



Airedale & Partners Vanguard: Local Evaluation

Executive Summary Report:

Introduction

This report is a synthesis of qualitative local evaluation insights reported by McDonach & Mohammed, July 2017⁽¹⁾ and an economic analysis by the York Health Economics Consortium that aims to quantify the economic benefits generated by the telemedicine programme (YHEC February 2018)⁽²⁾. The full and more detailed text of both of these reports are available to be reviewed separately.

A few contextual points about this local evaluation are worth noting at the outset:

- It was originally conceived as a mixed-methods approach to provide qualitative insights alongside the quantitative component of the Vanguard evaluation. This relied on reliable data linkage; work which was commissioned separately by Airedale & Partners and provided by a third party.
- The Airedale Vanguard has experienced considerable challenges in establishing a reliable, linked quantitative dataset for the purpose of evaluation. Establishing data sharing agreements and successful data flow from the Vanguard relative partners proved to be a lengthy process.
- This resulted in substantial delays in firstly, accessing the quantitative dataset and then, secondly, understanding and resolving the many data quality issues.
- These delays resulted in one academic partner (SCHARR) having to drop out, due to time constraints and other commitments. The quantitative economic analysis was undertaken by, York Health Economics Consortium (YHEC), joining the evaluation process at a very late stage.
- The qualitative aspect of the local evaluation (based on key stakeholders' views and experiences of the Vanguard) was completed and reported in July 2017 by Dr McDonach and Professor Mohammed.
- The quantitative component of the local evaluation was completed separately in February 2018 by York Health Economics Consortium (YHEC 2018). This document provides an executive summary of the learning that emerged from the two reports.

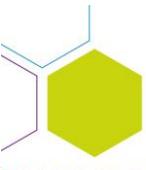
Background

In March 2015, Airedale & Partners was one of six 'enhanced health in care homes' (EHCH) Vanguards selected by NHS England as part of its New Care Models Programme¹. Airedale Telemedicine Vanguard aimed to:

"improve the quality of life and end of life experience of thousands of nursing and care home residents living in Bradford, Airedale, Wharfedale, Craven and East Lancashire – and ultimately for their model to be adopted throughout the country." ⁽⁵⁾

The Airedale and Partners Vanguard was led by health and social care professionals from 3 hospitals, 4 CCGs, 3 councils, community healthcare, mental health, IT partners, numerous GP practices, GP federations and both local authority-run and independent care home⁽⁶⁾. Notably, the Airedale Telehealth Hub was established in 2011, and predates its Vanguard status. The Airedale Vanguard

¹ A total of 50 Vanguards across five New Care Models made up the entire national programme at that time. NCMs emerged in response to the Keogh review of Urgent and Emergency Care.⁽³⁾ and the NHS Five Year Forward View.⁽⁴⁾



involves delivering ‘Telemedicine’, at scale, to 248 care homes, with an estimated 7,687 residents, across 4 CCG areas: Bradford City, Bradford District, Airedale, Wharfedale, Craven (AWC) and East Lancashire (EL). In April 2017, this Vanguard changed to focus on delivery of the new ‘Enhanced Health in Care Homes Framework’⁽⁷⁾ in East Lancashire – subject to a separate evaluation.

Airedale telemedicine ‘Intervention’

The Airedale and Partners Telemedicine service involves “remote consultation and support care” for care home residents via video-link to Airedale Digital Care Hub. There is a **standard** service model with options to add **enhanced** service models individually, or in combination as described by ‘Immedicare’, part of the joint venture delivering it:⁽⁸⁾

1. **Standard:** A single point of contact (video calls) for care home staff for support from 24/7 access to telehub nurses, with an average of 4 clinical assessment calls, per home, per month, across a CCG.
2. **GP Triage:** is developed in partnership with local GPs; care home staff are encouraged to default all day time calls to the Telemedicine hub for triage, freeing up GP practice staff for more appropriate work.
3. **Goldline:** provides dedicated 24/7 phone line support to patients known to be in the last year of their lives and their careers, to support staying at home or preferred place of care, wherever possible.

The Airedale Telemedicine implementation process includes:

- Each commissioned **home** receiving information packs and installation of the technology by joint venture partner ‘Involve’. This includes a laptop enabled by Wi-Fi or 4G and training in the use of the equipment delivered by both the clinical and technical teams.
- Each **resident** being added to an electronic patient record, ensuring clinical information is available at the first point of contact to guarantee a safe assessment. Consent is asked at each resident’s first consultation and documented in their electronic patient record.⁽⁸⁾

A developmental evaluation approach

NHS England adopted a three layered approach to vanguard evaluation: (1) national, (2) local and (3) independent summative, with each layer providing a different view of the programme. The Yorkshire and Humber AHSN was commissioned to provide robust, but, light touch, external local evaluation support for the Airedale & Partners Telemedicine Vanguard. The Airedale Vanguard and Telemedicine service predicated evaluation involvement, therefore aspects of the evaluation are retrospective.

A theory-based, mixed-methods, developmental evaluation approach was adopted with ‘embedded’ evaluation support to co-produce a logic model to inform local evaluation metrics². The original evaluation design anticipated a retrospective before-and-after design (quantitative data) with retrospective controlled comparisons (where possible), with stakeholder reflections (survey and interviews) conducted post-intervention as telemedicine was installed prior to evaluation involvement. Significant challenges experienced by Airedale in gaining access to linked quantitative data have been well documented³. The local evaluation team, where possible, has supported the ongoing data sharing, linkage and data quality issues process.

Qualitative Methods

The *qualitative component* of the Airedale Vanguard Local Developmental Evaluation provided key insights for the programme. These are based on data from a range of qualitative methods, involving more than 60 key stakeholders formally:

² The local evaluation team attended Airedale project meetings in 16/17, and had access to selected papers and minutes.

³ A summary of data challenges is included in Section Two of the Qualitative Insights Report (McDonagh & Mohammed, 2017). These have been reported and escalated to Airedale & Partners since August 2016.



- N = 14 semi-structured interviews: care home staff (7) and residents (4) key stakeholders (3)
- N = 3 key Vanguard stakeholders in a focus group;
- N = 42 online/paper surveys from Vanguard care home staff;
- N = 5 questionnaires from one care home staff team about potential barriers and enablers to telemedicine utilisation

The evaluation was also informed by discussions during five Evaluation Dress Rehearsals conducted with key Airedale stakeholders (July 16- Mar 17) and phone calls with 17 care home managers and 2 other Vanguard stakeholders. Framework Method^(9, 10) was used to develop a common coding frame across methods to identify key themes and patterns in relation to evaluation questions and logic model, in order to develop explanatory accounts. This approach offers a systematic and robust method of thematic analysis.

Qualitative analysis: Key findings

Telemedicine implementation

At the time of qualitative reporting (August 2017), the evaluation team had not been able to access Airedale Vanguard project metrics, utilisation data or outcome data. A ‘look up table’ was developed for the purposes of the evaluation, to summarise the implementation and spread of telemedicine across the Vanguard. This suggested that Airedale Telemedicine Vanguard had delivered its ‘Telemedicine’ service to 235⁴ care homes across four CCG areas:

- 148 of the care homes were installed pre-Vanguard and 87 homes during the Vanguard period (in 2016).
- 41⁵ care homes were de-installed; 34 in March 2017, the others before this date.
- Of the remaining 194 ‘live’ Vanguard care homes:
 - 132 are classified as ‘residential’ care homes and 62 are nursing homes⁶.
 - 174 care homes receive the standard telemedicine service, and 20⁷ homes the enhanced GP Triage model.
 - 50 care homes have not received Telemedicine, and may potentially act as ‘control’ homes.⁸
 - Available data does not provide information on number of residents receiving the Goldline service.

Telemedicine utilisation

Local evaluation access to limited data highlighted several important aspects of telemedicine utilisation across the Vanguard including:

- Substantial variation in telemedicine use across Care Homes;
- Lower uptake of telemedicine in Nursing Homes versus Residential homes;
- Variation in out-of-hours versus in-hours telemedicine use;
- High rates of non-utilisation of telemedicine; differences across the CCG localities;
- Small number of homes may responsible for large volume of calls.

Vanguard stakeholder views and experiences

A number of key themes emerged from evaluation participants’ experience of the Airedale telemedicine Vanguard:

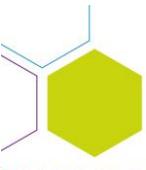
⁴ Discrepancy noted between look up table (n = 235) in April 2017 and Immedicare live list Jan 2017 (n=227) reported.

⁵ Records indicate that one care home was disputing this outcome so may not have been de-installed.

⁶ It is not clear from the current ‘look up table’ (developed for Pi in April 2017) how many of the care homes are of mixed structure – nursing/ residential structure as none are classified as such. Qualitative work indicates this may be an important aspect to reconcile.

⁷ Discrepancy noted between number of GP triage homes from January ‘live list’ and April ‘look up table’

⁸ It is not clear why these homes have not received telemedicine. They may be atypical, therefore suitability as controls to be determined.



The complexity of telemedicine utilisation; it is not necessarily a level playing ground, comparing ‘like with like’. This has profound implications for understanding telemedicine utilisation rates:

- **Multiple models of telemedicine are in operation across the vanguard;** some homes have a contract for the standard service (providing up to 4 calls per month), while others have the GP Triage model, which requires homes to use telemedicine prior to accessing GP services (some GPs formally mandate access via telemedicine, whilst others do not).
- **Local stakeholder support for telemedicine may vary.** Some care home staff report having been asked by their local stakeholders to only use the telemedicine service at certain times (e.g. out of hours) or within a certain number of calls per month (possibly due to service model and cost implications). Some care homes reported that only some of their residents were registered to receive telemedicine. One manager noted that some GPs had signed up to telemedicine while others hadn't, with different systems in place even within the one home, leading to added complexity.
- **Local services available to care homes may vary.** Care homes have access to different levels of local services which may influence telemedicine use. Some staff and residents report weekly GP/ District Nurse home rounds so issues can be ‘saved’ for then.
- **Within care homes, staff generally reported having the knowledge and skills to use the telemedicine kit,** with most receiving instruction (from the telemedicine provider or by a colleague). There were a few reports of staff (particularly older) being ‘nervous’ about the technology and more frequent reports by staff of technical issues such as connection, reception and waiting times for a response to the call. It is not clear the extent to which staff views and experiences influences their use of it; for example, those that are really positive may be limited in telemedicine use by their service model or residents' health profiles, and those that perceive telemedicine negatively may be required to use it to access GP services (such as a GP Triage home).

Perceived benefits of telemedicine: there was overlap in benefits identified by stakeholder groups in the evaluation:

- **Residents⁹** reported benefits including: avoiding hospital visits; friendly, quick, face-to-face.
- **Care home staff** in the online survey reported benefits including: avoiding unnecessary health care; providing support/advice; patient experience; available when needed; reassurance; and quality of the consultation.
- **Other stakeholders noted:** reduced workload of GPs, better end of life care and the potential to improve the quality of care of vulnerable older people and efficient use of resources.

The divergence of care home staff views of telemedicine.

- Some care home staff identify positive benefits and impact of telemedicine (as described above), whereas another group of staff are less positive and identify problems and disadvantages; what we have come to refer as the ‘Marmite’ effect. It may be useful to understand this within the context of the telemedicine service model in operation:

⁹ Recruitment of care home residents was both challenging and limited given the criteria of residents who had used the service, remembered using it, were willing to take part and perceived by the care home staff to have capacity to take part. NHS England commissioned separate work around quality of life using the ASCOT tool. Healthwatch also conducted some qualitative work with care home residents.



- Some staff from GP Triage homes identified disadvantages: telemedicine wasting time/gatekeeping access to services and professional infringement, which may more accurately reflect their views on the telemedicine model in operation. The concerns were shared by both residential and nursing staff who took part, although nursing staff often thought that telemedicine could be more useful for non-qualified staff. Concerns about equity of access for residents and tensions in professional boundaries were noted in some interviews and telephone discussions.
- Some of the suggested ‘improvements’ reported in the online survey may reflect dissatisfaction with the telemedicine service model: ‘Not for everything service’; ‘stop professional infringement’; ‘Nothing’; and ‘Remove’.

The convergence of care home staff views on telemedicine challenges and improvements:

- Some issues were raised by staff in both Standard and GP triage homes, and even among staff who rated telemedicine positively, such as challenges with technology issues involving Wi-Fi, reception coverage, image/sound and perceived long waiting times for calls to be answered especially in ‘out of hours’ periods.
- Potential improvements mirrored the reported problems with improved technical issues and the need to answer calls more quickly.
- Four participants identified potential expansion of the telemedicine service; both from services offered by the Hub but also within care home, with carers doing observations to support the telemedicine consultation.

Engagement and Implementation Challenges:

- A range of stakeholders identified engagement and implementation challenges in the scale up and roll out of the telemedicine service; although there had been pockets of good practice.
- A ‘disconnect’ between the clinical and marketing offer was reported.
- The logic model work identified gaps in current engagement activity with key stakeholders and sectors such as primary and acute care. This has implications for the telemedicine ‘theory of change’ (the hypothesised mechanisms of change) which relied on engagement with these key parts of the system. The extent to which this engagement happened consistently in practice is not clear.
- Residents and many care home staff report that residents are not always made aware of telemedicine prior to using it. The same was true of relatives. Although some care home managers identified telemedicine as a selling point which they advertised to relatives as access to 24/7 clinical support.
- A focus group/workshop explored shared learning from key stakeholders to identify the key aspects of ‘good’ implementation for future service improvement.

Programme strengths and challenges:

Stakeholders who took part in the qualitative part of the local evaluation identify a number of strengths in the programme, particularly around the telemedicine clinical offer. However, a number of organisational challenges were identified including:

- the buy-in, effectiveness and engagement of the partnership over time;
- the changed scope & focus of the Vanguard in its final year with funding tied to the delivery of an entire enhanced health in care homes framework;
- Loss of organisational memory and internal data resource; and mechanisms for supporting continuous improvement;



- Data challenges included delays in establishing a linked, validated dataset; limitations of recording systems, identifying care home residents and those who have used telemedicine or not.

The focus of the evaluation was upon the implementation of telemedicine, and its impact upon the utilisation of healthcare resources across the urgent care pathway. However, it is acknowledged that benefits and impacts of telemedicine are likely to be seen in primary care. Numerous attempts were made to access primary care data. Difficulties in accessing and linking primary care data present limitations to current evaluation activities.

Health economics analysis: Key findings

The aim of this review was to quantify the economic benefits generated by the telemedicine programme by conducting a ‘before and after’ review of the use of health care resources by the care homes to derive a return on investment estimate. There are limitations to this approach which is constrained by the availability and quality of the data collected.

Methods:

A large data set of more than 290,000 data points was collated for Airedale and Partners by a business intelligence organisation during 2017, covering every contact made by care home residents with some NHS services and any telemedicine calls made to the Hub. Although this dataset was large it only covered a limited period and there was no single intervention date, with telemedicine being rolled out over time. Only around 10% of care homes did not have telemedicine installed, providing a limited control group.

Data cleaning was intensive and a number of anomalies and issues with the data were discovered and rectified. Application of cut-off periods was necessary to avoid a situation where a care home had a full year of data after installation but only a partial year of data before. As a result of cleaning, the data set was reduced to around 48,000 items covering 141 care homes with telemedicine and 25 care homes without telemedicine.

The main limitations in the data set were duplicate care home names and lines of data, inclusion of non-relevant data for people under the age of 65 or with learning difficulties, and data with no identifier. These issues were rectified and the data set used was more robust following this process but interpretation of the results need to bear these limitations in mind.

The constraints of the available data, and the way in which the project was rolled out, mean that our findings are inconclusive and caution needs to be applied in interpreting the results. At face value the data analysis indicated that care homes with telemedicine had reduced use of other health care resources in the period following installation. The overview of all of the 141 care homes, in the year following installation of telemedicine, showed a reduction in emergency hospital admissions of 4%; a marginal reduction in A&E attendances; a small increase in the use of out-of-hours services (2%); and a reduction in the use of 111 calls (4%). The 25 care homes without telemedicine showed increases in emergency admissions of 7% and A&E attendances of 30%. National data collected by NHS England showed an increase in emergency admissions in areas not covered by New Care Models of 4.9%.

Analysis by type of care home showed a decrease in inpatient emergency admissions of 13% in nursing homes compared to an increase of 6% in residential homes. There were also reductions in nursing homes compared to increases in residential homes for A&E attendances (-8% versus 7%); use of out-of-hours services (-9% versus 17%) and 111 calls (-16% versus 12%).



Care homes using the standard service model, with limited numbers of calls to the Airedale telemedicine Hub, demonstrated a 2% reduction in A&E attendances compared to a 13% increase for care homes using the GP triage service model with unlimited calls. Both types of homes showed a reduction in emergency admissions. Care needs to be taken in interpreting these results as less than 10% of the care homes analysed used the GP triage service model.

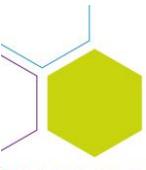
Analysis of the usage of telemedicine by care homes showed wide variation in the numbers of calls made to the Hub. The data showed low usage care homes showing a 17% reduction in emergency admissions while there was a 10% increase in emergency admissions in high use care homes. High use care homes also had a 14% increase in A&E attendances in the year after installation of telemedicine compared to a reduction of 16% in low use care homes. There was a similar reduction in 111 call usage in both high and low use care homes. High use care homes showed a 3% increase in out-of-hours usage following installation of telemedicine, while low use care homes showed a 5% reduction. Scatter plots showed a very minor trend towards reduced use of 111 services but a trend towards increased use of services for A&E, emergency inpatients and out-of-hours.

At face value these results showed that care homes reduced some forms of health care resource use after the installation of telemedicine, and that there was a greater impact in specific settings and for particular service models. An inability to control for the extent of frailty in individual homes means that the analyses carried out for the Airedale Vanguard can only be seen as indicative at best. These results do not have statistical significance and, therefore, do not demonstrate a causal effect.

Future developments:

The learning from this qualitative, developmental evaluation and health economics analysis have provided insights into key issues that would benefit from further attention

1. **Understanding telemedicine utilisation** across the Vanguard is critical to developing the service; providing access to telemedicine utilisation data at the care home level therefore *remains* an essential evaluation requirement. This conclusion was endorsed by YHEC when undertaking their health economics analysis of available data
 - Limited access to partial utilisation data indicated substantial variation for example, in-hours versus out of hours, nursing versus residential and across CCG areas. Some homes use telemedicine often, while others not at all.
 - This inconsistency in usage is borne out in the patterns of usage of telemedicine across the care homes. There appears to be no correlation between high usage of telemedicine, in terms of rate of calls made to the telemedicine Hub, and reduction in the use of health care resources. In fact the opposite is apparent, but this may simply be a case of higher levels of frailty in certain homes leading to higher use of telemedicine and higher use of health care resources.
 - Understanding the factors which enable or impede telemedicine use provides opportunities for service improvement. The COM-B model of behaviour change (¹¹) suggests there are three key elements to effective behaviour change: ensuring people have (1) the capability, (2) the opportunity, and (3) the motivation, to do things differently. Qualitative insights suggest that utilisation is complex; it may involve skills and knowledge of care home staff (the capability), but it is not all about what goes on in the care home or indeed the telemedicine hub.
 - There are potentially multi-level barriers and enablers to telemedicine utilisation, including:
 - the service model in operation (e.g. GP triage is likely to increase utilisation),
 - local stakeholder support for telemedicine and effective engagement with care homes
 - resolution of technical issues (the opportunity).



- variation in care home access to local health care professionals (e.g. weekly GP or district nurse home rounds) as well as beliefs about telemedicine , prior experience, and resident views may also influence utilisation (the motivation).

2. An integral measurement framework is needed to monitor progress of implementation and to track key metrics.

- This is essential to help understand the link between telemedicine utilisation and outcomes, and establishing a valid before and after or controlled comparison design to enable attribution of change to telemedicine rather than secular trends.
- A robust measurement framework is also important for exploring ‘optimal’ telemedicine use; for example, no/low telemedicine use may not necessarily be ‘sub-optimal’, it depends on residents’ needs as well as appropriate or inappropriate use of other health care services (e.g. out of hours GP, A&E etc.)

3. Divergence in care home staff views of telemedicine and understanding the role of the service model:

- Some care home staff are extremely positive about the service, its benefits and potential impact. A key stakeholder noted the positive impact of the GP Triage Model on reducing GP workload and improving their planning. However, some care home staff, particularly those who took part in the evaluation from GP Triage homes are less positive. Establishing if these tensions are common to all GP Triage homes is warranted and further engagement may be necessary to resolve.
- Incorporating opportunities for regular, formal feedback from care home staff and residents is recommended, perhaps using the telemedicine technology itself, similar to SMS feedback gathered by NHS services.

4. Potential service improvements:

- Care home staff identify a number of improvements, some of which relate specifically to the GP Triage service model. It may require further engagement to resolve identified tensions.
- Some improvements are common across both standard and GP triage models: such as the need to improve aspects of the technical service (Wi-Fi coverage throughout the home, patchy reception, visual/sound issue) and the need to answer calls quicker.

5. Improve future engagement and implementation strategies:

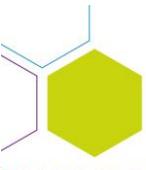
The local evaluation team facilitated a session to explore tacit and shared learning about what characterises ‘good’ implementation:

- Clinically-led engagement with local commissioners and a realistic offer on impact and targets was highlighted by some stakeholders, along with opportunities to build relationships with care homes prior to installation.¹⁰ ‘Virtual tours’ of the hub and meeting the staff were suggested.
- The need to develop robust resources and protocols for staff, residents and relatives which reflect the telemedicine model offer and how they can use it was also identified.
- Staff (and residents) indicate telemedicine the need for earlier and ongoing engagement with residents and stakeholders was noted.

Established monitoring and evaluation tools such as the Stages of Implementation Completion¹¹ may help to add structure and rigour to these processes.

¹⁰ This fits with NHS England’s commissioned literature review by Claire Goodman et al (2017) about Vanguard care home readiness .

¹¹ Stages of Implementation Completion (SIC) was developed by Chamberlain et al. (2011) as part of randomised controlled trial as a tool to objectively measure, overcome barriers and improve the effectiveness of implementation



6. Further health economics analyses:

The YHEC report concludes that the results from their limited evaluation indicate the potential for further research and analysis:

- Airedale and Partners may want to consider exploring the possibility of carrying out more in-depth analysis using statistical methods such as time-series analysis to observe some subsets of the data considered in this evaluation;
- Further investigation could focus more specifically on the key metrics and outcomes of interest. For example, the GP triage model could be seen as essentially an enhanced primary care offer, so more in-depth work could focus on the impact of care homes potentially using fewer GP resources, thus potentially improving GP access for the wider population which may impact on the use of acute care;
- Return on investment analysis relied on assumptions of the cost of avoided emergency admissions. A more detailed patient-level analysis could attempt to record exactly what types of admissions were avoided through use of telemedicine.

In summary, the Airedale Vanguard has been at the forefront of telemedicine delivery in care homes, at scale for years. It has the potential to offer unique insights, not only in the process and outcomes of the telemedicine intervention, but also about the complex challenges involved in attempting to embed new technology into routine practice within different health and care systems. The learning from this evaluation adds further insights into implementing telemedicine, the impact of different service models upon adoption and, finally, the challenges around accessing, linking and analysing data should not be underestimated.

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