

BIGMOTIVE



DHCNI

Technology Enabled Care (TEC) Discovery



Care Homes

May 2024

This report details **Care Homes** specific insights from the TEC discovery research.

For overall findings and other exploration specific reports please visit the [DHCNI website](#).



Overall Findings



Hypertension



Care Homes



Long-Term Conditions



Hospital at Home



Telecare

Contents

1

Exploration
Approach

2

Research
Questions

3

Insights &
Challenges

4

Opportunities

5

Appendices

 Care Homes

Exploration Approach

The Digital Care Home Plan

Responding to the current and emerging need of care home providers, their residents and their families, Digital Health and Care Northern Ireland (DHCNI) produced the 'Digital Care Home Plan' [1] to build on and support future digital transformation in care homes.

[Digital Care Home Plan, DHCNI, 2023](#)

Although this discovery focuses on the application of TEC, many of the findings surfaced within this exploration align with, and expand on the recommendations within the 'Digital Care Home Plan'[1].



Digital Health & Care
Northern Ireland

DELIVERING CARE TOGETHER

Digital Care Home Plan

[1] Digital Care Home Plan, Digital Health and Care Northern Ireland, 2023 [Online] Available: www.health-ni.gov.uk/sites/default/files/publications/health/doh-eccf-digital-care-home-plan.pdf



Care Homes

Care Homes Focus

For each exploration, DHCNI proposed a specific application of TEC.

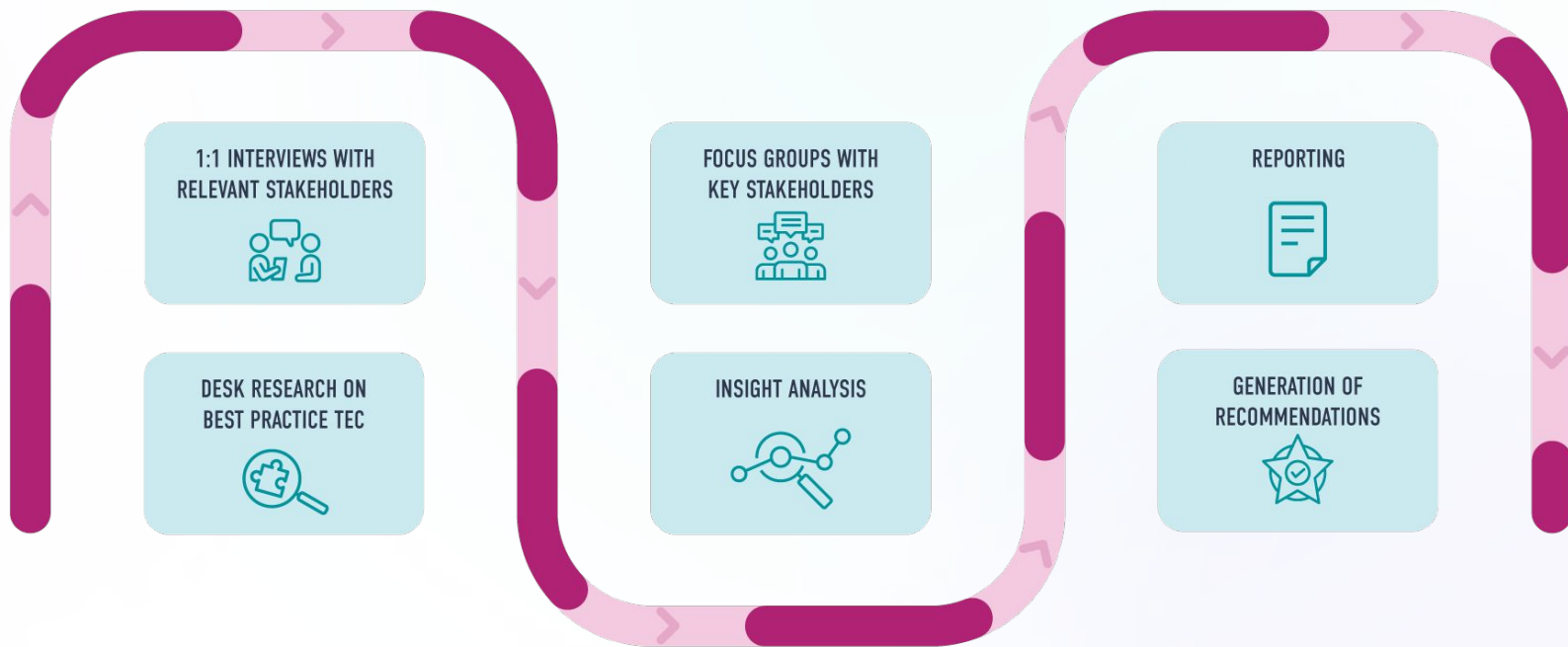
This was used to stimulate conversation during research and determine TEC opportunities and potential challenges with implementation.

A faded background image showing a nurse in a white uniform and cap, wearing gloves, attending to a patient in a hospital bed. The nurse is leaning over the bed, and the patient is partially visible. The image is semi-transparent and serves as a background for the text on the right side of the slide.

The use of technology enabled care to provide ***remote diagnostic and assessment tools to support healthcare professionals in their clinical decision making.***

Exploration Process

The process of exploring care homes followed agile principles, including iterative development, flexibility to adapt to new information, and continuous collaboration with stakeholders to ensure alignment and relevance of the deliverables.



Research Engagement for Care Homes

29

Participants
contacted

63%

Response
rate

18

Total
engaged

7

1:1
interviews

11

Participants at
focus groups



- Care Home Managers
- Trust Care Home Support
- Trust Care Home Liaison
- Geriatrician



- Physiotherapist
- Clinical Nurse Advisor
- Charity & Voluntary Sector
- Care Home Care Commissioner



- Commissioner of Older People
- NIPEC
- RQIA
- DOH



Storyboards

To facilitate **TEC focused conversations**, storyboards were created describing current and future state scenarios.

These were used in focus groups to facilitate reflection and debate, and to gain insights into the role of TEC in health services.

CURRENT STATE NEXT STEPS

Tell us what happens next...
Who is involved and what actions must they complete?
Map all possible routes to delivering necessary care.

FUTURE STATE NEXT STEPS

Here we imagine a scenario where care home staff are armed with a TEC kit to simplify the recording and sharing of resident vital measurements, therefore supporting care decisions.

Current State Storyboard

The Current State storyboard shows the initial stages of a potential referral to primary or secondary care services from Care Homes. This was used in the Care Home workshop to understand the range of potential care pathways that currently exist.



1 Sarah Wilson is 84 years old and has been a resident at Cherry Tree nursing home for 2.5 years.



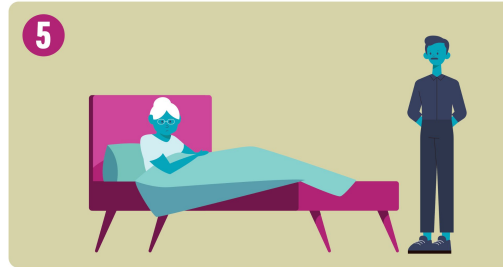
2 Sarah has three children, but only her daughter, Olivia, who resides in NI, actively participates in her care planning during regular visits.



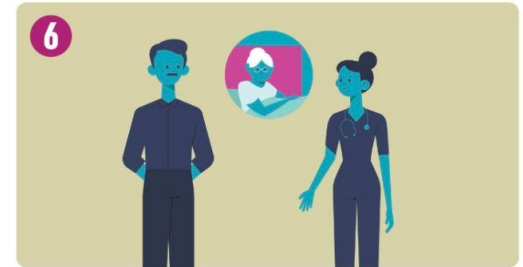
3 Sarah recently had a hospital stay for 2.5 weeks due to COPD exacerbation, receiving IV and oral antibiotics.



4 Following her hospital stay, Sarah returned to the care home 6 weeks ago and has been doing well until this point.



5 In the last 24 hours, staff have noticed that Sarah is generally unwell.



6 During the evening shift, a care assistant reports to the nurse in charge his concerns about Sarah's condition.

Future State Storyboard

The Future State storyboard shows a application of TEC for the remote assessment of a care home resident. This was used in the Care Home workshop to facilitate discussion about the potential impact of TEC.



7 The nurse attends to Sarah with TEC kit in hand.



8 The nurse establishes a connection to a clinical professional, a GP.



9 The clinical professional directs the nurse to use TEC kit for vital sign measurements.



10 The TEC kit takes real-time measurements - pulse, blood pressure, respiration, temperature, heart and chest sounds.



11 Clinical professional remotely visualises and hears real-time data, makes a clinical decision.



12 A decision is made to continue remote monitoring for 12 hours. The nurse informs Sarah's daughter Olivia about her condition.

Insights & Opportunities

Through analysing research findings and trends, key insights have been identified.

A Design Insight is a clear and comprehensive understanding of a complicated problem or situation.

Opportunities detail how insights may be actioned / addressed, to move towards TEC adoption and achieve positive outcomes for stakeholders.

 Care Homes

Research Questions

Research Questions

Research questions were composed to define the scope of each exploration and inform the creation of discussion guides.

The same research questions were used across all five explorations, allowing for the comparative capture of insights.

- 1 What are the experiences, attitudes and perspectives of individuals working with care homes regarding TEC?*
- 2 How might individuals better be supported or encouraged to engage in TEC innovation?*
- 3 What opportunities are available for TEC innovation in care homes?*

Research Questions

1

What are the experiences, attitudes and perspectives of individuals working with care homes regarding TEC?

Participants in this research highlighted the complexity and significant variation in care pathways for access to primary and secondary care from care homes.

There was an awareness and appreciation of the benefits of existing TEC solutions, such as TytoCare.

There was acknowledgement that TEC may play a significant role in care homes of the future by simplifying care pathways and assisting with staff workload.

Participants believed that care homes may not always be given the opportunity to engage with new TEC, and expressed a strong appetite to engage in future opportunities.

Research Questions

2

How might individuals better be supported or encouraged to engage in TEC innovation?

Our research identified several key opportunities to support and encourage care homes to further engage in TEC innovation.

These included the establishment of clear protocols and pathways for the receiving, interpreting, and actioning of TEC data, particularly between care homes and primary care.

Additionally, there was a desire for increased clarity concerning the roles and responsibilities, regarding TEC usage by care home staff.

Research Questions

3

What opportunities are available for TEC innovation in care homes?

Our participants described a wide range of potentially impactful applications of TEC innovation within care homes.

These included the enabling of remote consultations for care home residents, reducing the need for in-person hospital appointment attendance.

Additionally, participants highlighted the potential benefits to care home residents' care through sharing of health data with primary and secondary care professionals.

Further detail about these areas, and others, are provided within this report.

 Care Homes

Insights & Challenges

INSIGHT 1

The current care pathway for access to primary & secondary care is highly complex. Several variables (such as GP availability, care home pressures and available patient information) dictate the route of care to services which are not necessarily timely or the most appropriate.

Care homes struggle to contact GPs. Staff are placed on hold for long periods and then wait hours for a call back, impacting their ability to provide care. Only a few GPs provide a direct line.

In nursing homes, there is usually only one nurse on duty at a time. When a resident is unwell and experiencing delays in access to health care this has an impact on the nurses ability to provide care to others.

Appendix B details the current state journey and pain points of a residents route to receiving health care, as mapped by participants in the focus group.

INSIGHT 1

The current care pathway for access to primary & secondary care is highly complex. Several variables (such as GP availability, care home pressures and available patient information) dictate the route of care to services which are not necessarily timely or the most appropriate

The pathway depends on the person, the trust, and time of day, it's not consistent.

Care homes are seen as a place of safety and may be de-prioritised as a result.

We need a clear separate pathway for older people.

Trying to get standardisation is like pulling teeth.

INSIGHT 2

Technology will be central to care homes of the future, but participants didn't feel like they had capacity to plan for it

With a growing older population and greater complexity in needs, the future of care homes needs to be considered in any healthcare proposals. A study which found that the number people over the age of 85, needing 24-hour care, is to double (between 2015-2035). This highlights the need for services to adapt to the complex care needs of an increasing older population [2].

Upcoming generations with greater digital experience will expect TEC. This includes both residents and staff. During the COVID-19 pandemic, supportive digital technologies were implemented in care homes, and this has been a catalyst for increasing appetite and digital mindsets for using TEC. The British Geriatrics Society recommends that care homes should harness digital technology to improve the delivery of care [3].

On the other hand, with high staff turnover there is a fear that technology will replace essential human roles and negatively impact resident social connection.

[2] Andrew, Kingston et al, Forecasting the care needs of the older population in England over the next 20 years, The Lancet Public Health, September 2018

[3] Ambitions for change: Improving healthcare in care homes, The British Geriatrics Society, August 2021

INSIGHT 2

Technology will be central to care homes of the future, but participants didn't feel like they had capacity to plan for it

The next generation will be much more demanding of how they want to be cared for.

We need to rethink what social care is all about.

There is less perception of frailty, people are much more in tune with their health and devices.

We are being forced to adopt TEC more quickly due to workforce issues.

INSIGHT 3

TytoCare is currently only operated by nurses. Current carer roles and responsibilities limit adoption and utilisation of TEC.

Carers have restricted access to diagnostic tools, such as TytoCare. This means residential homes, who do not employ nurses, cannot avail of TEC like TytoCare.

Care home staff are under significant pressure, coupled with high staff turnover, and any addition to their roles must be carefully considered [4].

INSIGHT 3

TytoCare is currently only operated by nurses. Current carer roles and responsibilities limit adoption and utilisation of TEC

Carers pick up when nurses are off but they don't have the authority to do the checks.

TEC should be extended to residential homes, sometimes they are forgotten.

If there was a device, we don't know if RQIA would allow carers to do the measurements, there is a work to be done here.

A care assistant can put on device, but [is not permitted to] make a decision.

INSIGHT 4

Participants needed clarity on who would be receiving and interpreting the data from TEC.

Using TEC to streamline access to healthcare relies on being able to connect to HCPs, who then are able to receive and interpret the data in a timely manner. When discussing the use of TEC, participants wanted clarity on who would be looking at, and acting upon the data.

Participants described a lack of connection and alignment between care homes and primary / secondary care.

This challenge would need to be addressed before the full benefits of TEC can be realised.

INSIGHT 4

Participants needed clarity on who would be receiving and interpreting the data from TEC

Who is looking at this data?

It comes down to people being on the other end of the data and making decisions.

Nurses should not be sitting behind a screen all day, looking at data.

There needs to be greater coordination between us and primary and secondary care.

INSIGHT 5

There is significant digital transformation in health and social care but research participants felt like care homes are being left behind

Digital infrastructure to support the provision of healthcare is not mentioned in care home minimum standards [5,6]. Many care homes do not have access to basic Wi-Fi.

Care homes have to request paper discharge notes at resident discharge. When a resident is being admitted to hospital, they must print / photocopy their care plan.
Currently Encompass is not used in care homes.

[5] Residential Care Homes Minimum Standards, Department of Health, Social Services and Public Safety, V1.2, Dec 2022

[6] Care Standards for Nursing Homes, Department of Health, Social Services and Public Safety, Dec 2022

INSIGHT 5

There is significant digital transformation in health and social care but research participants felt like care homes are being left behind.

Independent Care Homes get lost.

Nursing Homes don't want to be left behind.

[We need] consistency across the board, access to appropriate records in a timely manner.

Care Homes need to be considered in the future of encompass - we aren't even on the list yet!

Challenges

Participants also described the following challenges for the implementation of TEC in Care Homes:

Process Challenges:

- Lack of a regional approach, including variation between trusts and lack of standardisation
- A need for clear guidance on ownership, responsibility, and accountability
- Lack of long-term planning due to a need to spend budget before year end

Technology Challenges:

- Inconsistency / lack of necessary infrastructure (e.g. Wifi or computers)
- Concern regarding the cost of technology and infrastructure

People Challenges:

- Limited availability of staff to attend training
- Uncertainty regarding care staff permission to collect measurements with TEC
- Significant variation in staff tech literacy and confidence
- Fear of increased responsibility and workload
- Fear of technology replacing people
- High staff turnover

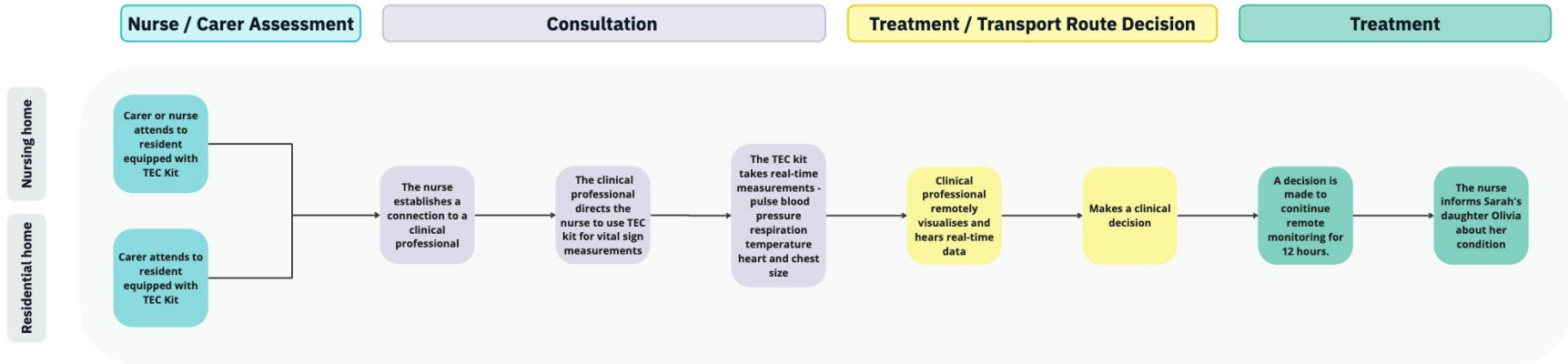
 Care Homes

Opportunities

OPPORTUNITY 1

Streamline access to care through the use of remote examination TEC.

- Participants determined that using TEC for remote examinations could significantly streamline and inform correct pathways for care. **Through co-design, a tailored pathway for care homes could be created.** Below is a future state designed by research participants:



OPPORTUNITY 1

Streamline access to healthcare through the use of remote examination TEC.

- Participants explained how TytoCare has been used successfully to streamline access to treatment, enabling quicker, more informed/correct direction of care. Instead of a potential 48 hour wait for an ambulance, residents can receive treatment in their home within 2 hours.
- There is an **opportunity to collect evidence** from the current use of TytoCare in care homes to understand its impact on streamlining access to care. **There is potential to build on the foundations and appetite** created by TytoCare to implement and integrate further TEC.
- In order to achieve standardisation in access to healthcare through TEC, care homes must be willing to adopt TEC technologies and update processes. **Consider engaging with care home owners to understand willingness for TEC adoption.**

Design for the future of care homes.

- **A long-term view is required to ensure the sustainability and value of TEC programmes.** Facilitating conversations with stakeholders to understand the future of care homes can help agree on a **vision for the role of TEC and use it to inform its implementation.**
- The future role of TEC in care homes is not clearly understood, leading to apprehension. By engaging with care home stakeholders, the **role and benefits of TEC in delivering care and supporting staff can be defined.**
- An appetite for digital within care homes has resulted from positive experiences with technologies implemented during the COVID-19 pandemic. These positive experiences create an **opportunity to further develop the use of technologies such as TEC and enable more significant benefits in care provision.**

OPPORTUNITY 3

Clarify roles and responsibilities for TEC use in care homes.

- To enable the use and benefits of TEC, care homes must be able to connect to HCPs who can receive and interpret the data collected and use the information to inform the direction of care.
- Care homes require a clear understanding of who will be receiving the data as well as reassurance that these HCPs will be available when needed.
- Participants described the importance of joint decision making between care homes, other HCPs, the residents, and their families. It is important that roles and responsibilities are agreed and clearly defined, and standard operating procedures are in place.
- Greater adoption and utilisation of TEC can be achieved by allowing carers to use TEC equipment and connect with health care professionals (HCPs).
- HCPs accessing and directing care would need to *buy in*, to carers using TEC with patients.

OPPORTUNITY 4

Explore the inclusion of digital infrastructure in care home minimum standards to enable TEC.

- Participants explained that foundations for digital technology adoption are lacking in care homes. These foundations are a requirement for TEC. Methods to support the implementation of digital infrastructure should be explored.
- The use of digital varies across care homes. To promote equity the potential to include digital infrastructure in care home minimum standards should be explored.
- Ensuring care homes have the necessary digital infrastructure will enable improved connection with other health and social care services and allow for the adoption of technologies to meet growing demand from residents and staff.

Aligns with DHCNI's Digital Care Home Plan [1] - Recommendation 5.1 and 5.2

OPPORTUNITY 5

Include care home staff in TEC policy design.

- To ensure TEC policy supports care homes it should be co-designed with care home stakeholders.
- In a report on the future of an aging population [7], The Government Office for Science describes the increasing role of tech in care support and emphasises the importance of a joined-up approach between health and social care providers to progress in this area.

Aligns with DHCNI's Digital Care Home Plan [1] - Digital foundations and Next Steps.

[7] Future of an Ageing Population, The Government Office for Science, July 2016

OPPORTUNITY 6

Enable remote consultations for care home residents.

- Lack of staff availability at times result in care homes being unable to support their residents for in-person hospital appointments
- Some residents need ambulance transport to attend appointments, however they are often in short supply.
- Remote consultations have the potential to alleviate capacity challenges, save time and ensure residents healthcare needs are met.



It's so difficult for us to get people to appointments, remote consultations would speed up appointments and be good for patients too.

- Regional Care Home Manager

OPPORTUNITY 7

Improve resident care through the capture and sharing of health data.

- Using TEC to collect health data of residents and share it with primary and secondary care could allow for greater and more informed coordination of care.
- Collecting population health data allows the identification of patterns, which can identify areas of need, inform future service design and influence policy.
- Collection and management of resident health data has the potential to aid workforce planning.



TEC data could provide patterns of health and social care.

– Assistant Performance Director,
Department of Health

Further Opportunities

Participants also described the following opportunities for TEC (and other health tech) in Care Homes:

- Recognition of delirium (using AI)
- Medicine management plus adherence
- Early recognition of deterioration before crisis
- Life enrichment i.e. Reminiscence Interactive Therapy Activities (RITA) and Robot Pets
- Falls prevention tech (wearables)
- Multi disciplinary team assessments i.e. speech and language, physiotherapy and occupational therapy
- Early clinical tests
- Remote X-Ray / Early Monitoring
- Remote testing for UTI, respiratory infection etc.
- Swallow care / dental care
- Telecare

Moving Forward

This discovery has provided a better understanding of TEC appetite, challenges, implementation requirements and opportunities for adoption.

In the next steps of this work, DHCNI are seeking to address key challenges raised across this discovery through implementing the recommendations detailed in the 'Overall Findings' report.

If you are interested in keeping up to date with ongoing work, please visit the [DHCNI website](#).

If you would like more information about this work please contact: Linda.McRandle@hscni.net or DHCNIContact@hscni.net

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 Care Homes

Appendices

Appendix A

DESK RESEARCH

- Desk research was conducted to understand the use of TEC in care homes, surfacing case studies and models of TEC care.
- Several examples of TEC technologies used in care homes were identified. Three were selected and used to create lightning posters to stimulate conversation in interviews and focus groups.
- Full research findings can be accessed by contacting DHCNI.

DHCNI

Health Call
TEC digital observations solution

- Tools to make quick, high-quality referrals direct to NHS clinical teams when concerned about a resident's well-being.

How it works

- Digital Referrals:** Our digital solution enables staff to record clinical observations and make quick referrals directly to NHS clinical teams.
- Guided Observation:** Care staff are guided through simple steps on our app to take clinical observations (using the Situation, Background, Assessment, Referral SMART tool).
- Data Integration:** This data integrates straight into GPs and hospital records which clinical teams then use to triage patients.
- Secure and Complete Data:** Data is secure, with an robust audit trail, so care and clinical groups can create a complete picture of a resident's history.

How it supports care

- Save time:** Less time on the phone, more time for compassionate care.
- Save money:** Cost saving of an estimated £1m for one health care system.
- Relieves the pressure:** Proven to reduce emergency hospital admissions by 4%, and inappropriate nurse visits by 13%.
- Creates more time for residents:** Reduced care.

How it improves care

- Improves bridge:**
- Releases care home staff:**
- Empowers care home staff:**
- Improves the prioritisation of clinical management:**

Additional features:

- Pulse Rate, Sleep Detection, Temperature, Respiratory rate.
- Advanced Fall Analysis, Wandering Detection, Activity Counts, Body Position.
- Bed measures: measures that are used against gold standards.

Flowchart: Digital Referrals → Guided Observation → Data Integration → Secure and Complete Data → NHS Clinical Teams → Hospital Records → GPs → Clinical Teams.

Big Motive

TEC Technology Examples

There are several examples of TEC technologies being used in care home. Many of the examples make use of technologies such as sensors, wearables, smartphone applications, AI and data collection platforms to monitor resident health and inform care needs.

- 1. Empatica, www.empatica.com**
A remote monitoring solution consisting of a smart watch, patient app and healthcare provider interface which allows continuous measurement recording of physiological parameters (such as blood oxygen saturation, pulse, temperature, respiratory rate) which can be used to inform patient care.
- 2. Health Call, www.nhshealthcall.co.uk**
Is an NHS owned digital health company. It provides a TEC digital observations solution which uses technologies to make quick, high-quality referrals direct to NHS clinical teams when concerned about a resident's well-being. Care staff are supported to take observations, the data is then integrated straight into GP and hospital records, which clinical teams then use to triage.
- 3. PainChek®, www.painchek.com**
A TEC pain monitoring solution, which uses AI technology to support a modern pain assessment framework and identify the presence of pain even when it's not obvious. Pain score data is then used to support and monitor pain management interventions.

TEC Impact Summary

Continually emerging TEC innovations are being used to change the way care is delivered in Care Homes. Many technologies have been successfully trialled, implemented, and their impact evidenced in case studies.

- **Health Call**, an app-based technology that records residents' vital parameters electronically and is triaged by remote clinical staff, was found to reduce unplanned secondary care usage and associated costs. Analysing data from 8,702 residents, Health Call was found to reduce the number of emergency attendances by 11%, emergency admissions by 25% and cost by £113 per resident [8].
- Similarly, Frimley Health and Care Integrated Care implemented a **Connected Care** programme which used remote monitoring technology and provided digital connection to healthcare professionals. Since rolling it out to 800 care home residents, Frimley Health and Care have seen hospital admissions reduced by 34%, A&E attendance dropped by 40%, and GP contact reduced by 20% [9].
- In an independent study, **Feebris**, a system that uses data collected via digital apparatus to generate post-examination summaries and recommendations based on nationally recognised guidelines, was found to save the NHS £0.5m per 1,000 patients over a year [10].
- **PainChek**® uses AI technology to identify the presence of pain when it's not obvious and support those who cannot verbalise pain. PainChek® has been shown to detect pain with 95.0% accuracy, which subsequently evidenced a reduction in the use of psychotropic medication by identifying pain as a cause of challenging behaviour [11].

[8] Garner A, et al. The impact of digital technology in care homes on unplanned secondary care usage and associated costs. Age Ageing. 2024 Feb

[9] Frimley Health and Care maximising virtual wards and remote monitoring to reduce hospital admissions, Nov 2023, frimleyhealthandcare.org.uk

[10] Economic Impact Case Study: Feebris, NHS INNOVATION ACCELERATOR, York Health Economics Consortium, January 2023

[11] Whitepaper: Modern Pain Assessment in Aged Care, 2022, www.painchek.com

TEC Models Summary

The way TEC has been implemented in care homes varies. Models include Trust based contracts, council partnerships and charity supported programmes. Although success was evidenced, challenges remain in devising sustainable, integrated models which deliver on a scale that provides significant benefit to the healthcare system.

[12] TECS Case study: Using telemedicine to reduce hospital admissions, NHS England

[13] Case Study: Digital Care Homes in County Durham, healthcall, June 2021

Trust Contract: Airedale NHS Foundation - Telehealth [12]

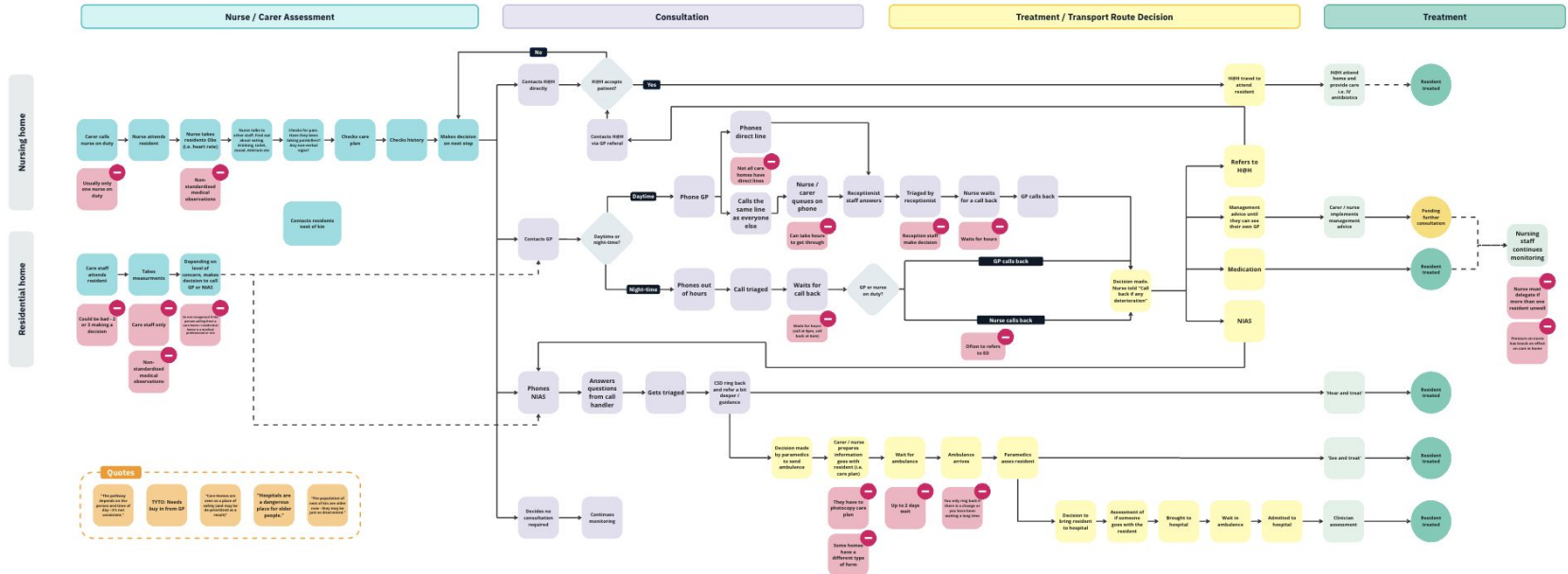
- Digitally connecting patients and clinicians based at a Telehealth Hub, the project resulted in a 35% reduction in hospital admissions.
- Although successful, the care model surfaced challenges around commissioning, procurement and information governance:
 - A perverse tariff system meant secondary care providers continue to be paid more for a hospital admission than delivering an avoided admission
 - Confused boundaries between primary and secondary care leading to adoption challenges
 - Lack of homegrown evidence used as a challenge
 - The need for scale to achieve significant benefits
 - Contracts based on non-recurrent funding

Council commissioned partnership with the NHS: Digital Care Homes [13]

- Health Call Digital Care Home supports NHS integrated electronic referrals and remote monitoring of residents.
- The following factors enabled this model to be sustained:
 - Joint engagement sessions
 - Co-production and direct feedback from care homes
 - Council commissioning of the NHS Foundation Trust to manage the implementation (providing ongoing training + support)
 - Partnership informed continuous product development

Appendix B

CURRENT STATE JOURNEY



Nurse / Carer Assessment

Consultation

Treatment / Transport Route Decision

Treatment

Nursing home

Residential home

