the mobile facility).

In our analysis we assume that all activity which takes place in a Vanguard mobile facility will 'reduce' NHS partner waiting lists. As with the 'increase' to NHS partner income, this 'reduction' in waiting lists is a reduction when compared with the counterfactual scenario, in which the Vanguard mobile facility was not used. Additionally, we note that while RTT targets only apply to non-urgent, consultant-led treatment, not all patients treated in a Vanguard mobile facility will be non-urgent and consultant-led. Nevertheless, even if a patient treated in a mobile facility is an urgent case, in the absence of the mobile facility, that patient would have needed to be treated elsewhere within the hospital and would therefore displace non-urgent cases somewhere else.

2.5 Data and evidence

Our analysis has drawn upon the best available sources of data and information. The main sources have included:

- publicly-available evidence on the clinical impact of orthopaedic, ophthalmic and endoscopic healthcare interventions;
- publicly-available data on NHS tariffs and waiting times.
- data from Vanguard on the type of mobile facilities operated and activity levels in staffed facilities.

References are included at the end of this report.

15 NHS England (2023a).

2.6 Limitations and opportunities to improve this analysis

As with any analysis, the approach described above has some limitations, such as:

- our impact estimates are based on a basket of representative procedures, rather than estimating different impacts for different procedures; and
- our impact estimates are based on publicly-available evidence on clinical outcomes, rather than Vanguard or NHS partner-specific clinical outcomes data.

Further work could potentially be undertaken to mitigate these limitations. The analysis might also be extended, for example to include additional clinical areas, different types of mobile and modular facilities, or to include the wider social impacts identified in our impact framework. Over time, Vanguard may be able to fill some of these evidence gaps, by undertaking new targeted data collection or adapting existing processes to capture additional information.

3 Results

3.1 Orthopaedics

3.1.1 Individual impact

We estimate that the health-related quality of life (HRQoL) impact of orthopaedic surgery is approximately:

- 0.4 Quality Adjusted Life Years (QALYs) for a major orthopaedic procedure; and
- 0.1 QALY for a minor orthopaedic procedure.

These are conservative estimates, based on a range of academic literature.[16]

Applying the NICE threshold valuation of a QALY (£20,000), the social value associated with these quality of life gains is approximately:

- £8,000 for a major orthopaedic procedure; and
- £2,000 for a minor orthopaedic procedure.

These are also conservative estimates, noting again that HM Treasury's Green Book includes a higher suggested social valuation of a QALY (£70,000).

3.1.2 NHS impact – tariff income

Our analysis suggests that the average tariff income associated with orthopaedic procedures is:

- £4,000 for a major orthopaedic procedure; and
- £1,000 for a minor orthopaedic procedure.[17]

The precise tariff applied varies significantly, depending upon the specific procedure and the level of complications and comorbidities of each patient.

3.1.3 NHS impact – waiting list

Our analysis suggests that 440,000, or 54% of trauma and orthopaedics patients currently start treatment within the 18-week RTT target across England.[18] Of these patients, approximately 25,000, or 3% of the total list, are seen in week 18 i.e. are against the 'boundary'

16 References are included at the end of this report.

17 These tariffs include an average Market Forces Factor (MFF) uplift. Each NHS trust has its own MFF value. The tariff paid to a particular trust may vary by up to around 15% (above or below) the average.

18 Data is for March 2023, the latest available at the time of analysis. It was not possible to identify the waiting times for different sub-specialisms or specific procedures.

of the RTT target. At the level of a typical individual NHS trust, there may be around 500 of these 'boundary patients'.

Our estimate for the impact of Vanguard mobile facilities is that every 18 patients seen in a mobile facility each week will improve the NHS partner's RTT performance by 0.1%pts (e.g. increasing from 60% being treated within 18 weeks, to 60.1%).

3.1.4 Illustration for Vanguard mobile facility T44 (South East)

The box below illustrates the social impact that can be created by an actual Vanguard facility.

Example Vanguard mobile facility: T44 orthopaedic surgery

Vanguard mobile facility T44 provided additional capacity for orthopaedic inpatient surgery to an NHS trust. It is a staffed facility, with NHS and Vanguard teams working together to deliver patient care. Procedures undertaken in facility T44 include:

- total knee, hip and shoulder replacements;
- knee arthroscopies and meniscal repairs; and
- shoulder arthroscopies and rotator cuff repairs.

On a given day, 4 major procedures (e.g. total joint replacement) and 2 minor procedures (e.g. arthroscopy) might be undertaken. Over a week, this means around 20 major procedures and 10 minor procedures can be completed.

Based on Frontier's estimates of impact described above, **mobile facility T44's social impact across a year** is estimated to be as follows:

- Quality of life for patients: **338 QALYs gained, with an estimated social value of £6.8 million, equivalent to 375 additional years of life**.
- NHS tariff income: **£3.4 million average income** which would otherwise have been lost.
- NHS waiting list impact: **absent Vanguard, the proportion of patients being treated within 18 weeks would have fallen by 4.5%pts** (e.g. decreasing from 50% to 45.5%).

3.2 Ophthalmology

A range of ophthalmic procedures are undertaken in Vanguard facilities, although the majority are cataract surgeries. Our analysis has therefore focused on cataract surgery.

3.2.1 Individual impact

We estimate that the health-related quality of life (HRQoL) impact of cataract surgery is approximately:

- 0.2 QALYs for a bilateral cataract surgery; and
- 0.05 QALYs for a first eye cataract surgery.

These are conservative estimates, based on a range of academic literature.[19]

Applying the NICE threshold valuation of a QALY (£20,000), the social value associated with these quality of life gains is approximately:

- £4,000 for a bilateral cataract surgery; and
- £1,000 for a first eye cataract surgery.

These are also conservative estimates, noting again that HM Treasury's Green Book includes a higher suggested social valuation of a QALY (£70,000).

3.2.2 NHS impact – tariff income

Our analysis suggests that the average tariff income associated with cataract procedures is:

- £2,500 for a complex procedure; and
- £1,000 for a minor or intermediate procedure.[20]

The precise tariff applied varies significantly, depending upon the specific procedure and the level of complications and comorbidities of each patient.

3.2.3 NHS impact – waiting list

Our analysis suggests that 400,000, or 64% of ophthalmology patients currently start treatment within the 18-week RTT target across England.[21] Of these patients, approximately 22,000, or 3.5% of the total list, are seen in week 18 i.e. are against the 'boundary' of the RTT

[19] References are included at the end of this report.

[20] These tariffs include an average Market Forces Factor (MFF) uplift. Each NHS trust has its own MFF value. The tariff paid to a particular trust may vary by up to around 15% (above or below) the average.

[21] Data is for March 2023, the latest available at the time of analysis. It was not possible to identify the waiting times for different sub-specialisms or specific procedures.

target. At the level of a typical individual NHS trust, there may be around 500 of these 'boundary patients'.

Our estimate for the impact of Vanguard mobile facilities is that every 19 patients seen in a mobile facility each week will improve the NHS partner's RTT performance by 0.1%pts (e.g. increasing from 60% being treated within 18 weeks, to 60.1%.

3.2.4 Illustration for Vanguard mobile facility T6

The box below illustrates the social impact that can be created by an actual Vanguard facility.

Example Vanguard mobile facility: T6 ophthalmic surgery

Vanguard mobile facility T6 provided additional capacity for ophthalmic surgery to an NHS trust. It is a staffed facility, with NHS and Vanguard teams working together to deliver patient care. Procedures undertaken in facility T6 include:

- phacoemulsification with intraocular lens (IOL) implantation;
- trabeculectomy and trabeculotomy; and
- eye lid correction and repairs.

On a given day, 15 procedures might be undertaken, of which 2 might be relatively complex. Over a week, this means around 75 procedures can be completed, of which 10 might be relatively complex.

Based on Frontier's estimates of impact described above, **mobile facility T6's social impact across a year** is estimated to be as follows:

- Quality of life for patients: **192 QALYs gained, with an estimated social value of £3.8 million, equivalent to 214 additional years of life**.
- NHS tariff income: **£3.2 million average income** which would otherwise have been lost.
- NHS waiting list impact: **absent Vanguard, the proportion of patients being treated within 18 weeks would have fallen by 10.8%pts** (e.g. decreasing from 50% to 39.2%).

3.3 Endoscopy

The impact of endoscopy is slightly different from the impact of orthopaedic or ophthalmic activity, because endoscopy is more frequently used as a diagnostic rather than therapeutic procedure. This means it typically does not directly improve a patient's quality of life, rather it may allow a patient to progress to an appropriate treatment pathway. There are a large number of different treatment pathways to which an individual could be referred, depending upon the nature of their diagnosis.

For this reason, we have considered diagnostic endoscopy only. We have not estimated a QALY gain for patients due to diagnostic endoscopy. However, we note that each patient receiving an endoscopy will potentially benefit from receiving a diagnosis, or referral to appropriate specialism, and the ability to start treatment. If patients are not able to receive an endoscopy, this will typically lead to a delay in their treatment, and in some cases this may lead to a loss of quality of life.

3.3.1 NHS impact – tariff income

Our analysis suggests that the average tariff income associated with endoscopic procedures is £600.[22]

The precise tariff applied varies significantly, depending upon the specific procedure and the level of complications and comorbidities of each patient.

3.3.2 NHS impact – waiting list

Our analysis suggests that 107,000, or 63% of patients currently receive a diagnostic endoscopy within the 6-week target across England.[23] This is slightly higher for gastroscopy (67%) and lower for colonoscopy (60%) and flexible sigmoidoscopy (59%).

Of these patients, approximately 9,000, or 5.4% of the total list, are seen in week 6 i.e. are against the 'boundary' of the 6-week target. At the level of a typical individual NHS trust, there may be around 200 of these 'boundary patients'.

Our estimate for the impact of Vanguard mobile facilities is that every 49 patients seen in a mobile facility each week will improve the NHS partner's performance against the 6-week target by 1%pt (e.g. increasing from 60% receiving endoscopy within 6 weeks, to 61%). We note that a mobile facility carrying out 100 endoscopies each week may offer sufficient capacity for a relatively small trust to avoid any 'boundary patient' from breaching the 6-week target.

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22 This tariff includes an average Market Forces Factor (MFF) uplift. Each NHS trust has its own MFF value. The tariff paid to a particular trust may vary by up to around 15% (above or below) the average.

23 Data is for March 2023, the latest available at the time of analysis.

3.3.3 Illustration for Vanguard mobile facility EDU4

The box below illustrates the social impact that can be created by an actual Vanguard facility.

Example Vanguard mobile facility: EDU4 endoscopy

Vanguard mobile facility EDU4 provided additional capacity for endoscopy to an NHS trust. It is a staffed facility, with NHS and Vanguard teams working together to deliver patient care. Procedures undertaken in facility EDU4 include:

- gastroscopy;
- colonoscopy; and
- flexible sigmoidoscopy.

On a given day, 20 endoscopies might be undertaken. Over a week, this means around 100 procedures can be completed.

Based on Frontier's estimates of impact described above, **mobile facility EDU4's social impact across a year** is estimated to be as follows:

- NHS tariff income: **£1.4 million average income** which would otherwise have been lost.
- NHS waiting list impact: **absent Vanguard, the proportion of patients receiving an endoscopy within 6 weeks would have fallen by 18.4%pts** (e.g. decreasing from 50% to 31.6%).

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