2Gether Support solutions
East Kent Hospital
RFID Case Study

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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 having 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
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 its effectiveness and range of the RFID tag.
• If the substrate is plastic it may well have a sprayed EMS coating on the inside reducing its 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
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

<table>
<thead>
<tr>
<th>Device No.</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Model Description</th>
<th>Location</th>
<th>Next Scheduled Service Date</th>
<th>Has a Contract</th>
<th>Dev Sts</th>
</tr>
</thead>
<tbody>
<tr>
<td>39323</td>
<td>COVIDEN (UK) COMMERICAL LTD</td>
<td>GENIUS 2</td>
<td>Tympanic Thermometer</td>
<td>ACCIDENT &amp; EMERGENCY</td>
<td>03/02/2015</td>
<td>No</td>
<td>In Se</td>
</tr>
<tr>
<td>00459</td>
<td>SIEMENS PLC</td>
<td>CLINITEK STATUS PLUS</td>
<td>Urine Analyser</td>
<td>ACCIDENT &amp; EMERGENCY PAEDIATRICS</td>
<td>08/02/2017</td>
<td>No</td>
<td>In Se</td>
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<tr>
<td>02994</td>
<td>KEELER</td>
<td>OPHTHALMOSCOPE/OTOSCOPE</td>
<td>Ophthalmoscope / Otoscope</td>
<td>ACCIDENT &amp; EMERGENCY</td>
<td>05/08/2015</td>
<td>No</td>
<td>In Se</td>
</tr>
<tr>
<td>03074</td>
<td>BELMONT INSTRUMENT CORPORATION</td>
<td>FMS2000 RAPID INFUSER</td>
<td>FMS2000 Rapid Infuser</td>
<td>ACCIDENT &amp; EMERGENCY</td>
<td>13/02/2017</td>
<td>No</td>
<td>In Se</td>
</tr>
<tr>
<td>05459</td>
<td>SIEMENS PLC</td>
<td>CLINITEK STATUS PLUS</td>
<td>Urine Analyser</td>
<td>ACCIDENT &amp; EMERGENCY</td>
<td>04/02/2017</td>
<td>No</td>
<td>In Se</td>
</tr>
<tr>
<td>12226</td>
<td>WELCH ALLYN UK LTD</td>
<td>GST77 WALL MOUNT TRANSFORMER</td>
<td>Ophthalmoscope / Otoscope</td>
<td>ACCIDENT &amp; EMERGENCY</td>
<td>30/06/2016</td>
<td>No</td>
<td>In Se</td>
</tr>
<tr>
<td>12494</td>
<td>CAREFUSION (ALARIS)</td>
<td>ALARIS ASENA QH</td>
<td>Syringe Driver</td>
<td>ACCIDENT &amp; EMERGENCY</td>
<td>07/01/2017</td>
<td>No</td>
<td>In Se</td>
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<tr>
<td>12855</td>
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<td>ACCIDENT &amp; EMERGENCY</td>
<td>13/11/2016</td>
<td>No</td>
<td>In Se</td>
</tr>
</tbody>
</table>

Rod is the last PPM was over 13 Months ago. Yellow is the last PPM was over 11 Months ago.
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 overdue for service. Please can you contact your local EME department to arrange a service as soon as possible.

<table>
<thead>
<tr>
<th>Category</th>
<th>Asset Name</th>
<th>Asset ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIAMOND SINGLE OXYGEN (O2) FLOWMETER OXYGEN FLOWMETER</td>
<td>105469</td>
<td>F2 Inserted Asset</td>
</tr>
<tr>
<td>DIAMOND SINGLE OXYGEN (O2) FLOWMETER OXYGEN FLOWMETER</td>
<td>105471</td>
<td>F2 Inserted Asset</td>
</tr>
<tr>
<td>WALL OXYGEN FLOWMETER (O2) OXYGEN FLOWMETER</td>
<td>105654</td>
<td>F2 Inserted Asset</td>
</tr>
<tr>
<td>WALL OXYGEN FLOWMETER (O2) OXYGEN FLOWMETER</td>
<td>105655</td>
<td>F2 Inserted Asset</td>
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<tr>
<td>WALL OXYGEN FLOWMETER (O2) OXYGEN FLOWMETER</td>
<td>105657</td>
<td>F2 Inserted Asset</td>
</tr>
</tbody>
</table>
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 database being updated with the last inventory date
• Tracking devices that are 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?

SO I JUST FINISHED

COUNTING THE ASSET TAGS MANUALLY
I’m happy for anybody to come down to Kent for a site visit

Andy.Barrow@NHS.Net
Any Questions?