



Technology Enabled Care: Data Review and Evaluation Options Study. Summary Report



HEALTH AND SOCIAL CARE

Technology Enabled Care Programme: Data Review and Evaluation Options Study
Summary Report – May 2018



Contents

About the TEC Programme	3
About this study	3
Methodology	4
Findings	5
Logic models and data review	6
TEC Programme findings	6
Workstream findings	8
Telecare.....	8
Video Conferencing (VC).....	8
Digital Platforms.....	9
Home and Mobile Health Monitoring (HMHM).....	9
Economic evaluation data review	10
Implementation Research.....	10
Measurement Framework.....	11
Recommendations and evaluation options	13
Conclusion	16
Bibliography	17

About the TEC Programme

Launched in late 2014, the Scottish Government's Technology Enabled Care (TEC) Programme is a circa £9 million a year Scotland-wide programme designed to significantly increase citizen choice and control in health, well-being and care services. Due to the start-up time required by many of the projects, the first phase of the programme will conclude in September 2018. Building on this, a second phase of work focusing on scaling up and adoption will commence from April 2018.

The TEC Programme was set up to respond to the need for service transformation in the context of rising demand for health and social care. By providing central funding to a dedicated programme, the aim was to drive deployment at the local level alongside national infrastructure and support work, and to place Scotland at the forefront of innovative approaches to technology enabled care.

Technology Enabled Care is defined as "where outcomes for individuals in home or community settings are improved through the application of technology as an integral part of quality, cost-effective care and support". The Programme has been structured over five interrelated workstreams:

Expanding Home and Mobile Health Monitoring (HMHM)

Expanding the use of video conferencing (VC)

Digital platforms

Further expanding and embedding the use of telecare

Improvement and support

Scotland's leadership in this area has been recognised by the award of '4-star Reference Site' status by the European Commission's Innovation Partnership for Active & Healthy Ageing in December 2016. This award, which is the highest standard under the system, was in recognition of its work on technology enabled care in an integrated care setting. Only 8 out of 74 sites were awarded 4-star status.

The Digital Health and Care Strategy for Scotland, published in April 2018, will build on achievements of the programme to date and set out future developments and priorities to ensure effective integration of TEC with wider digital health and care objectives.

About this study

A key component of the TEC programme is a focus on service transformation and continuous improvement supported by measurement and evaluation. Over its life, many evaluative activities have taken place. These have primarily sought to demonstrate the effectiveness of technologies that sit within individual workstreams. They take the form of one-off evaluations, improvement reports and ongoing monitoring, and forecast reports to assess the impact of scaling up, particularly on cost-effectiveness.

This paper is a summary report of a data review and evaluation options study that was commissioned to review existing evaluations and identify priorities for future evaluation. Specifically the aims were to:

- 1) Develop a clear understanding of the expected outcomes of the TEC investment at programme and work-stream levels for different groups of people over the short-, medium- and long-term and how these are expected to be achieved.
- 2) Establish the nature, quality and relevance of existing evidence and identify key information gaps.
- 3) Detail a range of options for Scottish Government, in association with the TEC Board to consider for a further phase of evaluation, explaining the extent to which each option would be robust and cost-effective in understanding the impacts of technology enabled care and establishing longer term monitoring.

Methodology

The study was carried out in seven stages between September 2017 and March 2018. This paper is a brief overview of the findings with a focus on recommendations and evaluation options. The full report provides more detail on the approach taken and description of how the synthesis was carried out.

The research stages were as follows:

Stage 1: Develop logic models. A series of logic models were developed using primary and secondary research. The purpose was to systematically identify outcomes that could be used to assess the strength of the evidence base in each area of work.

Stage 2: Evidence classification. A total of 53 evaluation reports were received and catalogued according to evaluation type.

Stage 3: Data Review. Quantitative data was extracted and key variables were inputted into an Excel spreadsheet. Qualitative data was analysed using NVivo.

Stage 4: Comparing outcomes with data. Matrices were constructed to indicate which elements of the logic model were supported by data, the type of data (qualitative/quantitative/mixed) and providing an assessment of its quality.

Stage 5: Economic data review. Ten evaluation studies containing economic data were systematically analysed and data was extracted on key variables.

Stage 6: Implementation research. This comprised of two workshops with frontline and programme staff to understand barriers and enablers. This was supported by a secondary literature review on implementation science in TEC and a review of primary data gathered via the existing evaluations.

Stage 7: Measurement framework. Finally, a measurement framework and options for future evaluation were developed. This was informed by the previous evaluation activities and some additional literature searches.

Findings

- There is emerging evidence for the value and impact of the TEC programme. Stakeholder engagement with implementers of technology enabled care found that the TEC programme is highly valued and that it is unlikely the technology development, deployment and adoption could have happened independently. This conclusion is supported by the secondary literature on implementing technology enabled care which highlights the need for dedicated funding, personnel and expertise to drive a programme of work such as this, especially in light of widespread barriers to adoption.
- Our data review found a strong commitment to measurement and evaluation and its role in supporting continuous improvement of the TEC programme. Consistent with international evidence, there is solid evidence for the two workstreams (HMHM & Telecare) that are furthest in the implementation cycle and emergent evidence for the workstreams where technologies are either in development (digital platforms) or in the early stages of implementation (VC).
- There are challenges inherent in evaluating technology enabled care interventions which mean that standard methods of conducting health evaluation, such as randomised controlled trials, are often not appropriate. We recommend the adoption of the Rapid, Relevant, Research Process (RRRP) as a framework for future measurement and evaluation activities. The RRRP framework addresses evaluation challenges such as the need for flexibility, speed, adaptability, attention to contextual factors and the evolving nature of the interventions. A set of principles have been developed that should inform evaluations for the programme.
- There is variability in the robustness of evaluation studies, including economic evaluations. To ensure best practice is mainstreamed and to avoid duplication of effort we recommend the development of guidance and resources to support measurement and evaluation as well as the development of in-house expertise.
- Our work on implementation found that the TEC programme is already applying many established implementation strategies that are consistent with international best practice. Further support on the use of IS frameworks to inform technology-enabled care delivery could assist with mainstreaming of technologies by addressing common barriers to adoption.

Logic models and data review

The TEC programme has a strong commitment to evaluation and this is reflected in the number of evaluation studies undertaken. As a group, these studies point to a solid evidence base, especially for two of the workstreams; telecare and HMHM. In other areas, the evidence base is still 'emergent'. However, this is to be expected, given that workstreams are at different stages of implementation and many of the outcomes are expected to take place beyond the life of the programme. In addition, some were building on existing evidence, from Scotland and elsewhere, which negated the need for fresh evaluation.

The purpose of developing the logic models was to systematically compare workstream outcomes with the existing evidence produced by the programme. A total of 95 documents were submitted to Just Economics for review. Of these 54 contained evaluation data, and these were synthesised. This section provides a summary of the findings from this work by describing each programme and its evidence base. We begin with the overarching programme.

TEC Programme findings

At the heart of the TEC programme's strategic vision is catalysing the transformation of health and care services such that technology becomes integrated as 'business as usual', thereby allowing more delivery of services at home and in community settings. As well as providing a 'home' for each of the workstreams, it aims to add value i.e. to be 'more than the sum of its parts'. Stakeholder engagement carried out as part of this commission with implementers of technology enabled care interventions found that the programme is highly valued and that it is unlikely the technology development, deployment and adoption could have happened independently.

The programme operates at two levels. At a national level, the programme seeks to create the conditions to support scale up and adoptions. This includes building the infrastructure, tools and approaches, and tackling the existing technological, social, organisational and cultural barriers. At a local level, it seeks to grow TEC activities and initiatives through dedicated funding to local organisations implementing or trialling TEC initiatives.

There have already been considerable successes for the programme, with an additional 66,000 clients benefiting from technology-enabled care (to February 2018), sharing of learning across settings, and progress on infrastructural issues, such as the analogue to digital switchover.¹ Going forward, the TEC Programme Board has identified the following four areas in its Strategic Priorities for technology enabled care 2018-21 in support of the new Digital Health and Care Strategy for Scotland:

¹ See TEC Strategic Priorities 2018-21 Final, Board Paper

Transforming local systems – supporting exemplars that are seeking to transform local health and social care systems using digital technology to shift local systems upstream to prevention, self-management and greater independent living

Developing approaches once for Scotland – developing approaches that have been shown to be effective, supporting scaling up across Scotland and addressing barriers that require national level action

Preparing for the future – identifying and testing new approaches that offer the potential to achieve change at scale

Building capabilities and supporting improvement – championing, supporting, gathering and promoting the evidence of what works, to develop the culture and skills that recognise and use digital TEC including through developing business cases, supporting strategic planning and delivery.

These strategic priorities aim to increase the number of people using fit-for-purpose technologies and for those technologies to either a) free up capacity within the system without any risk to care quality or b) improve health and social care outcomes (or, indeed, both simultaneously). Ultimately, the goal is to enable citizens to enjoy longer, happier and healthier lives in their own homes, thereby reducing demand on current services and freeing up capacity.

Achieving these strategic priorities occurs via several pathways. These include the use of the Attend Anywhere video conferencing system for remote clinical and care consultations and decision support, improved condition control and self-management via remote monitoring and digital platforms, more technology-enabled care options being used in care homes and better access to specialist services, especially for those with long term conditions and those experiencing health inequalities. Wider social benefits have been identified for interventions at scale. These include improving the viability of vulnerable services and communities, reducing CO2 emissions and economic benefits from the improved productivity of a healthier workforce. Ultimately, however, the goal is to enable citizens to enjoy longer, happier and healthier lives in their own homes.

A signal that these technologies are being exploited to their full potential is that technology-enabled care options become the default within decision-making in health and care teams. This is a key objective for some of the workstreams and the overall programme. This underlines the importance of the promotion and advocacy work and the continuous improvement through evaluation.

There are also some challenges. An objective of the TEC programme is to reduce health inequalities and there are various means by which the technologies can play a role within this. However, some of the technologies also require minimum skills and infrastructure to be fully exploited. Given that those who experience health inequalities are also more likely to be digitally excluded there is a risk that inequalities will be exacerbated, as the more digitally included are better placed to access the benefits. A second challenge for technology enabled care is that many of the benefits for the health and social care system are only realised once a critical

mass of users is reached. That is, whilst technology-enabled care users can personally benefit, the wider societal benefits can only be achieved at scale. Demonstrating 'cashable' savings is difficult in the short-term and the marginal savings from – for example bed days saved - is likely to grossly undervalue the potential economic impact of the programme.

As discussed, most of the evaluations to date have focused on the workstreams and the efficacy of the technologies they are developing and promoting, rather than the programme itself.

Workstream findings

This section describes each of the workstreams in turns and summarises the evidence base for each. We begin with telecare.

Telecare

Telecare refers to continuous, automatic and remote monitoring of users by means of sensors to enable them to continue living in their own home by minimising risks such as a fall or gas and flood detection. A key element of the programme in Scotland is an effective triage system, which ensures that emergencies are prioritised. Telecare is one of the most widely used forms of technology enabled care in Scotland. According to the most recent data, there are nearly 130,000 local authority-provided telecare systems currently in operation with an estimated additional 50,000 people being supported via housing and care provider organisation.² Among those aged 75 and older, 20% are using a telecare service.

There is a relatively strong evidence base for telecare. This reflects its advanced stage of implementation relative to other technology-enabled services. A range of outcomes were evidenced for clients in the existing evaluations, including:

- enhanced dignity, independence and quality of life in clients
- increased confidence of vulnerable clients to be more active
- increased health and well-being in carers
- reduced unplanned hospital admissions and prevention or delay of admission to care homes

One of the key challenges for telecare is variability in provision across Scotland. There are a range of providers, often using different equipment, and charging regimes vary. Although a policy, rather than programmatic issue, further research may be required to identify ways to tackle service variability. Other evaluation priorities for this workstream include exploring sustainability and why some users drop out over time.

Video Conferencing (VC)

² This figure relates to local authorities only and excludes those accessing telecare via a housing association or any other private arrangements

The initial focus of the video conferencing workstream was extending traditional VC from NHS settings to community health and social care settings. This had some initial success, but was delayed for technical reasons. In late 2016, the integration of VC into health and social care has been facilitated primarily through the bespoke Attend Anywhere system. This allows health and care staff to offer video calls as part of their day-to-day operations. There has been considerable success with rollout. Attend Anywhere is functional in 13 out of 14 Health Boards. However, given its very recent adoption, the evidence base is limited at this stage.

Evidence from evaluations of other VC systems suggest there are likely to be considerable benefits, particularly where VC facilitates specialist input to remote areas. Outcomes attributed to VC in these studies include better pharmaceutical management, improved access to specialist services, reduced hospital admissions and length of stay, time and travel savings for staff and clients, and family and clients having greater confidence in the care they are receiving. Areas for future development include a focus on the use of Attend Anywhere for wider public services, and impacts on the workforce and carers/families.

Digital Platforms

This workstream is concerned with supporting the development of an integrated digital platform that enables people to access their health and care records, engage with the health service and manage their own healthcare. This is an ambitious goal which has led to an independent programme of work. The role of the TEC programme has been to support development work for the National Health and Social Care portal, including commissioning a business case and testing components of the portal. The TEC Programme also supported two key citizen-facing programmes, Living it UP and ALISS, under this workstream, as well as some local work.

Given that this workstream is largely concerned with technology that is still to be developed, there is not an existing evidence base as such. However, the Living It Up platform evaluation points to some of the benefits of online platforms for clients with a chronic condition, including a greater sense of control and self-management, reduced social isolation and access to information on their condition and ways to manage it. This area of work could benefit from a greater emphasis on outcomes evaluation from platforms such as ALISS.

Home and Mobile Health Monitoring (HMHM)

HMHM is the use of digital remote monitoring technology to enable patients outside of hospital to receive, record and relay clinically relevant information about their health and wellbeing. At the start of the programme, there were 485 users of HMHM. This had increased to 10,780 by December 2017, with 12 Health and Social Care Partnerships undertaking work in this area.

This workstream had the largest number of existing evaluations, reflecting the extent to which the technologies underpinning HMHM are becoming embedded in clinical practice (compared to video conferencing and digital platforms) and the specific focus on developing an evidence base. The main outcomes for patients

centre around a feeling of reassurance from the increased connectedness that HMHM offers. There was both quantitative and qualitative evidence for clinically-focussed outcomes around health and some evidence of reduced health visits and hospital admissions. Challenges centre mainly around the use of the technology and overcoming the initial trepidation of staff and patients around its use. Future evaluations would be enhanced by including a greater emphasis on quality of life impacts and the experiences of carers, as well as seeking to evidence the role these technologies can play in prevention.

Economic evaluation data review

There were ten studies that contained economic data. All of those studies found a positive return on investment in technology enabled care. The two areas which have seen the greatest levels of funding and are furthest along with implementation - HMHM and telecare – have the strongest economic evidence base. It is our assessment that, across all workstreams, the studies underestimate the value of technology-enabled care as most placed an economic value on a narrow set of outcomes and considered value creation only for public bodies (i.e. non-economic outcomes were not valued in the main).

There was considerable methodological variation across the studies. Our main recommendation relates to greater standardisation of approaches across studies, thus enabling greater comparability and ensuring best practice in economic evaluation.

Implementation Research

A key finding from the data review is that, although many of the technologies have established an evidence base, the pace of implementation can be slow. This has also been noted in the wider literature on technology-enabled care (e.g. Glasgow et al. 2013; Ossebaard and van Gemert-Pijnen 2016). Implementation Science (IS) has become an increasingly popular way to bridge the gap between science and practice and is an approach that could be usefully applied to the Scottish TEC programme to assist with mainstreaming of technologies, and the wider implementation of digital health and care as a whole. The literature points to several ways in which implementation is challenging in the context of technology-enabled care, including the rapidly evolving nature of the technologies, the importance of context and the need for multi-stakeholder buy-in.

The main findings from the primary and secondary research on implementation in this study are as follows:

- The TEC programme is already employing many implementation strategies that are consistent with international best practice
- The barriers and enablers identified in the primary research are consistent with those in the wider IS and technology-enabled care literature
- Staff resistance is the most frequently mentioned barriers, and more could be done to understand the determinants of staff resistance

- Further support on the use of IS frameworks to inform technology-enabled care delivery could assist with mainstreaming of technologies

Some enablers highlighted by the research were:

- A good initial user experience of the technology
- Technology that works well, is personalised with simple protocols
- Staff and management buy-in with appropriate training and ongoing support and specialist skills
- Organisational readiness to embark on digital transformation

Further research to support implementation has already been identified as a key priority for the programme.

Measurement Framework

The difficulty of assessing technology-enabled care against the principles and requirements of traditional evaluation methods, such as Randomised Controlled Trials (RCTs) was a theme that emerged throughout this study. It is clear that the standard methods of conducting evaluation, especially in health, are often not appropriate in this field.

Our high-level review of evaluation frameworks revealed a number of alternatives, the most promising of which is the Glasgow et al. (2016) Rapid, Relevant, Research Process (RRRP). The RRRP framework addresses evaluation challenges such as the need for flexibility, speed, adaptability, attention to contextual factors and the evolving nature of the interventions.

Due to its close relevance to technology-enabled care, we propose that RRRP is adopted as an overarching framework for future evaluation for all digital health and care implementations. The adoption of a broad framework such as this should ensure a more consistent and strategic approach to evaluation and that best practice elements such as stakeholder engagement are being used. We have developed the following nine principles to guide measurement and evaluation for the TEC programme. In addition, we make several recommendations to improve measurement and evaluation set out in the next section.

Proposed evaluation principles

Principle 1: Be strategic: evaluations should add value and be cost-effective

Evaluation resources should be carefully deployed to ensure that they are addressing gaps. Where evidence already exists, even if it has been collected outside the TEC programme, evaluation should not seek to repeat this.

Principle 2: Plan and Scope: each evaluation should be carefully planned and scoped

Once an area of evaluation is chosen, it will require careful planning to ensure a good research design and appropriate scope are chosen. Well-planned evaluations can still encounter problems, but good planning minimises the risk of this.

Principle 3: Measure what matters

There are three aspects to this principle: (a) measure outcomes; (b) measure things relevant to people; and (c) ensure that indirect effects/externalities are captured. Co-producing research with your stakeholders is a good way to ensure the things that matter are being measured.

Principle 4: Methodological Plurality: the most appropriate methodology/approach should be chosen from a range of options

There are many different evaluation methods and approaches. No single approach or method is appropriate to all situations, nor is any intrinsically better than another: they all have strengths and weaknesses and work more or less well in different contexts. Employing a range of approaches across the programme gives richness to the data and should also enable flexibility (Principle 6).

Principle 5: Timeliness: evaluation findings should be available in a timely fashion

As discussed, there is typically a considerable time lag involved when using experimental research designs such as RCTs. In the context of technology-enabled care, where the technologies under study are rapidly evolving, this delay may mean the findings are all but obsolete by the time of publication. When planning an evaluation, the likely time lag for any methodology should be considered alongside the time scale within which the results are needed.

Principle 6: Flexibility: there should be a focus on evaluation methods, which are iterative, adaptive and flexible

As mentioned above, the rapid evolution of technology in the field of TEC has implications for evaluation. As well as providing rapid results, the evaluation method needs to support the process of continuous learning by providing feedback loops.

Principle 7: Context matters: it should be central, focused on and reported

A key difference between the RRRP and the traditional approach to evaluation is the importance of context. Evaluation plans should demonstrate how they will ensure that context is considered, and evaluation findings should, wherever appropriate, include an understanding of how the context may have influenced the results.

Principle 8: Involve stakeholders and clients/citizens throughout

The involvement of stakeholders at the planning stage ensures that the evaluation measures things that are most important to those directly experiencing the change and multi-stakeholder approaches are now commonplace in many types of evaluation.

Principle 9: Use technology: data collection and analysis should be automated where possible

Data collection and analysis can be very time consuming, as well as susceptible to human error and bias. Using technology to support measurement reduces the risks of human error (e.g. from data being inputted incorrectly) and can be less resource intensive.

Recommendations and evaluation options

In this section, we provide practical recommendations of steps that could be taken to work towards the achievement of the nine principles set out above. Some are high level recommendations on the approach to evaluation – the ‘how’ to measure, and others are recommendations on evaluation content – the ‘what’ to measure. These are cross-cutting recommendations drawn from all the research activities carried out as part of this project. There is no hierarchy as such, but some will require a larger scale/resource level (e.g. implementation) than others (e.g. quality of life impacts).

1. Adopt the RRRP approach to evaluation

We recommend that the Scottish Government formally adopts this approach and uses the nine principles set out above to guide evaluators. In many instances, this is what the workstreams are already doing. Formalising the approach provides academic and methodological credibility for work that is already being undertaken. As part of this we would recommend building economic analysis more routinely into evaluations. Finally, it would be useful to document the process of adopting and developing the RRRP as this will increase its legitimacy as well as contribute to a process of ongoing learning and development.

2. Prioritise implementation and the impact of the TEC programme

Much of the evaluation to date has focused on the technologies at the workstream level, rather than the programme as a whole. In future evaluations, and as the programme matures, it will be helpful to shift the emphasis on to the impact of the programme, despite the continued existence of data gaps at the workstream level.

Given that the programme focuses largely on implementation, this will be facilitated by a greater focus on evaluating this area. From the exploratory research in this study, we recommended exploring the following evaluation options.

A. Scoping research on implementation needs and the effectiveness of existing strategies.

Implementation has already been addressed as part of evaluations to date. Nonetheless, this has been identified as an area that requires ongoing investigation with a view to identifying the most significant barriers (and new barriers as they emerge) and crucially the most useful implementation strategies to address them as the programme shifts to national scale up.

B. Identification of an IS framework for future TEC rollouts.

It is recommended that the programme use, or adapt, an existing IS framework in future project planning and evaluation that can support both national and local implementation and contribute to the implementation of the new Digital Health and Care Strategy.

C. Evaluating the success of the implementation framework.

Should an implementation framework be selected, it will be important to evaluate its effectiveness. This would be highly beneficial for the programme and the future development of TEC and wider digital health and care priorities in Scotland. It would also be of wider academic, policy and practice interest, and contribute further to innovation in technology-enabled care.

3. Conduct a review of monitoring data capture and use evaluation to address gaps in the logic models

The way in which monitoring data is captured should be reviewed. Alongside this, a long-term plan for automating data collection should be developed as well as a short/medium-term plan for the interim. This would seek to address the inconsistent and time-consuming nature of existing data collection and explore how to better support this. We recommend increasing the use of technological solutions where possible. Assuming a better system can be developed, this should seek to extend what is being captured to include outcomes, economic, and implementation data.

4. Adopt a more consistent approach to evaluation, especially economic evaluation

In general, the programme could benefit from more consistency in how evaluations are approached. This would enable comparison but also improve the quality of evaluations by ensuring that good indicators and approaches to data collection are shared across projects. However, consistency is especially important for economic evaluations. This could be improved by adopting a standardised approach to the measurement of outcomes, wherever possible.³ This could include the

³ Consistent use of assumptions and values should be a goal of any future evaluation, although there will be instances where the specificities of the intervention or local context will mean that a study may have to diverge from the standardised measures.

development of a bank of indicators and values that enable measurement and valuation to be undertaken more easily for multiple stakeholders and in the same way across different studies. This will make it easier to aggregate and compare results, or at a minimum read across different studies.

5. Develop guidance, in-house skills and a microsite

To improve consistency and ensure high quality approaches are used, the programme would benefit from developing bespoke guidance for the TEC programme. This would include templates for evaluation, surveys, interviews and guidance on economic analysis and other 'off the shelf approaches' that are consistent with the RRRP. This also applies to economic analysis.

To host these materials, we recommend the development of a microsite specific to the TEC programme. This would act as a 'one stop' resource hub for TEC evaluations. To manage this site and the guidance development, we recommend fostering some in-house evaluation skills within the TEC programme (e.g. a part-time staff role). This person could also support evaluations of delivery staff. Finally, they could be responsible for keeping abreast of the latest international research and disseminating this internally.

6. Conduct more multi-stakeholder research

Evaluations to date have tended to focus on a single stakeholder, even in contexts where there are multi-stakeholder impacts. We recommend taking a wider approach, which is again consistent with the RRRP. This is especially important for economic evaluations to ensure that benefits are being measured holistically. In our review, only one in ten studies adhered to this even though it is considered a best practice approach (Treasury, 2003). This is a further area where bespoke guidance may be beneficial.

7. Further research on future benefits, sustainability and mainstreaming

There are two types of sustainability relevant to the TEC programme: sustainability of the use of technology and sustainability of the outcomes (i.e. the benefit period for outcomes). The first is concerned with whether people cease to use a technology over the time and the second is concerned with whether the technology use continues to provide them with the initial benefit. Measuring this over time with users will be important especially for economic studies that want to project benefits into the future or understand the rate at which benefit declines over time.

An additional future impact is to understand the point at which a technology becomes mainstream. This would include some exploration of what constitutes 'critical mass' for each technology. This links to questions of when a technology to have been fully implemented and there is no further need for a TEC programme. This may also help identify the most promising set of activities to achieve mainstreaming.

8. More research on some secondary outcomes

Unsurprisingly, the evaluations have tended to focus on the primary outcome of a technology, often a clinical or care outcome. However, there are some gaps relating to secondary outcomes, which could benefit from some further research. The two we highlight here are quality of life/well-being impacts and health inequalities.

Conclusion

The TEC programme has achieved much in the three years of work that have been considered as part of this evaluation. Although building on previous work, especially in telecare and HMHM, the programme as a whole includes a sophisticated set of complementary and well-developed technologies that are beginning to change the way in which health and social care are being delivered in Scotland.

The purpose of this evaluation was to synthesise the existing research produced over the first three years of the TEC programme and make recommendations for future evaluations. The TEC programme has produced a sizeable number of good quality evaluations, which are varied in terms of methodologies, geographies, stakeholder included, and issues considered. These point to substantial benefits for clients as well as for carers, staff and the wider health and social care system. They also point to continuing challenges, particularly around mainstreaming.

As the programme moves into the next phase, there is a clear opportunity to use the latest thinking on technology-enabled care evaluation and implementation. This report provides high level and more detailed recommendations that should lead to improved adoption, and continue the practice of producing high quality evidence thereby solidifying Scotland's international leadership in this area.

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This section includes all primary and secondary sources consulted during this evaluation. The primary sources have also been divided into those that are published and unpublished sources

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This document is also available from our website at www.gov.scot.
ISBN: 978-1-78851-899-4

The Scottish Government
St Andrew's House
Edinburgh
EH1 3DG

Produced for
the Scottish Government
by APS Group Scotland
PPDAS415426 (05/18)
Published by
the Scottish Government,
May 2018



Social Research series
ISSN 2045-6964
ISBN 978-1-78851-899-4

Web and Print Publication
www.gov.scot/socialresearch

PPDAS415426 (05/18)