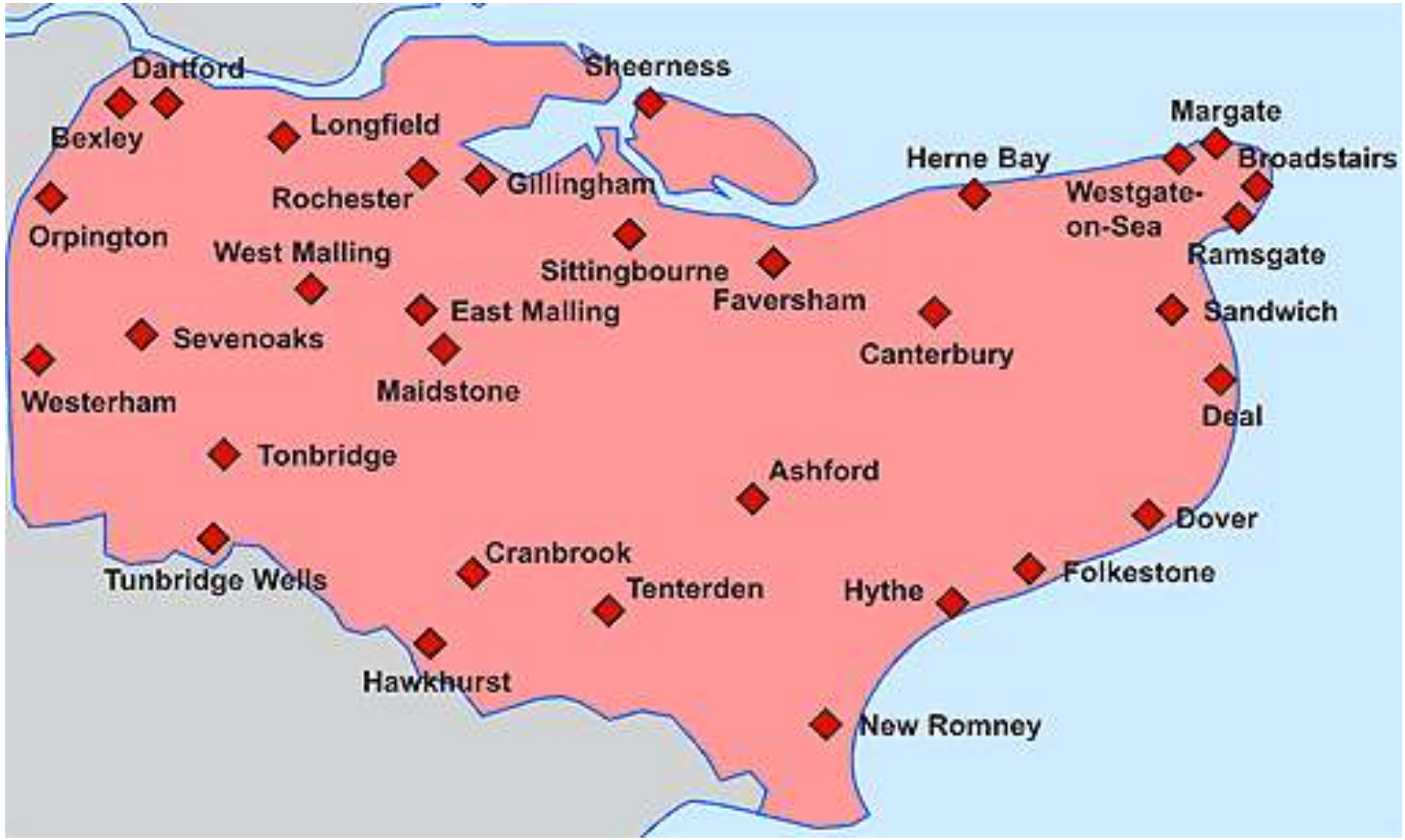
2Gether Support solutions
East Kent Hospital
RFID Case Study

Andy Barrow
Head of Electronics, Medical Engineering & Radiology Maintenance
2Gether Support Solutions
East Kent Hospital University Foundation Trust
Clinical Engineering

Kent….. The Garden of England



East Kent Hospitals

East Kent Hospitals University Foundation Trust has a total of 1173 beds spread across three acute sites and 2 cottage hospitals.

William Harvey – Ashford

Queen Elizabeth the Queen Mother – Margate

Kent & Canterbury – Canterbury

Buckland Hospital – Dover

Folkestone Hospital - Folkestone

Ashford famous for Uumm……. Passing through to go to France

M20’s Operation Stack & Project Brock

William Harvey Hospital
Largest of the Acute sites

City of Canterbury

Kent & Canterbury Hospital

Margate

Queen Elizabeth The Queen Mother Hospital

The Scale of my worries back in about 2014

Medical Engineering Managed about 21,000 medical devices across the 3 acute sites and 2 small satellite hospitals in Dover and Folkestone (48,000 Devices including Community contracts) with 35 staff

Then one day the CQC came visiting

Back in 2014 the CQC came to visit and kindly identified a few of issues around the Management of Medical Devices and I saw this as a time to invest in the future

The Problems were

- The trust expanding rapidly of sprawling sites
- Services optimised and Departments moved across sites so loosing devices
- Under & Over utilisation of medical devices
- Lack of devices when needed/poor storage
- Poor standardisation of devices
- Preventative Maintenance falling well short of target (98%)
- Training associated with medical devices

Road to improvement across the trust

- Improvement & Innovation hubs
- Funding stream for more EME technicians
- Stronger, more accountable governance for Medical devices
- Buy in from all department regarding Maintenance
- Procurement of technology
- Importantly Getting IT involved and on board

Setting up of Equipment Library's

- Library's to be set up an 3 Acute sites
- Look at the Addenbrooks Hospital MEL Model
- Recruiting of Library staff
- Procurement of RFID Infrastructure and active tags
- Installing the RFID and IT Infrastructure
- Phased introduction of MEL’S
- Updating our ISO9001/13485 registration to include The Medical Equipment Library's

The big build starts

Addenbrooks Model

Site visits to Addenbrooks to meet with Simon Dawkins the Medical Equipment Library Manager

Learnt lots of small but essential tips on setting up the library and the processes of RFID tagging that were relatively new to the medical devices world

Recruiting for MEL's

- Recruited 3x Band 2 & 3x Band 3 Equipment library staff
- 3 Band 3 Associate EME Technicians
- 1 x Band 5 Equipment Library Manager

The RFID Journey

- Initial 3000 Active RFID tags
- Discussions as to what to tag for maximum gain
- Where to physically tag the device
- Location of Fixed active RFID Readers
- Integration of Harland & Simons RFID Discovery Database to Our Database Info Health's F2 V3.0

RFID Infrastructure

- Combination of fixed point readers and Hand Held PDA’s
- Fixed readers in Workshops, Equipment Library's and Equipment Buffers stores
- Data fed back to the medical engineering data base and back end reports written

Phase 1 Active RFID Tagging started

What we Tagged

- Infusion Pumps
- Syringe drivers
- ECG
- Monitors
- Falls Monitors
- Sat’s Machines
- Bed frames……

Active RFID Tagging lessons

- Tagging Labour intensive as we were against a project clock.
- Essential that data was correct at entry as mistakes caused a few problems.
- Enabled our F2 database records to be audited at same time.
- USE BAR CODE READERS to scan Tags in
- Photograph and document tag location on specific medical devices for standardisation

William Harvey Library

Discovery Integration

- Initial setting up of the integration of the 2 databases was intensive
- Getting The Fixed readers on to the Hospitals IT Network was sometimes a challenge
- Essential to have named contacts in IT

Then It started to all work….

- Trust very quickly saw the benefits of have the Medical Equipment Library's with the ability to RFID Track devices
- Using the Hand Held PDA’s any staff member can scan wards and area looking for devices that are out of service date or are becoming due for annual service.
- Better use optimisation of devices

More advantages

- Better infection control.
- Smarter Purchasing of device numbers
- Shows areas where more equipment is needed
- Found we had excess of 96 Alaris GH pumps across sites
- Tracking of the decontamination of Dynamic mattresses

What the CQC Said at the next visit

"Our observations and discussions with staff indicated that access to equipment was good. The introduction of an equipment library (including the use of radio frequency identification tags) has been of benefit."

The awards


TRUST
AWARDS
2015
Supported by
East Kent Hospitals Charity
People feel safe, reassured and involved

Lord Carters recognition April 2017

Where we were in 2017

- Purchased additional 2000 tags to Tag all our bed frames as it is a struggle to locate them for maintenance
- Clinical Engineering have to date written 56 reports that can be run that show all aspects of the management of the devices and their locations via RFID

The future developments

- Display screen in Library's showing real time data in Equipment Buffer stores (A/E) giving a par of the devices so staff can be proactive.
- Purchase more Active RFID tags.
- Expand our network of fixed RFID Readers
- Add the cost of an Active RFID Tag to the cost of every Medical Device Purchase
- Allow over providers in the trust to use RFID Tagging & Discovery to track their assets.

……Future

- Serious look into Passive RFID for Foam mattress management and the management of smaller items
- Look at the Harland & Simon solution to Theatre stock management
- Looking at work flow management making sure devices follow the correct work flow and alerted if not.

Reflection so far as a MUST DO

- Need IT on board 100%
- The RFID system needs to be driven by a systems manager as it needs to be managed constantly. As locations and asset integration is constantly changing
- Passive tags need model specific label location
- Integrations between Medical engineering database and RFID software have had their challenges to good relationships need to be formed

Where we are today 2019

- We have now moved to passive tagging and are currently 52% complete of our now 35000 as this is being rolled out with the GS1 requirements for device labelling
- Continued development of RFID software's with our supplier
- Starting to RFID Tag domestic equipment managed by out Soft/Hard FM teams
- Managing Patient transfer chairs so as always available at their storage points at the hospital receptions

- Integration of data to the Medical Engineering Department information screens
- Looking for novel opportunities for integration of Passive RFID

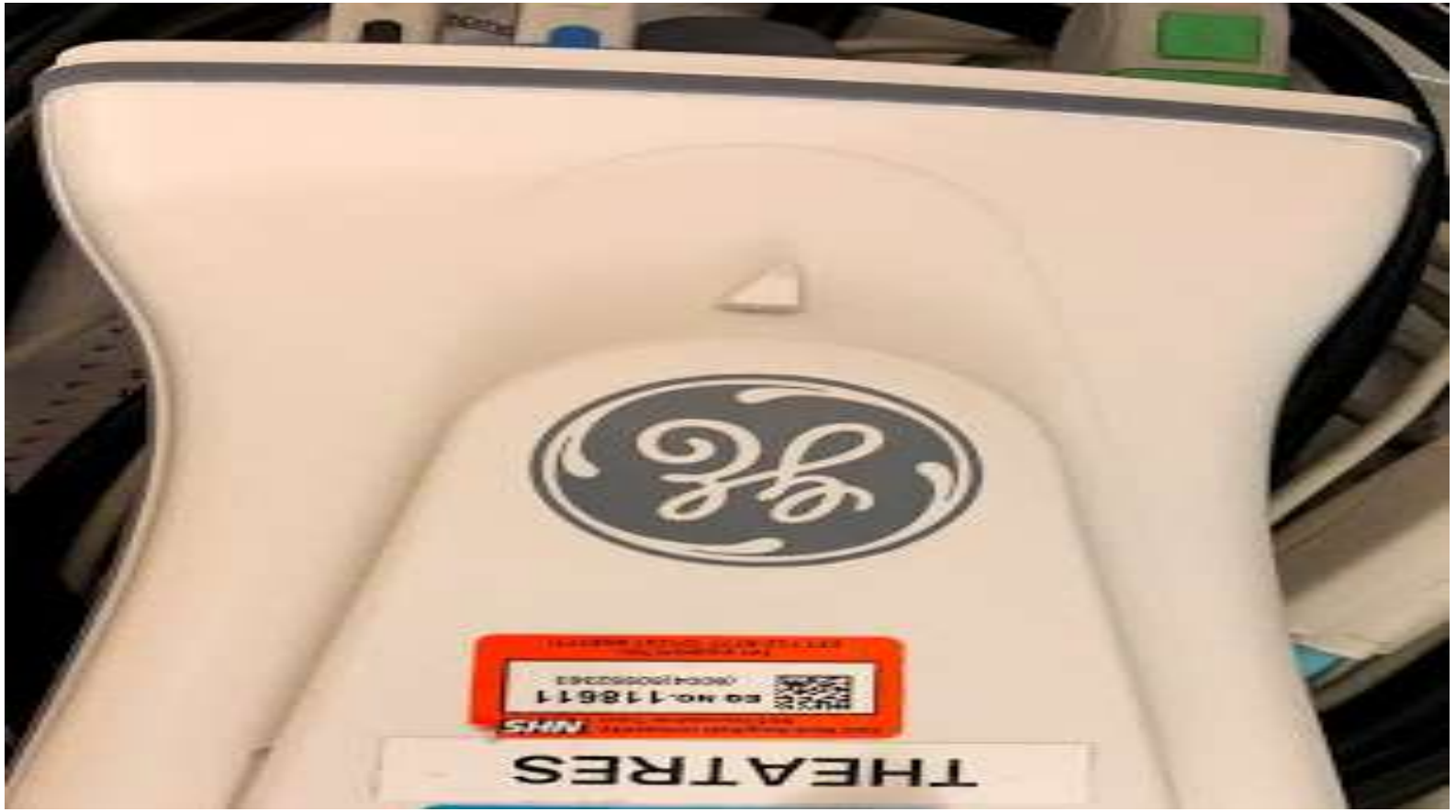
Passive Tags/GS1 labels

- Passive RFID Tags come in all shapes and sizes and so a selection is needed
- We use three sizes that are printed with the unique device number in GS1 format
- All these tags come with the RFID chip pre- programmed
- Range is dependent on physical size/ surroundings

Largest size RFID Tag (Range 10m line of sight)

Medium Size Passive Tag (5m – 7m)

Smallest Size Passive RFID Tag
(Found not very effective)



Passive Tagging Challenges

- Tag positioning need to be tested for every model and then tagged in the same place all the time for that model
- May I suggest photos in a shared file
- Correct label size selection
- Staff do need training/understanding
- Understanding the Limits of RFID Technology
- The most important thing to remember is that RFID technology is only as useful as the people using it.

Passive Tagging Practicalities

- Depending on what you are attaching the label to will depend on it effectiveness and range of the RFID tag
- If the substrate is plastic it may well have a sprayed EMS coating on the inside reducing is range

Passive tag Peeling issues

- Peeling of labels
- Surface preparation/de-greasing

Additional Programmable Passive Tags that will add range to an existing label (at a cost).

Additional Tag configurations are numerous

Issues on minimum order numbers usually circa 1000 +

Sew in Passive RFID tags

O2 flow meters/suction regulators now so easy to audit

Device tagging examples


mindray
Standby

Limitations of Passive RFID vs Storage

Passive/active RFID tag reader

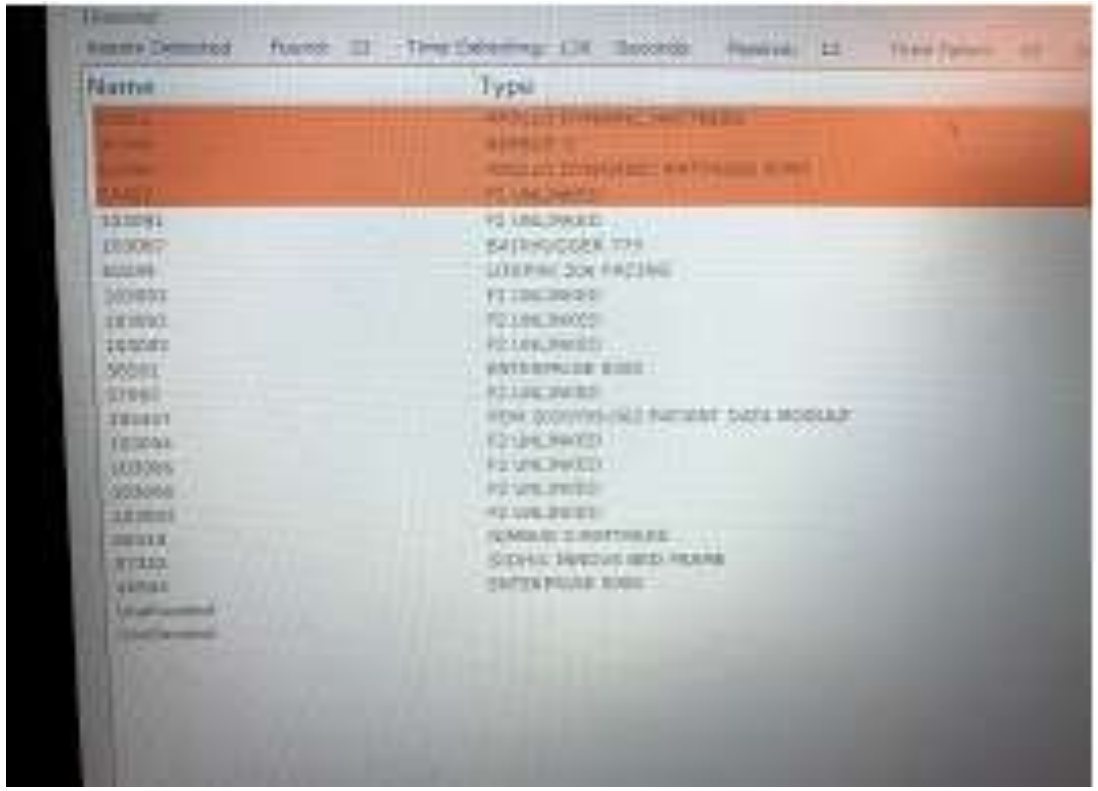
Hand held Passive only scanners

Limitations of passive scanning through metal door furniture

Lead lined X-ray areas

Poorly organised storage areas

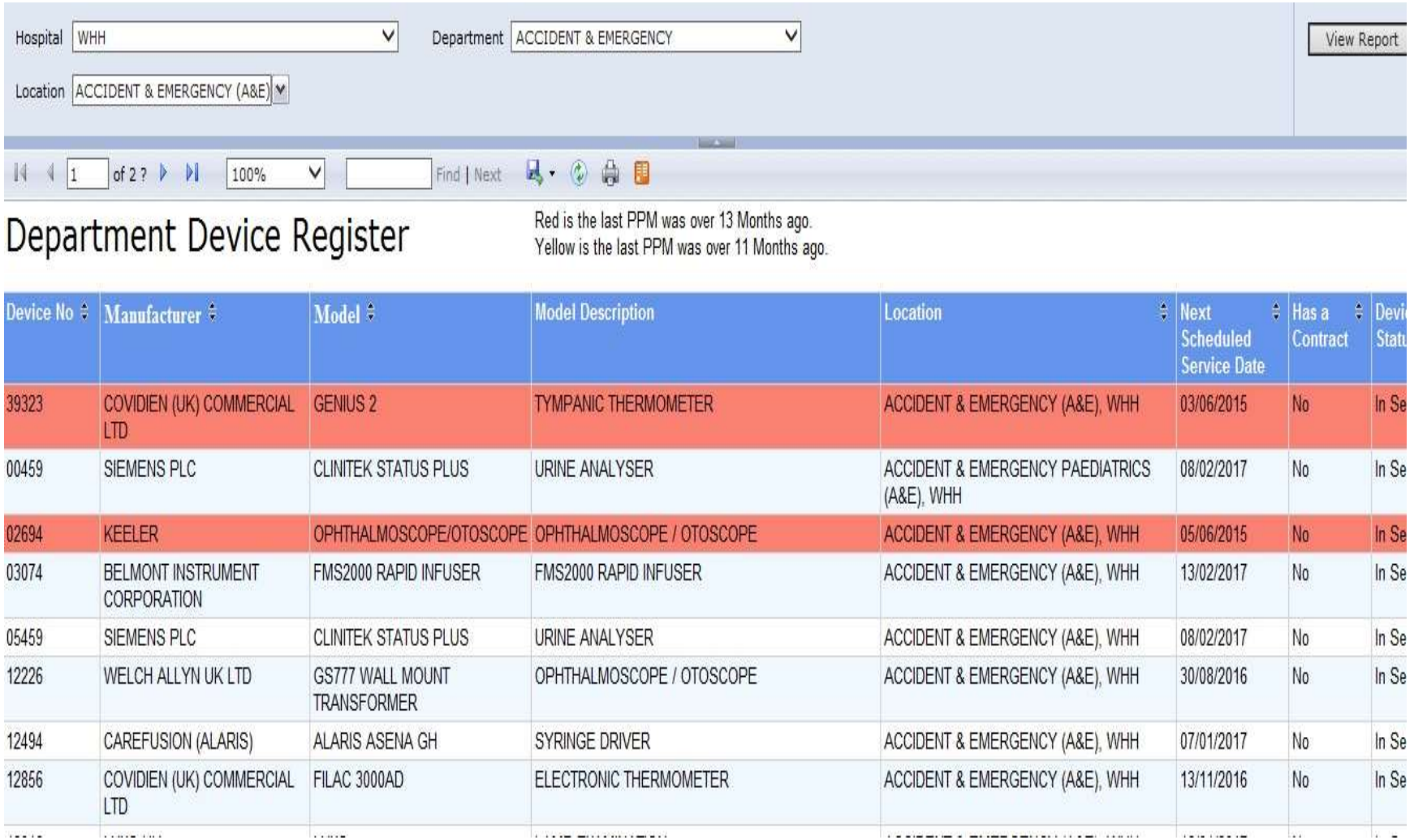
Trolley Scanning data



Updating of last inventory dates & Locations

Updates all our systems and info screens with last seen location and date

Reports



Department Device Register

Red is the last PPM was over 13 Months ago.
Yellow is the last PPM was over 11 Months ago.

Device No	Manufacturer	Model	Model Description	Location	Next Scheduled Service Date	Has a Contract	Devi Statu
39323	COVIDIEN (UK) COMMERCIAL LTD	GENIUS 2	TYMPANIC THERMOMETER	ACCIDENT & EMERGENCY (A&E), WHH	03/06/2015	No	In Se
00459	SIEMENS PLC	CLINITEK STATUS PLUS	URINE ANALYSER	ACCIDENT & EMERGENCY PAEDIATRICS (A&E), WHH	08/02/2017	No	In Se
02694	KEELER	OPHTHALMOSCOPE/OTOSCOPE	OPHTHALMOSCOPE / OTOSCOPE	ACCIDENT & EMERGENCY (A&E), WHH	05/06/2015	No	In Se
03074	BELMONT INSTRUMENT CORPORATION	FMS2000 RAPID INFUSER	FMS2000 RAPID INFUSER	ACCIDENT & EMERGENCY (A&E), WHH	13/02/2017	No	In Se
05459	SIEMENS PLC	CLINITEK STATUS PLUS	URINE ANALYSER	ACCIDENT & EMERGENCY (A&E), WHH	08/02/2017	No	In Se
12226	WELCH ALLYN UK LTD	GS777 WALL MOUNT TRANSFORMER	OPHTHALMOSCOPE / OTOSCOPE	ACCIDENT & EMERGENCY (A&E), WHH	30/08/2016	No	In Se
12494	CAREFUSION (ALARIS)	ALARIS ASENA GH	SYRINGE DRIVER	ACCIDENT & EMERGENCY (A&E), WHH	07/01/2017	No	In Se
12856	COVIDIEN (UK) COMMERCIAL LTD	FILAC 3000AD	ELECTRONIC THERMOMETER	ACCIDENT & EMERGENCY (A&E), WHH	13/11/2016	No	In Se

Email post to department medical device manager

The CQC will love this

- Once scan has taken place the trolley software automatically post a email to all interested parties for that department stating the area was scanned and these are the devices that have been found to be out of date so arrangements can be made to make them available to Medical Engineering

Alert Email alert sent to all interested parties

Department/Ward RFID Scan action needed

Dear Colleague, your department/Ward was RFID scanned today and the devices below are over due a service. Please can you contact your local EME department to arrange a service as soon as possible.

Category	Asset Name	Asset ID
DIAMOND SINGLE OXYGEN (O2) FLOWMETER OXYGEN FLOWMETER	105469	F2 Inserted Asset
DIAMOND SINGLE OXYGEN (O2) FLOWMETER OXYGEN FLOWMETER	105471	F2 Inserted Asset
WALL OXYGEN FLOWMETER (O2) OXYGEN FLOWMETER	105654	F2 Inserted Asset
WALL OXYGEN FLOWMETER (O2) OXYGEN FLOWMETER	105655	F2 Inserted Asset
WALL OXYGEN FLOWMETER (O2) OXYGEN FLOWMETER	105657	F2 Inserted

RFID Tagging of Reusable hoist slings for LOLER testing

Added washable Passive tag

So they are tracked not thrown away

The future of Passive RFID

- Better Passive readers are coming on line that are more reliable and cost effective
- Novel passive readers are becoming available
- Direction of travel
- Experts also anticipate rapid growth of RFID use in the pharmaceutical

So the benefits….

- Confidence to the trust & CQC that medical devices are serviced routinely and managed as well as can be
- Improved shared responsibilities (ward-eme)
- Medical devices database constantly kept up to date as of every trolley scan
- Ability to located devices out of sight for example drugs cabinets/behind curtains etc

- Track devices that are on loan/Trial
- Financial accountability via the data base being updated with the last inventory date
- Tracking devices that related to a FSN/MDA alert.
- Optimise Medical Equipment Library PPM functionality through tracking
- Unnecessary procurement of devices


YOU NEED RFID

Thank you to…

- The manufactures and suppliers of all the systems for all there site visits and help over the phone. Excellent support
- Addenbrooks Professor White & Simon Dawkins the then Equipment Library manager
- My staff who have put so much into getting the new systems up and running
- David Attwell head of clinical engineering

Are you still dong it manually?

I’m happy for anybody to come down to Kent for a site visit

Andy.Barrow@NHS.Net

Any Questions?