

CareCube Delivering Tangible Benefits

Highlights from the Case Study and Collaboration
with Liverpool Heart & Chest Hospital (LHCH)



CareCube

In Pursuit of Excellence in Operational Efficiency and Patient Safety

Cardiovascular intervention at the **Liverpool Heart and Chest Hospital (LHCH)** is widely regarded as a beacon for innovation and excellence, not only in the UK but in Europe and beyond. This drive for excellence has, at its foundation, a willingness to identify problems, create innovative solutions and a commitment to delivering any required change. In line with other institutions **LHCH** face complex challenges; demonstrating operational efficiency, patient safety and ensuring every effort is made to make the best use of available resources.

Collaboration with CareCube

Throughout the last decade Liverpool has been aware of the need for quality information. Practical experience gained with locally developed, stand alone, 'pilot' digital systems provided helpful but limited support over the years. However, the collaboration with **CareCube** in 2017 has enabled the realisation of objectives for scheduling, patient tracking and patient safety.

CareCube has provided a much-improved level of functionality to the existing digital systems. The local stand-alone systems have been replaced with a single platform; providing a level of transparency and connectivity across all the clinical areas. **CareCube** simplifies and centralises the complex nature of scheduling and tracking of patients. The application provides a framework for clinical teams to support patient safety, reduce human error and make best use of resources.

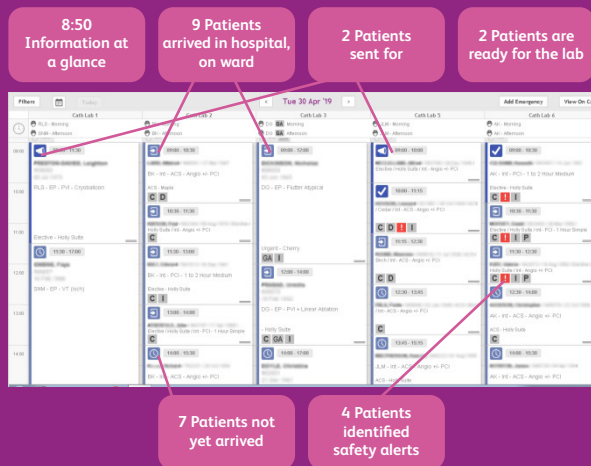


Scheduling

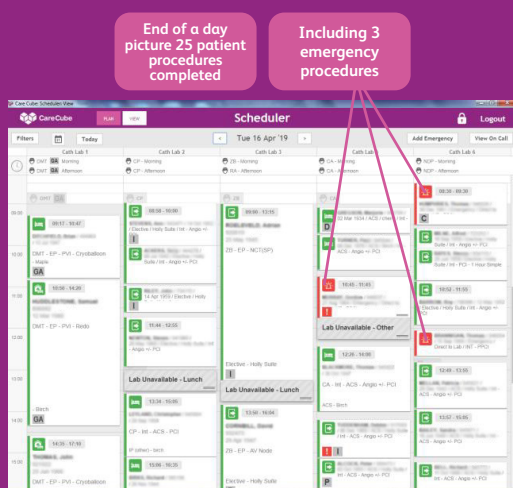
The scheduling of clinical activity across clinical areas is complex and multifaceted. CareCube is more than just a diary system; supporting planned and unplanned activity. Changes made, for example in the office of the cath lab co-ordinator will immediately be reflected on the screens of consultant staff and ward nurses, linking teams in separate clinical areas. This ability to perform 'real time scheduling' eliminates the need for multiple, individual communications.

Fig 1: Shows a schedule at the start of a day highlighting the symbols which aid communication and then a schedule record for the end of a day, highlighting emergency cases fitted into the workload.

Start Of Day:



End Of Day:



Although we tend to quantify the benefits and efficiency savings with numerical parameters like cath lab turnaround time, the number of cases performed in a day and other similar measures - there are, in reality, substantial savings in staff time meaning that members of the clinical team can devote themselves more directly to the care of their patients.

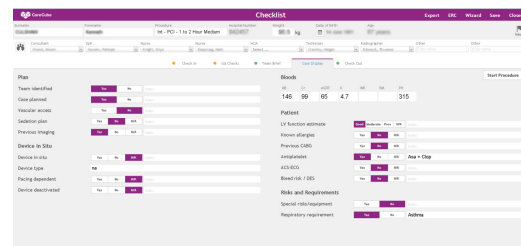


Patient Safety Checklist

The CareCube patient safety checklist is based on work previously undertaken by the team at LHCH. It has as its foundation the principles of recognised patient safety guidance; meeting BCIS, WHO and NatSSIPs standards.

The 'checklist' process runs from check in through team-brief, case display and check out. Six procedure-specific checklists are provided, with up to sixty auditable data points per patient.

Key data relevant to the patient is displayed throughout the procedure in the 'Case Display'. This is an important visual aid and plays a vital role in briefing staff arriving mid case in support of an emergency event. The checklist concept has now been extended within CareCube to include the addition of 'flagged issues.' This facility allows staff to make observations or 'flag' a case so that potential learning opportunities are identified at the time. Flagged issues can be reviewed daily and reported monthly and help to empower clinical teams to speak out safely.



For the cath lab manager the 'safety flags' are...

“ a God send when it comes to immediate and accurate flagging of issues during a case - leading to shared learning across the clinical team. ”



Reporting

The goal of continual improvement is only achievable with access to timely, relevant and accurate information. Teams and organisations require regular feedback on performance of reliable, objective data to help inform, decide and plan future developments. Liverpool now has, with the introduction of CareCube, a broad range of invaluable data to support operational and clinical governance.

The Model Hospital and Care Quality Commission (CQC) demand a level of transparency for the key parameters of safety and quality;

- Lab Allocation
- Touch-time
- Start time
- Finish time
- Case numbers
- Turn-around time
- Deferral rate
- Cancellations

CareCube delivers reports on all these metrics and, in addition, provides valuable safety data on checklist completion and 'flagged issues'.

A six-month review

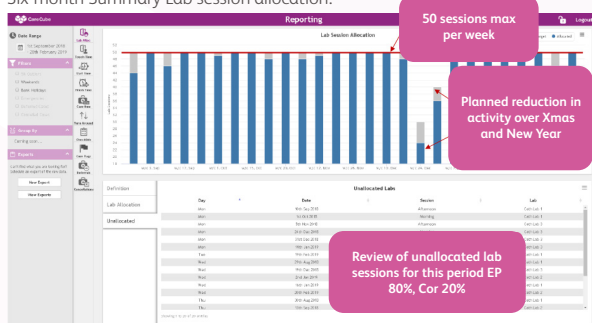
A review of performance using CareCube over a six-month period from 1st September 2018 to 28th February 2019 has been undertaken. Some key highlights from the key areas of performance, efficiency and best of use of resources are seen below.

Cath Lab Allocation

LHCH has 5 catheter labs and over a working week this equates to 50 sessions. Throughout the six-month period there were 20 unallocated sessions, 16 (80%) in designated EP labs and 4 (20%) in coronary labs.

The feedback from CareCube led to a review and revision of working practices across the team.

Six-month Summary Lab session allocation:

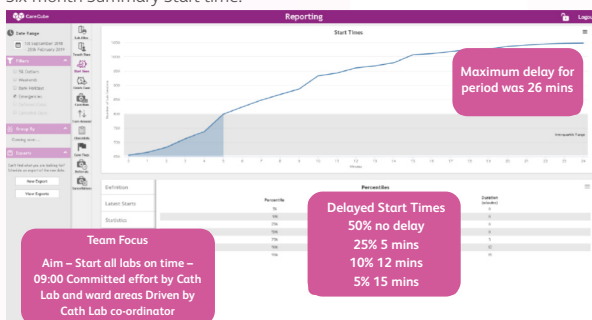


Lab Start Times

The lab start times are enshrined in the cath lab rules. The aim is to have a patient on the table at 09:00hrs across all 5 labs. The cath lab co-ordinator role is the main driver for this focus which requires dedication and commitment from the teams in all the clinical areas.

The six-month review of this metric showed a maximum delay time of 26 minutes. For 50% of the time all labs started at 09:00hrs, a 5 min delay occurred 25% of the time, a 12 min delay 10% of the time and 15 min delay 5% of the time. The report module has the capability to drill down and scrutinise the data, to identify potential outliers or patterns of practice.

Six-month Summary Start time:

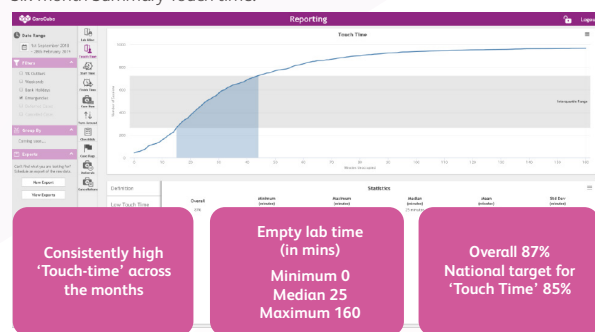


Touch Time

One important metric to provide evidence for best use of resources is ‘touch-time’. The definition of ‘touch-time’ is the amount of time patients are in the catheter lab with the clinical team.

This will include preparation and set up, the procedure and immediate post procedure activity. The national standard for touch-time is 85%. Over the six-month period the touch time at LHCH was 87%. This is above the national target set by the Model Hospital and CQC.

Six-month Summary Touch time:

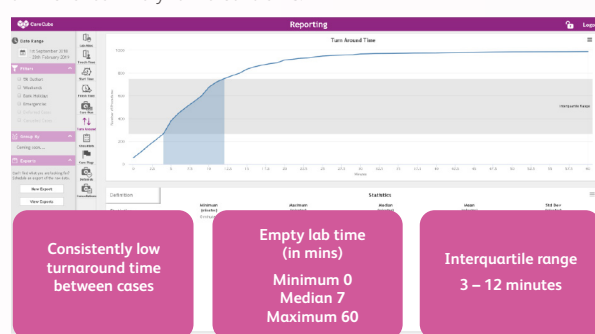


Turn-around Time

A second measurement reflecting best use of resources is ‘turn-around time’; the amount of time the lab is empty between cases.

For the six-month period median turn around was 7 minutes, with an inter-quartile range of 3 – 12 minutes.

Six-month Summary Turn-around time:



Deferrals and Cancellations

Capturing and identifying reasons for deferring or cancelling patients is an important indicator of quality.

The CareCube reporting module captures this data and the reasons for each individual occurrence, as well as allowing rapid rescheduling of any deferred patients.

Estimating the Financial Gains Delivered by Change

In the cath lab, as in general, “Time is Money.” The overhead costs associated with cath lab operation will remain constant (and substantial) irrespective of the efficiency with which the facility is used.

Wasted time during routine working hours represents a missed opportunity to do more cases. Apart from the important advantage associated with the delivery of more healthcare intervention to the population, there is also the potential to earn more income – from the tariff associated with the extra procedures performed.

We have created a cost model that can estimate the potential additional tariff income that could be achieved as a function of improvements in efficiency. An example of the detailed cost model is within the complete case study.

The data at Fig 2 shows summary data from the model with data comparing LHCH norms in 2009 (LHCH Past) to current performance populated with data from CareCube (LHCH Present). Touch-time has increased over this time from 48.53% – 85.15% an increase of almost 75%. Improved Lab utilisation has potentially generated the equivalent of an additional 18 (18.31) lab sessions each week. This provides an additional income, based on 2018 – 19 tariff for PCI, of £122,000 per week or – over a 50-week horizon, an annual gain of over £6 million.

The drive for improvement and changes in working practice over time has delivered benefits to patients and the organisation. The feedback provided by the CareCube reporting model affords LHCH a level of business intelligence and performance reporting probably unique in the UK.

The NHS Long Term Plan sets out strategies to overcome the challenges we face over the next 10 years including; doing things differently, backing the workforce, making better use of data and digital technology and getting the most out of taxpayers’ investment in the health service. For cardiovascular intervention at LHCH and CareCube this represents ‘business as usual’.

Fig 2: Summary of Time Lost, Sessions Gained and Potential Additional Income Identified.

Figures Each Week	LHCH Past	LHCH Current
Sessions Available	50	50
Sessions Unallocated	10	1
Average Start Time Delay	15	2
Average End Day Lost Time	20	0
Average Turn-around Delay	20	9
Average In-Lab Delay	7	2
Touch-time Percentage	48.53%	85.15%
Total Sessions ‘Unused’	25.73	7.42
Extra Sessions Gained		18.31
Typical PCI Tariff Income Per Session		£13,365.00
Potential Maximum Extra Income per week		£244,698.30
Potential Maximum Extra Income per 50-weeks		£12,234,915.00
Proportion (%) that might be realised		50.00%
Expected Extra Income (PCI) per week		£122,349.15
Expected Extra Income (PCI) per 50-week year		£6,117,457.00



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