Telecare Asset Management

Good Practice Guide
November 2015

jit joint improvement team
creativity, collaboration and continuous improvement

Scottish Centre for
Telehealth & Telecare

TSA™
The voice of technology
enabled care

Acknowledgements

This Good Practice Guide has been written with the purpose of sharing existing operational practice with a view to promoting improved standards of telecare service delivery across Scotland.

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Special Note

The TSA Code of Practice referred to within this document is currently under review.

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1. Telecare Asset Management in Context

1.1 Background

Scotland is one of the few countries in Europe with a national strategic approach to the development of telehealth and telecare services. The National Telehealth and Telecare Delivery Plan for Scotland to 2015 was developed with partners from health, social care, housing and the third and independent sectors to provide a clear strategic direction for the use of technology to support health and social care delivery in Scotland.

The Plan recognised the importance of sharing good practice across the whole system and, specifically within its Workstream 6 - Exchange Learning, Develop and Embed Good Practice - identified the need to develop good practice guidance across a range of areas, including Asset Management. The specific brief in the Plan was to *Develop guidelines and standards for asset management – including equipment storage, maintenance / repair, battery replacement.*

The term *"asset management"* is used to describe how equipment is procured, stored, tested, maintained, decommissioned and recycled. Asset management enables service providers to maximise control over equipment, create efficiency and minimise equipment loss.

This Guide recognises that appropriate asset management of telecare and other technology enabled care (TEC) equipment is an essential component of safe, effective and consistent care service provision.

1.2 Purpose of Good Practice Guide (GPG)

The Scottish Centre for Telehealth and Telecare (SCTT), the Joint Improvement Team (JIT), and the TSA have co-authored this Good Practice Guide (GPG), the purpose of which is to outline best practice in the asset management of telecare equipment.

The GPG covers:

- Procurement
- Software systems used for telehealth and telecare asset management
- Stock control systems – including monitoring of equipment lifecycle
- Battery management
- Storage of telecare equipment
- Testing of telecare equipment
- Installation of telecare equipment
- Identification and diagnosis of equipment faults
- Repair and maintenance of equipment – scheduled and unscheduled
- Removal, recycling and cleaning/decontamination of equipment – including disposal of non-recyclable products
- Re-issuing of used equipment – re-use policy and decontamination practices

2. Definitions and Roles

2.1 Alarm Receiving Centre / Monitoring Centre

Community alarm and telecare services require an Alarm Receiving / Monitoring Centre capable of receiving and responding to alerts raised by the equipment in order to initiate the appropriate action. These are staffed by one or more trained operators (call handlers) who provide an immediate, skilled, sensitive response to the person, or to the alarm. This part of the service is referred to as an Alarm Receiving Centre (ARC), monitoring centre, or call handling service.

2.2 Equipment and Assets

2.2.1 Telecare Alarm Unit

For the purpose of this document, the term Telecare Alarm Unit will be used to describe a Community Alarm, Dispersed Alarm Unit or Personal Alarm Unit.

The Telecare Alarm Unit provides a direct link from the individual's home to the alarm receiving centre via the telephone network using designated communication protocols.

2.2.2   Alarm Triggers

Radio wave signalling devices, which are activated by personal physical, actions that link and signal upon activation directly to the Telecare Alarm Unit and subsequently to the Alarm Receiving Centre.

2.2.3   Peripherals and Accessories

Further radio wave signalling devices, as above, for use by carers and service users, includes batteries for use in telecare and telehealth equipment.

2.2.4   Health and Care Peripherals

Radio wave signalling devices, as above, which are used for the care of people who use services and for the management of health conditions.

2.2.5   Environmental Devices

Radio wave signalling devices which are activated by environmental conditions that link and signal upon activation directly to the Telecare Alarm Unit and subsequently to the Alarm Receiving Centre.

2.2.6   GPS Devices

Devices that use the Global Positioning System to determine the geographical location of a person out with their home.

2.2.7   Lifestyle Monitoring Equipment
Equipment and software that monitors lifestyle activity, reports on significant changes, warns of developing problems and prompts early intervention.

3.   Procurement

3.1   Scotland Excel

Scotland Excel is the Centre of Procurement Expertise for Scotland's local government sector which establishes collaborative national frameworks on behalf of local authorities and other public sector organisations in Scotland.

Scotland Excel provides frameworks across a wide range of categories including construction, transport, waste, corporate, education and social care. These categories offer a variety of framework agreements covering goods and services purchased by local authorities.

3.2   Telecare and Telehealth Technologies Framework

Amongst the range of frameworks managed by the social care team in Scotland Excel is the framework for telecare and telehealth technologies which is open to all 32 local authorities in Scotland as well as other associate members including Scottish health boards and some housing associations. The framework enables purchasers to procure products from a range of suppliers with agreed pricing and terms and conditions.

The establishment of the framework by Scotland Excel fulfils public tendering requirements meaning purchasers can select products when needed without the requirement to undertake a further tendering process. Products can be purchased directly from suppliers or 'mini-competitions' can be conducted if required.

The framework agreement has a number of benefits including:

• Agreed specifications and guidelines for service delivery and service recovery
• Agreed lead times for delivery to end users
• Set-up arrangements and responsibility of contractors to replace or reimburse equipment where it is either faulty or not fit for purpose
• Community benefits
• Greater consistency and transparency in costs

In addition, Scotland Excel's role in the ongoing management of the framework allows for monitoring and analysis of purchasing trends, national collaboration amongst purchasers to discuss quality concerns and effective liaison and information sharing in the event of quality issues or product recalls.

3.3   Structure of the Framework

The initial telecare and telehealth technologies framework was put in place in January 2012. As a result of the framework development work, a common communications protocol (BS8521) was developed to combat the issue of interoperability. This standard specified the requirements for the establishment of a common signalling protocol to ensure that social alarm systems from different manufacturers exchange essential information and controls in a compatible manner.

At the expiry of the initial framework, a renewed Telecare and Telehealth Technologies Framework was put in place in January 2015. It will run until December 2016, with the option to extend until December 2018. The framework was developed in collaboration with key stakeholders including local authority officers, the Joint Improvement Team and the Scottish Centre of Telehealth and Telecare.

The Framework comprises of seven lots:

*   Lot 1 – Dispersed Alarm Units
*   Lot 2 – Alarm Triggers
*   Lot 3 – Peripherals and Accessories e.g. bogus caller alerts, pillow alert and beacons
*   Lot 4 – Health and Care Peripherals e.g. Occupancy sensors and medication sensors
*   Lot 5 – Environmental Devices e.g. smoke detector and flood detector
*   Lot 6 – GPS Devices
*   Lot 7 – Lifestyle Monitoring Equipment

For more information on the Framework, please contact: social.care@scotland-excel.org.uk

4.   Alarm Receiving Centre Software / Stock Control Systems

4.1   Overview

Generally speaking, Alarm Receiving Centres (ARC) software systems are fully comprehensive and able to monitor and manage technology enabled care alerts via BS8521 or Common IP Protocols, voice calls, and call conferencing.

A number also support additional features such as; lone worker, SMS text, GPS, Video Door Entry (or CCTV) as standard.

It should have integrated incident logging and document management capabilities to securely record and store communications to and from service users. Telecare management tools such as integrated referrals, assessment, installations, stock control and planning systems are often a feature of the ARCs equipment that can enhance and support good practice for asset management.

It would be good practice to have a system/s that enables integration with voice recorder and corporate email to ensure an effective single system communication tool in conjunction with flexible reporting practises for all service delivery areas.

Furthermore, it would also be good practice to have stock control systems that are fully integrated with the call handling systems and the users' corporate network for seamless recording and reporting purposes. The system should provide flexible stock management capabilities for both local and remote operators.

The stock control system should facilitate the management of equipment telecare alarm units and associated sensors. The system should allow any stock based or installed items requiring an element of control to be monitored, maintained and fully recorded. Each individual stock record should include the type of equipment, availability, stock history (including the age of the stock), location, warranty period (including any extended warranties), battery replacement, servicing dates and a reportable notes field.

The system should also have the facility to record equipment without serial numbers and allow batch entry and barcode readers for bulk purchases. All changes/updates made to stock are fully logged for auditing purposes. All information associated with each piece of stock can be queried & reported upon.

For example:

A user can create a report that identifies battery replacement dates due for stock items. The report will identify batteries needing to be replaced in a selected time frame. If required, reports can be scheduled to run and be automatically delivered to the appropriate maintenance team each month.

The software system should be able to recognise that the owner of the asset is a particular organisation and where the equipment is actually located in the community.

The software has an equipment database that the following information on the asset can be logged into the system.

Manufacture	Type	Model
Status	Serial No	Location Type
Location	Quantity	Owner/ Owner Type

The software system should be able to define service period and expiry dates for:

• Warranty
• Maintenance
• Battery

It would be good practice for testing Information Systems for ARC and/or Partnerships to have processes and procedures in place to facilitate the following:

• IT system which alerts when testing required.
• Manual system for recording of service user details, assets, test dates and outcomes. Linked to service user records.
• Programme of testing to ensure ARCs are not overwhelmed.
• Automated reports to advise the ARC when service users have not tested within certain time frame.
• ARC contacts those service users to encourage test.

4.2 Sheltered Housing/Warden Call systems

A warden call system is an alarm and communication system designed specifically for grouped housing developments. It should offer telecare capabilities as standard and be flexible enough to suit all types of core and cluster housing. It supports resident intercom, on-site management Digital Enhanced Cordless Telecommunications (DECT) handset with off-site ARC answer and response capabilities.

The system should support hardwired and wireless (radio receivers) telecare sensors configurable on an individual basis to support individual needs. Door entry, video entry and fire alarm, remote release key safe systems can work independently or be combined with the system. Additional support systems such as lifestyle monitoring can be added if required.

The housing development call systems are seen as an "essential service" and are often one of the reasons that people want to stay in grouped housing developments.

Systems should be maintained and serviced on an on-going basis, and replaced every 10 to 15 years based on product support guarantees (manufacture and maintenance) reliability of equipment – to ensure that spare part availability is not exhausted and that systems are replaced before frequent failures become the norm. Good practice would include contingency planning to ensure funds are available to replace within the defined timeframe. To an extent replacement will be driven by the constant improvement in technology and the requirement to provide the residents with the range of modern support sensors and peripherals to enable them to remain in their own homes.

It would be good practice to replace the system where there is persistent failure of existing equipment and availability of spares to ensure the safety of residents. Issues with system wiring could also expedite replacement if the equipment was more than 10 years old.

5. Stock Control

5.1 Overview

Stock Control is a process for managing and locating objects or materials. The term "stock control system" can be used to include various aspects of controlling the amount of equipment on order, in stock, being repaired and the reordering process/procedure.

Throughout Scotland, organisations use various methods to log telecare assets, their location and serial numbers. This may include completing written paperwork, electronic records or telephone calls direct to the ARC. What is important, whichever method used, is that staff ensure that all records are up-to-date and accurate.

As already mentioned in this guide, good practice would be that the stock control system would be fully integrated with the call handling system at the ARC. However where this is not possible, whichever local method is used by organisations, it is vital that stock levels are accurately maintained and are not allowed to go below the agreed minimum stock control levels to prevent disruption to the installation or delays for individuals waiting for the service.

Whichever method of asset management / stock control is being used by organisations, it is essential that it includes a Stock Order Record.

5.2 Stock Order Record / Purchase Order

These records should contain details of all stock orders regardless of which system is being used. These records should hold supplier information and be used each time an order is placed. It is important that each order has an order reference, the date the order was placed, the supplier, correct delivery address and the status of the order (awaiting stock / part complete / fully complete). The status of the order should change as the order progresses through the delivery process. These order records should also be used when invoices / payments are due. *(see section 3 on Procurement).*

5.3 Stock Summary

The Stock Summary details how many items are currently 'In Stock', how many of an item may be 'On Order' and a 'Due Date'.

This should include a breakdown of all stock items used by the organisation, current stock level, minimum stock control level alert and any stock on order with due dates.

Please note that 'Minimum Stock' is interpreted as the 'minimum acceptable level of stock', i.e. if the number of items in stock is equal to the 'Minimum Stock', it would be good practice to incorporate stock re-order system or an alert.

5.4 Receiving Stock / Equipment

When stock has been received from the supplier at the agreed storage location, it is vital that each order is checked to ensure the correct items and quantity has been received. Once checked it is vital that the stock is added to the stock control system as soon as possible. It is important that organisations do not allow stock to be taken and used for installations before being logged on the system. This will help prevent future problems or inaccurate records. *(see section on ARC Software)*.

All stock must be entered onto the stock control system and should include the following details:

- **Order** Reference number
- **Date** – the date the order was placed.
- **Status** – to include 'Awaiting Stock' / 'Part Fulfilled' / 'Completed')
- **Manufacturer**
- **Product** – type of sensor/equipment.

5.5   Serial number

A serial number is a unique number used for identification. Serial numbers can be very useful for quality control. If there is a problem with a certain batch of products, the serial number of one defective item can tell which items are affected by the problem. Serial numbers can also be used to keep track of equipment and can support product recalls in the event of quality issues.

When new stock is purchased, it can be added into the stock control system using the serial numbers either manually or using a USB barcode scanner. Barcode scanners should be configured to supply a carriage return at the end of the code.

There are different types of barcodes, e.g. standard barcodes and the more recent '2D' barcodes. The appropriate type of scanner must be used to scan in barcodes.

Standard barcode

2D barcode (also known as a QR code)

5.6   Warranty date

It may be possible to identify the warranty date from the equipment's serial number depending on whether an extended warranty was purchased by the organisation.

> **For example:**
> The age of some manufacturers' equipment can be identified by the serial number: i.e. First 4 digits indicate the week number and year of manufacture e.g. Serial number beginning 0114 = manufactured 1 January 2014

Where information is entered onto the ARCs call monitoring system, it may be also necessary to keep a manual record or spreadsheet of equipment at the storage location for audit purposes. It would be good practice to include:

- details of stock removed
- date and time of removal
- name of individual removing equipment

5.7   Storage

The system should include stock rotation to enable older stock to be used first. Where equipment is stored off site e.g. joint equipment store, it may be necessary to retain a small supply of basic alarm equipment for emergency use out with normal working hours and at the disaster recovery site which should always be at a separate location.

Service Providers should ensure that their business continuity plan includes asset management, to ensure they can deliver a continuous service to the service user that meets key performance indicators.

Equipment should be stored according to manufacturer's recommendations in terms of temperature and humidity; and in an organised manner to enable timely access and aid audit checks. For example:

- In stock new
- In stock recycled
- In stock technician
- Service user reference number
- Shelf 1 – dispersed units
- Shelf 2 – smoke alarms, flood detectors, carbon monoxide detectors
- Shelf 3 – bed occupancy sensors, epilepsy monitors

Equipment returned for decontamination and recycling should be de-programmed prior to being chronologically stored for re-use.

5.8 Equipment / Stock Record Sheet

It is vital that when equipment is being installed, a record detailing the type of equipment with the corresponding serial numbers is completed. This ensures that the correct equipment / stock can be allocated to the individual's record and helps to maintain accurate stock control records.

Should the need arise to retrieve equipment for replacement or maintenance; the serial numbers are required to identify and locate equipment. The Telecare Service should be able locate any item of stock whether in their office, for repair or in an individual's home.

This is one of the reasons why it is so important that serial numbers are logged accurately. Good practice would be that suppliers use bar codes compatible with the various asset / stock management systems being used in Scotland.

This would allow all organisations to quickly scan stock directly into their stock control system. This would reduce human error and increase efficiency and productivity in completing a labour intensive, time consuming but essential function in the stock management of telecare equipment.

6. Installation – Telecare Alarm Unit

The role of the telecare equipment installation and maintenance staff is to ensure that equipment is programmes, tested and installed adhering to the suppliers/manufacturers guidance and local policies and procedures.

Telecare installation and maintenance staff provide instruction, guidance and training to individuals and carers on how to use the equipment correctly and safely. *(Cross reference with testing parameter section)*

6.1 Service Models

Across Scotland, there are various approaches to installation. These include the use of the existing in-house Response Service, in-house specialist technicians, Council Technical Services / Direct Works, Care and Repair, Joint Equipment Stores, out-sourced to a 3rd party contractor or a combination of these options.

Some Housing Association offers the service user the option of self-installation. The equipment is pre-programmed and sent out with instructions and dedicated telephone numbers to contact trained staff if needed.

6.2 Knowledge, Skills and Training

Individuals who install telecare must be competent and confident in various areas of social and health care practice. However they must also have knowledge and appropriate training in telecare equipment and services and a commitment to continued professional development to ensure their knowledge is kept current and relevant. Installers must possess key core competencies in telecare equipment programming and installing. A relevant qualification (PDA in Telehealthcare http://www.sqa.org.uk/files_ccc/5746_PDA_Telehealthcare_A4_web.pdf) would be advised.

It is important that installers adhere to suppliers and manufacturers guidance when installing equipment and follow their own organisations policies and procedures. Although local policies and procedures may differ in each organisation there is national legislation which must be followed: (see **Appendix 1**) installers should have a broad overview of an individual's rights and their own professional responsibilities.

All organisations should have local policies and procedures for staff that cover:

- Telecare equipment, programming and fault finding
- Installing and using of telecare. This should include an **Installation Checklist** (see **Appendix 2**)
- Electricity in the home and electrical equipment regulations and guidance (see PAT testing)
- Risks, hazards and control measure in the workplace and in people's homes
- Lone Working
- Infection Control / Hygiene / Protective Equipment (wipes / gloves)
- Moving and handling and using moving and handling equipment

6.3 Using Stock / Equipment

Organisations need to have a robust stock control system and procedures in place which ensures that installers have access to adequate stock. This must be balanced between storage facilities available, with not too much stock sitting on a shelf as the warranty depletes, while having enough stock to maintain individual organisation's installation timescales.

It is important that installers ensure they have the correct equipment required for individual installation visits. Without the correct equipment the installation can be delayed or cancelled This can be checked by reading the individual's referral, assessment or service request which should clearly highlight what equipment is required. The installer, where possible, should address any issues or concerns regarding the equipment being installed prior to leaving the office for the installation visit.

Before leaving the office to attempt an installation the installer should check that:

* They have the correct equipment
* The equipment has been programmed and tested
* The equipment has been labelled and marked correctly
* They have spare / alternative equipment in case problems occur
* Various pendant cords, wrist straps etc. to offer choice to the individual
* Any paperwork that is required for the installation (include Installation Checklist)

6.4 Working in an individual's home

To ensure all individuals receive the same high-quality service, organisations should follow the Good Practice Guide Access to Service Users' Homes (http://www.tsa-voice.org.uk/ sites/default/files/file-directory/Access% 20to%20Service%20Users%20Homes.pdf)

While in the individual's home, as part of the installation visit, the telecare installer should be able to identify if and when other telecare may be necessary. With the consent of the individual, the installer should follow any local procedures to access additional telecare for them.

Procedures must protect the individual by ensuring:

* They understand who is visiting them and how to recognise them
* When to expect a visit and the purpose of the visit
* They know their rights as an individual and a customer of the organisation regarding the installation, testing, use, return, payment for and maintenance of their telecare equipment
* They have been given information about how they can comment or complain about the service or equipment

6.5 Installation

The alarm unit should be installed in the same room as the power and main telephone socket. However this may not always be possible or be the best solution for the individual. Where the alarm unit is to be located in another room, it is important that a risk assessment has been completed. It may be appropriate that the power and main telephone socket require to be moved to the main room occupied by the individual i.e. bedroom.

As part of the installation, it is important that the installer ask who the phone provider is and records where the alarm unit is located.

The installer should not:

* Stretch cables
* Lead them under or through doors
* Install cables under floor coverings or over walkways

The installed equipment should be left in a tidy fashion. Cables should be left tied up neatly at a suitable length and tucked out of the way to ensure that they do not become a potential tripping hazard.

All labels should be visible and appropriately attached.

The installer should advise the individual of the importance of installing equipment into the main telephone socket only and explain why it is vital they leave the unit plugged in at all times.

Telephone Socket Testing:- Where there is more than one socket, the installer may identify the Master Socket by this process:

- Unhook the telephone attached to socket to be tested
- Wait until the dialling tone stops
- Lift the receiver on another telephone in the house, momentarily press the cradle switch and listen for a dial tone
- The Master Socket will be able to 'over-ride' any other telephones off-hook and obtain a dialling tone

Where an individual requests the alarm be installed in a socket other than the Master Socket or where a Master Socket cannot be identified, a Safe Socket/Call unit must be used to link the other telephone extensions to the main telephone line. Where the master socket cannot be identified, a safe socket/call unit should be used on all additional extensions.

Note: The Safe Socket/Call unit is used to automatically disconnect any telephone extensions that appear engaged or off-hock when a telecare alarm unit needs to dial out for assistance. One Safe Socket/Call unit is required per telephone extension

Power Socket Testing:- The installer should use the socket tester on the electrical socket then intend to use. If the electrical socket fails the test, the installer should consider using an alternative socket. If no safe electrical socket can be found, the installation should be abandoned and a report passed to line manager.

The installation process must ensure that the rights, dignity and wishes of each individual are observed and accommodated.

The installer *must* give information about:

- How to use the equipment and its limitations
- Any financial aspects of the service
- The individual's responsibilities for testing the equipment
- The importance of updating information held by the organisation
- How to report faults or request uplift
- How to register a comment or a complaint

- Any information leaflets or booklets about the service

They must ensure that the alarm is demonstrated and its proper use is explained to the individual's satisfaction.

The individual should be asked to activate the installation test calls from the button on the unit and the pendant.

On receipt of a first installation call, the ARC operator will welcome the individual onto the system, elicit a response, give reassurance that the service operates 24/7 and advise that future test calls are welcome.

The installer must:

- Programme and test all equipment to ensure that it is working
- Complete range testing which covers all rooms in the property and any garden space
- Explaining the equipment and answer any questions
- Get the individual to test the equipment and talk to Alarm Receiving Centre (ARC) operator
- Explain any written agreement or terms and conditions and get the individual to sign any documents
- Complete any paperwork including noting serial numbers of equipment being installed so that stock records can be updated

Best practice is to provide installers with an **Installation Checklist (Appendix 2)** to ensure no tasks are missed when installing equipment.

The most important role for the installer is to be sure the individual understands how the service works and can press the button to get assistance.

6.6   Customer Responsibility

This good practice guide has explained the organisation's and installer's responsibilities when arranging and completing a successful installation. However it is also important that the individual customer is aware of and understands their responsibilities in order for the installation to be completed successfully.

It is essential that the individual has:

- A modern telephone socket that accepts incoming and outgoing calls
- An electrical socket on the same wall as the telephone socket (within three meters to avoiding trailing wires)
- Provided an access solution which is specific to the local organisation but will include key holders, a key safe or providing a key for the organisation to hold on their behalf

If any of these essential requirements are not in place then the organisation cannot proceed with and the installation and therefore reserves the right to postpone or cancel the installation until these requirements have been met by the individual or their representative.

It is also very important that the customer understands that not all telephony suppliers guarantee to support community alarm systems and this may result in alarm activations not getting through to the 24/7 monitoring centre.

If the individual's telephony supplier is not BT, it is their responsibility to check that their telephone provider will support telecare alarm systems. This information should be referred to in the terms and conditions of the telephone provider's contract. If it is not in the terms and conditions, it is recommended that the individual contact the telephone provider to check this information.

Organisations cannot guarantee that the telecare alarm system will always work with all telephone providers.

7. Repair & Maintenance

Providers of sheltered housing developments and telecare providers should have maintenance contracts in place for hardwired systems. Good practice options for telecare alarm service providers include standard or extended warranty and maintenance contracts for telecare equipment.

The stock control system should record equipment purchase dates and highlight, in advance, all systems or individual sensors that are due for replacement either through age or coming up to an expiry date (if applicable). Both of these occurrences should be manufacturer advised i.e. the life expectancy of their products from a best practice point of view. The system should also flag up when batteries are due to be replaced.

Asset management systems should facilitate planned maintenance to enable sensors/systems and batteries to be changed in advance of their due date; and on re-issue for recycled equipment. This should reduce issues arising due to delays in obtaining access or problems with stock replenishment. This can only be achieved if there is a robust asset management system in place.

Reactive Repairs: Any faults that occur out with regular testing require to be dealt with promptly e.g. battery and unit failure calls, as the service users' safety may be at risk. Resources have to be targeted towards a rapid response but if there is a robust Planned Maintenance and Testing Programme in place, this should help reduce the numbers of faults occurring.

Faulty equipment should be dealt with under maintenance or warranty agreements i.e. equipment within warranty should be returned to the manufacturer for repair/replacement. Equipment out of warranty should be considered for replacement if this is more cost effective than repair. System and sensor setting changes should also be viewed in the same way as reactive repairs, as a rapid response can assist in prevent acute/long term care admissions. Any changes must be conducted in partnership with the care provider but can lead to better outcomes allowing clients to remain safely in their homes for longer. For example: timings on a property exit sensor or sensitivity on an epilepsy monitor.

Repair and maintenance should directly link to the asset management system.

7.1   Identifying / diagnosing faults

Emphasis should be placed on identifying emerging/changing needs and potential problems in relation to the telecare equipment and provide the emergency response to repair or replace the equipment. Consideration should be given to correctly identifying the response in relation to faulty equipment.

Faults in sensors that have been installed to manage a risk, for example property exit sensors, bed monitors and epilepsy sensors, require urgent action to either replace or repair the faulty sensors. Another example where urgent action would be essential is a failure of the mains power supply to a telecare alarm unit (the ARC will be informed of such a failure via the unit). However, the telecare alarm unit has a battery backup which lasts for 24 hours.

Any fault, which affects the normal functioning of telecare equipment, should be addressed (by replacing or repairing the equipment) as quickly as possible.

There will also be times when the equipment installed is no longer required or needs to be upgraded. Removal of a telecare device or service can result from a number of situations; common examples include the death of the individual or withdrawal of the service because the user has additional care needs.

8.   Testing

In the TSA process module '*Installation, planning maintenance and repair*', the TSA offers the following guidance:

Telecare equipment is designed to be used in safety critical applications, so it is essential that all devices and the system are tested on a regular basis. The frequency of testing depends on the manufacturer's recommendations. Service Providers shall have a procedure for encouraging service users to test their telecare base unit and/or their own pendant alarms and other worn radio triggers on at least a monthly basis to ensure, in

the first instance, that the radio link continues to work properly.

Method of Testing

- Monthly self-test of pendant/base unit by service user
- Monthly self-test of pendant/ telecare alarm unit by service users supported by Care at Home workers/Support Workers
- In House testing of all equipment – annual health check
- Testing by specialist external contractors – annual health check
- Volunteer responders/ family encouraged to support service user with pendant test and push button testing of smoke detectors and other life critical sensors – heat detectors, carbon monoxide detectors, gas sensors
- Specialist service testing of gas sensors, carbon monoxide sensors and "puff testing" of smoke sensors – annual health check
- Some manufacturer's equipment can be configured to raise a periodic call. If the monitoring centre does not receive one of these periodic calls, it prompts further investigation by the ARC as to why a call has not been received, for example, telephone line is not working.

8.1   Asset Information

Any planned testing programme requires accurate records of what assets require testing, where they are located in property, and when they require testing. Outcomes and Actions should be identified and recorded.

8.2   Arranging Access

- Refer to the Good Practice Guide – Access to Service Users Homes (http://www.tsa-voice.org.uk/sites/default/files/file-directory/Access%20to%20Service%20Users%20Homes.pdf)
- Arranging pre-planned appointments
- ID badges / identification

8.3 Health and Safety for Testing Personnel

- Environmental Risks
- Violence and Aggression Training
- Lone Working
- Infection Control/Hygiene/ Use of protective gloves
- Moving and Handling Training

8.4 Standards of Testing

- As per manufacturer's instructions.
- TSA Code of Practice *TSA's Technology Management Standards Module*.
  Section 2 highlights the requirement for service providers to ensure they have a procedure for the testing and calibrating where required equipment ahead of it being installed in the user's home.
- *TSA's Installation Planned Maintenance and Repair Process Module*.
  Section 18 looks at the routine testing of equipment within a service users' home, and section 19 provides detailed information on the testing of specific telecare sensor devices.
- Knowledge and training of those testing equipment.
- Written testing procedures – how to guide to include cleaning of smoke heads.
- Health and safety regulations.
- Welfare regulations.
- New partnerships liaise with appropriate sections of Health to ensure testing programme meets NHS Health & Safety requirements.

8.5 Portable appliance testing (PAT)

PAT forms part of health and safety policy requirements to ensure service providers take reasonable steps to determine that no danger results from using electrical appliances. Where electrical appliances are either used by employees, used in public areas or are supplied or hired, the Health & Safety at Work Act places a duty of care on service providers.

The TSA Code of Practice indicates that it is the service providers' responsibility to determine if their telecare equipment requires PAT testing.

However suppliers and manufacturers advise that telecare equipment does not need to be tested under PAT regulations, as telecare sensors work on a radio frequency and telecare base units operate in conjunction with a plug transformer, therefore the cable to the unit is low voltage.

9. Equipment Replacement

TSA Guidelines state that service providers shall ensure all telecare equipment is maintained and tested in accordance with the manufacturer's recommendations. Service Providers should have a planned maintenance/ replacement programme for all equipment installed in the service user's home, and a record should be kept of the maintenance and testing undertaken.

9.1 Planned Equipment Replacement

- Strategic plan for replacement of equipment to include financial investment, life-cycle cost analysis, specifications and standards
- Manufacturers guidelines on lifecycle of equipment
- Organisational risk assessment if equipment Is not to be replaced as per manufacturer guidelines.

9.2 Faulty Equipment Replacement

- Agile, reactive service delivery to replace faulty equipment
- Specialist knowledge and training
- Access to replacement equipment
- Stock levels

9.3 Maintenance Information Systems

- IT system which provides automated replacement reports. The IT system should support financial investment.
- Manual system for recording of service user details, assets, with lifecycle replacement dates. Linked to service user records.
- Co-ordination of Replacement Programme.

9.4 Battery Replacement (see Appendix 3)

It is important to have procedures in place to manage the replacement of batteries in telecare sensors. Depending on the sensor/device type, battery replacement may be necessary between 3-6 months and 10 years.

In some cases, batteries can be simply changed, in others the complete telecare sensor/device will have to be returned to the manufacturer. All manufactures should be able to provide guidance on battery management for their sensors/devices which should include how often each sensor/device should be tested and how the batteries are replaced.

A Low Battery is a call from a device (pendant, door connector, fall detector, smoke detector, etc.) normally upon activation where the equipment senses a low battery at the same time. An Auto Low Battery is an alert call to the ARC that the battery within the equipment needs replaced. Some technology has in-built battery self-test functionality or will alert the ARC of low battery status.

One manufacturer's example in relation to auto low battery replacement states that; telecare devices perform an automatic battery test every 24 hours. If the voltage falls and stays below a pre-set level for 7 consecutive days a "low battery" alarm is reported. Once a low battery call is received, the device/battery should be replaced within 7 days.

However if there is no clear guidance from the manufacturer on the length of time that the equipment will work after an auto low battery alert is received; any auto low battery calls should be actioned as soon as possible. Unlinked smoke detectors use sound to indicate such conditions to the user; they can then (if appropriate) activate telecare device to alert the Service Centre so that a battery replacement can be provided.

Some sensor devices will have two sets of batteries, one for the sensor itself and one for the radio transmitter. It does not necessarily follow that the automatic battery-low indication applies to both batteries; in many first generation sensor products, only the battery state of the transmitter would be signalled automatically.

Service providers must refer to the instructions of each device in order to determine if there is a single battery which covers all functions (as in a smart fall detector for example) or whether there are two sets of batteries to be considered.

As above, vital sign peripherals devices which require batteries should have them supplied with the equipment; arrangements should be made by the Service Provider to ensure that the user can continue to undertake their monitoring as per their telehealth plan.

10. Decontamination

Decontamination is the process of cleansing an object or substance to remove contaminants such as micro-organisms or hazardous materials, including chemicals, radioactive substances, and infectious diseases. TSA **Installation Maintenance and Repair Module** states that Service Providers should demonstrate procedures for purchase management, maintenance and repair. This includes reference to disinfection/decontamination and re-use policies e.g. enuresis sensor pads. https://www.gov.uk/government/collections/decontamination-and-infection-control

10.1 Waste electrical and electronic equipment (WEEE)

All suppliers and manufacturers will uplift obsolete and faulty equipment for disposal free of charge. Equipment is disposed of in accordance with the Waste Electrical and Electronic Equipment (WEEE) Regulations 2006. The WEEE directive was introduced into UK law in January 2007. The WEEE directive aims to reduce the amount of electrical and electronic equipment being produced and to encourage everyone to re-use, recycle and recover it. The WEEE directive also aims to improve the environmental performance of businesses that manufacture, supply, use, recycle and recover electrical and electronic equipment.

Appendix 1   Health and Safety Legislation

The Health and Safety at Work Act 1974 is the main legislation in the UK that sets out guidance for employers, managers and employees on health, safety and the wellbeing of individuals within any organisation. The following table provides information on some of the key legislation and regulations developed in line with the Health and Safety at Work Act that apply to the role of an installer.

The Health and Safety at Work Act 1974	This is the major piece of legislation covering health and safety in the UK. As new legislation is introduced to provide protection in the workplace, it tends to be added to this Act in the form of supplementary regulations.
Safety Representatives and Safety Committees Regulations 1977	Makes it mandatory for employers to consult with trade union safety representatives regarding health, safety and wellbeing issues for all employees. Health and Safety (First Aid) Regulations 1981.
Health and Safety (First Aid) Regulations 1981	Outlines the management of and responsibilities for first aid in the workplace. Specifies the training and development needs of first-aiders in work settings.
Manual Handling Operations Regulations 1992	Concerned with all aspects of moving and handling of people and equipment, alongside the assessment of risk related to manual handling.
Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 1995	Makes it a legal requirement to report certain events and situations, for example death at work, infectious diseases.
Management of Health and Safety at Work Regulations 1999	Introduces mandatory risk assessments to be carried out by employers in all work situations.
Electricity at Work Regulations 1989, The Electrical Equipment (Safety) Regulations 1994, and Electrical Safety, Quality and Continuity Regulations 2002	Provides guidance on safe working practice for people who are carrying out work on or near electrical equipment.
Control of Substances Hazardous to Health Regulations (COSHH) 2002	Intended to provide protection for employees and service users from a whole range of potentially hazardous substances in the workplace.
Lifting Operations and Lifting Equipment Regulations (LOLER) 1998	The regulations relate to the lifting of goods or people at work. Equipment covered is broad, including slings, ropes, fork lift trucks, and lifts.

Environmental Protection Act 1990	Outlines the structure and authority for waste management and control of emissions into the environments. Controlled waste includes household, industrial and commercial waste, to avoid pollution of the environment.
Provision and Use of Work Equipment Regulations 1998 (PUWER)	Places duties on people and companies who own, operate or have control over work equipment. PUWER also places responsibilities on businesses and organisations whose employees use work equipment, whether owned by them or not.

Appendix 2   Installation Checklist

Name	
Address	
Date of Installation	
Installer's Name	

Installation Tasks to Complete	Tick
Suitable electric socket near phone socket used	
Electric socket tested as working	
Main phone line used	
If main phone line not used, risks explained to user or safe-socket used	
Phone line tested as working	
Specify phone provider	
Unit / pendant / other telecare labelled correctly	
Cables tied and tidy (no tripping hazards)	
Unit / pendant / other telecare programmed and tested to ARC	
Specify location of alarm unit	
Range test completed in property and garden	
Equipment explained to individual and information leaflet left	
Individual reminded to test pendant (weekly / monthly)	
Fault reporting procedure explained	
Complaints procedure explained	
Terms of Service / Contract discussed, signed and left with individual	
Complete Visit Record paperwork (equipment installed and serial numbers)	
Removed any items that are no longer required i.e. packaging / paperwork	

Problems / Issues

Service User Signature		Date	

Appendix 3
Battery Replacement

Auto low battery functionality is incorporated into all 869MHz devices. It is there to provide additional protection and reassurance to service users by regularly checking that personal trigger batteries are working, rather than relying solely on a manual test by the user. The first personal triggers with the functionality are now beginning to send auto low battery reports to ARCs.

1. What is the Low Battery Feature?
Personal triggers are programmed to automatically test their own battery every seven days throughout their life. This test could happen at any time of the day or night and cause a silent alert call to be made to the monitoring centre.

2. Why does it do this?
Regular testing of personal triggers is recommended to ensure they are in working order when needed. However, if a service user forgets or is unable to carry out a test, this feature will ensure that the battery is regularly tested.

3. What happens next?
If the battery is OK then the trigger will not signal anything and wait for a further seven days before repeating the test. If the battery is low then the trigger will signal to the telecare alarm unit which, in turn, will report the failure to the ARC.

4. Recommended actions
The ARC should firstly confirm the low battery by contacting the service user and requesting they manually test their trigger.

5. Why should any confirmation be necessary?
Low battery reports can be caused by other factors such as when the trigger has been temporarily placed in a cold area – e.g. on a windowsill. Because triggers automatically test themselves at any time of the day or night such instances can easily occur. An auto low battery call under these circumstances may not be considered valid. The prompt however allows for a follow-up manual test to confirm the status under normal circumstances.

6. Recommended management
If the manual test is successful (i.e. battery is OK) then the trigger should be left with the customer. If the manual test fails then the trigger should be replaced..