

Whitepaper

Digital Health

Intel Mobile

Clinical Assistant



# Pharmacy department accrues wide range of striking benefits in mobile point of care pilot

East Cheshire Trust - Macclesfield District General Hospital

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# Introduction:

## Missed patient doses fall by 27 per cent

Macclesfield District General Hospital, part of the East Cheshire NHS Trust, delivers a wide range of clinical services for patients from a large rural and urban population in the North West of England.

The hospital introduced a Mobile Point of Care (MPoC) pilot designed to evaluate the business value of using Mobile Clinical Assistants (MCAs), based on Intel® mobile clinical assistant reference design, to better manage pharmacy workflows in two of the hospital's wards. Its overall aim was to explore how pharmacy services could be enhanced.

Cheshire ICT Service is a recently formed NHS ICT Shared Service provider. It worked closely with the Pharmacy Services at East Cheshire NHS Trust, providing technical support services to set-up and configure Intel® mobile clinical assistant (MCA) devices to work with the Trust's clinical applications and a new wireless network.

### A brief overview

The hospital pharmacists are responsible for ensuring the safe, appropriate and cost-effective use of medicines. They use their specialist knowledge to dispense drugs and advise patients about the medicines they have been prescribed. By working collaboratively with other health care professionals they also help devise the most appropriate drug treatment for patients.

A wireless network was deployed in two wards. Five Intel mobile clinical assistants (MCAs) – designed to streamline workflows through the digital recording of information and wireless transfer of information to the appropriate people and systems were loaded with three applications used by pharmacists and pharmacy technicians in their daily work. Internet access was also provided.

Prior to the pilot pharmacists were visiting the two wards using paper based systems to order medicines. During the pilot a medical technical officer (MTO) was introduced as an additional resource. The aim of the MTO was to support the pharmacist in ward medicine management and also trial the concept of dispensing medicines directly from the ward and remotely from the pharmacy.

The pharmacy department was keen to use the MCAs to gain experience in business value modeling as well as developing an understanding of how the MCAs could complement their traditional data collection methods. As a result, during the pilot, the pharmacy staff used the MCAs on their ward rounds to dispense medicines, re-label existing medicines and also access medicine information sites to support their clinical work.

The pilot focused specifically on three pharmacy workflows in the wards and the dispensary. Broadly speaking, these were:

- Ward discharges
- Medicine requests for in-patients
- Medicine management

However, each workflow typically consisted of many components. For example, ward discharges included among other elements, the number of patient discharges completed at ward level and the time taken to complete discharges at the ward level and in the dispensary. Medicine management included the time taken to complete top up of stock medicines on the ward, management of returns and waste, and also a measure of missed doses that occurred on the ward.

The use of Mobile Clinical Assistants for pharmacy workflows has led to a range of benefits including the reductions of missed medicine doses for patients by 27 per cent and a projected saving across three workflows over one year of £122,000.

### Radical increases

A notable finding was that the MCAs enabled a significant shift of workflows from the pharmacy to the wards. Because pharmacists and technicians could use the MCAs to access and record information they could spend more time on the ward, closer to the patients and doctors. This reduced the time spent travelling between the ward and pharmacy and meant tasks could actually be completed on the wards. In turn, this led to the more efficient ordering of medicine for patients. For example, prior to the pilot, only 29.5 per cent of inpatient requests were completed in less than two hours. This increased to 70.5 per cent during the pilot.

However, one of the most striking benefits was in the area of missed medicine doses for patients. Despite an effective administration regime, missed doses are not uncommon. This often happens due to time delay – the doctor prescribes the medicine in the morning, but the pharmacist may not receive the prescription until several hours later.

Then there could be further issues which delay the actual medicine administration, for example, the pharmacist has to check the patient's drug medication history or has to contact the doctor. If the delay is extended through to the time the nurses change shift, which isn't uncommon, a patient's dose could actually be missed. However, because all the information was recorded on the MCA or was accessible from the MCA, it was picked up straight away leading to 27 per cent reduction in the number of missed doses and improving both patient safety and quality of care.

Potential financial benefits were also established. For example, the average inpatient request cost £10.62 to process before the pilot and with the

MCA £7.78, representing a 39 per cent saving in the cost of processing a request electronically versus on paper. When annualised over the hospitals 22 wards it was estimated that a potential saving of £50,662.28 could be achieved. The total annual saving across all three workflow areas and annualised across the 22 wards was an estimated £122,034.29. However, this needs to be considered only as a potential saving as the introduction of the medical technical officer to the wards is an additional cost that the Trust needs to fund. Any actual cost savings are likely to be generated with better use of medicines and reduction in waste. The main driver for this pilot was the improvement in patient care enabled by the mobile technology.

### Macclesfield District General Hospital

Macclesfield District General Hospital is part of the East Cheshire NHS Trust. Every year, the Trust deals with approximately 56,000 accident and emergency incidents, 15,000 emergency admissions and 17,000 treatments that require operations.

Macclesfield District General Hospital is central to the delivery of vital services to its local community. It provides a wide range of services from children, maternity and adolescent services to geriatric and orthopaedic care, and general surgery among others.

The hospital has a well established track record in measuring workflows and deploying technologies to support medicines management. For example, it makes extensive use of an iSOFT\* software application called iPharmacy\*. This application supports many aspects of the hospital pharmacy practice and is being actively developed in the UK by East Cheshire NHS Trust and iSOFT as a new pharmacy system for the UK market. As such its use was well suited and particularly receptive to the pilot.

# Understanding business value: a model designed to deliver measurable benefits

In 2006, Macclesfield District General Hospital embarked on a drive to modernise its pharmacy services. An important element within this drive was the implementation of i.Pharmacy from iSOFT, a software application for managing and tracking essential activities within a hospital pharmacy environment. Phase two of the project is to introduce Electronic Medicines Management onto the wards, to improve existing processes and facilitate patient care. The mobile point of care (MPoC) pilot took place within this context.

Intel's Digital Health Group (DHeG) and IT Innovation Centres have developed the MPoC value model to help organisations evaluate how IT can aid them. The MPoC value model is based on the use of value dials which are a series of broad categories through which an IT investment delivers value.

The initial aim of the pilot was to equip pharmacists with mobile clinical assistants (MCAs) to be used during their daily duties by comparing the workflows before and after the deployment of MCAs. With this goal in mind the pilot not only aimed to increase the level of support for the pharmacy but also create support for future technology purchasing decisions. It was also decided to introduce pharmacy technicians (medical technical officers) onto the wards to assess the benefits of introducing ward based pharmacy teams using technology as a supporting tool.

Generally, pharmacists split their time between the dispensary and the wards. This not only creates a sense of isolation, in that they don't feel a part of the ward team, but it also creates other problems, such as delays between the time when the medicines are prescribed and ordered to when they are delivered. If the MCAs enabled the pharmacists to spend more time on the ward, a range of benefits would expect to cascade

down, ranging from improved drug delivery times to more time spent with patients and greater involvement in clinical tasks. Work normally carried out by pharmacists could be reassigned to medical technical officers thus freeing up pharmacists for more clinically related duties.

A workshop was held to introduce the concept of business value for IT to Macclesfield District General Hospital. This helped frame the project scope. Workshops were also held to introduce the concept of value dials and metrics to the pharmacy team and also a team from iSOFT. Encouragingly, pharmacy had developed process maps (workflows) for their major activities so they had clear ideas as to where the MCAs could make an impact.

The pharmacy department had also developed real measures such as throughput, missed doses and discharge times which would be used to establish a baseline for the project before it started.

To develop the actual value dials a number of topics were debated during the workshop. These included:

- Identifying core value drivers and understanding and evaluating the impact of healthcare IT investments,
- Building IT alignment within the business unit
- Developing standard building blocks for business cases and healthcare IT investments
- Accelerating progress in achieving the benefits of healthcare IT

Following the workshops, value dials were established alongside key performance indicators (KPIs). Each KPI was derived from an underlying calculation that reflected the hospital's existing processes. By measuring the KPIs before and after the pilot the

**Macclesfield District General Hospital gained an in-depth understanding of how IT can effectively be applied to healthcare while retaining integrity of care**

hospital aimed to establish the benefits of a wireless network and the use of MCAs. The value dials would provide a broad perspective in key areas such as patient safety and quality of care. The main value dial was workflow optimisation and while the following value dials cover different areas both they and their KPIs come under the umbrella of workflow optimisation. Figure one summarises the main value dials and KPIs.

Real time access to important information can dramatically alter the quality of care that clinicians deliver to patients

| Value dials                 | Key performance indicators              |
|-----------------------------|---|
| Workflow optimization       | Dispensary discharge prescriptions      |
|                             | Ward discharge prescription             |
|                             | Inpatient requests                      |
| Staff productivity          | Discharges assessed on the ward         |
|                             | Discharges completed on the ward        |
|                             | Post 5pm discharges                     |
|                             | Improved communications                 |
| Cost optimisation           | Ward discharges                         |
|                             | Inpatient requests                      |
|                             | Drug management                         |
| Patient access/satisfaction | More informed patients                  |
|                             | More timely delivery of care            |
|                             | More professional caring service        |
| Employee satisfaction       | Improved care delivery                  |
|                             | Increased confidence in decision making |
|                             | Support through modern working methods  |
|                             | Increased team working                  |
| Patient safety              | Improved clinical decisions             |
|                             | Reduced risk of incomplete information  |
|                             | Reduction in missed doses               |
|                             | Improved medication procedure           |
|                             | Reduced transcription errors            |
| Quality of care             | More accurate discharge summaries       |
|                             | Effective communications                |
|                             | Complete 'episode of care' summary      |

Figure one

# Pilot: significantly enhancing workflows

Towards the end of January 2008, baseline data was collected by interviewing clinicians and observing the pharmacy processes in action. Once collected three applications that were usually accessed via PCs, were loaded onto the mobile clinical assistants (MCAs) and staff were then trained in MCA device use. The applications were:

- iPharmacy – an information management application from iSOFT, developed with expertise gained from over 18 years experience in hospital pharmacies that allows all aspects of hospital pharmacy practice to be tracked within a single system. For example, a patient's medication history can be viewed including repeat prescriptions. Medicine ordering can also be carried out online
- eDNF – a solution that is used as part of the discharge notification process. Patient medicines for discharge are transcribed onto the eDNF by doctors and checked by pharmacists
- Internet access – allowed medical journal subscriptions and reference texts to be accessed while performing ward rounds to check treatment procedures, drug formularies and so on
- LabCentre – an application used to look up laboratory results

The aim was to allow the pharmacists to perform their usual duties on the ward rather than splitting their time between the ward and the dispensary. Docking stations, keyboards and a computer mouse were also provided so staff could not only recharge the unit but could also choose to use the keyboard to enter data rather than the MCA stylus.

At the same time that the pilot was to run, the hospital also introduced a medical technical officer (MTO) into the wards. The MTO would also use an MCA to support the pharmacists. The overall aim of the MCA pilot was to determine whether the MPoC solution would improve workflow processes in three key areas:

## Ward discharges –

This covered two main areas; the number of patient discharges completed at the ward level and the time taken to complete discharges at the ward level and in the dispensary. Typically, the time at which a patient leaves the hospital is dependent on when they receive their medication. From the time that a doctor authorises discharge to the patient actually receiving the medicine they need, can be a full day.

## Inpatient requests –

Requests come from patient for various drugs, for example, medication they were taking before being admitted onto the ward. However, patient history background checks need to be carried out. Once cleared, if the drugs are available on the ward they can be dispensed immediately. However, if the drugs are not on the ward the request has to be relayed to the pharmacy. In a busy environment, with lots of checks required the process can often be time consuming. Delays of up to three hours, before the patient receives their medication is not unusual and often an entire days medication can be missed.

## Medicine management –

This relates to the resource costs associated with recycling or destroying drugs. Medicines are sometimes ordered by the nurses before the pharmacist has the opportunity to determine the history of the patient's medicine usage. This can result in the stock being sent back to the store if not appropriate. Medication can also be wasted when a patient is admitted into one of the wards. Upon admission, new medication is prescribed and ordered even though the patient may have come in with medication. Some medicines also have short expiry dates, for example, once a blister pack is opened, then if not totally used the medicine cannot be recycled. However, a patient may require only two out of fourteen tablets, meaning that the remainder is often wasted.

Three applications were loaded onto mobile clinical assistants and along with internet access allowed pharmacists immediate access to vital patient and medicine information, leading to far greater efficiency in processing discharges

The use of MCAs led to clear benefits across all three workflow areas. In brief, much of the work previously carried out in the dispensary could now be carried out on the ward. This led to an overall lower discharge cost associated with patients receiving medicines before leaving the hospital. The time a patient spent waiting for medication was also reduced. Because all the required information is provided on the MCA and because there was an increased pharmacist and MTO presence on the ward there was a significant increase in the number of on-ward assessments.

Also medicine assessment tasks normally carried out by the pharmacist on admission such as recording drug histories and medicine ordering could be carried out by the MTO with appropriate back up checks carried out by the pharmacist. This in turn led to more time for the pharmacist to concentrate on clinical related tasks. For inpatient

requests the number of requests completed within two hours climbed significantly while the cost of processing these requests also dropped. Again the MCAs enabled the pharmacists and MTO to immediately access the relevant information which led to, for example, a more proactive and successful location of medicine stock on wards.

There was also a reduction in the volume of medications that needed to be recycled or destroyed. For instance, 'ward returns' are medications ordered and delivered to the ward but not used and returned to the pharmacy. This happens when duplicate requests are made, wards are overstocked or medications cannot be immediately located. However, the introduction of the MTO onto the wards ensured that medicines were placed in the appropriate lockers. The technician's use of the MCAs was recorded on the MCAs and could be checked.

# Results: faster, better, safer

The mobile point of care (MPoC) pilot was originally envisaged as a four to six week project including project scoping, research, the collection of baseline data and post deployment data, and analysis. However, significant delays arose due to the sourcing of a supplier for the installation of the wireless network. The baseline figures were based on admission and discharge medication supply and medicine utilisation. The hospital's pharmacy department agreed the format of the content and data to be collected. The pilot ran on wards 8 and 9.

Overall, the pilot clearly highlighted that the MPoC solution using mobile clinical assistant's (MCAs) would clearly optimise, to considerable degrees, existing workflows. In the three main areas; ward discharges, inpatient medicine requests and medicine management, clear benefits were observed. In turn, this led to a wide number of further benefits which the hospital valued highly, particularly in patient safety. For example, the number of missed medicine doses fell by 27 per cent, a critical measure in improving patient safety and treatment outcome. The following provides detailed insight of the Macclesfield District General Hospital value dials, the key performance indicators and resulting benefits.

## Workflow optimisation

Before the pilot, 68.5 per cent of dispensary discharge prescriptions were completed in less than two hours. This rose to 85 per cent during the pilot, an improvement of 17 per cent. During the base lining it was observed that there were no ward discharge prescriptions that took more than 40 minutes to complete. However, during the pilot 19 per cent actually did take longer than 40 minutes. This was due to the fact that more complex discharges could be completed on the ward. That said, the overall time a patient spent waiting for medication was actually reduced.

## Staff productivity

During the pilot there was a 40 per cent increase in discharges assessed on the ward while the number of actual discharges on the ward increased from 12 per cent to 35 per cent. Interestingly, the

number of discharges that happened after 5pm decreased from 31 per cent to only 3 per cent, strongly indicating that due to the MCAs, staff are better able to manage the volumes of discharges during the working day. This also reflected improved communications between the ward staff, such as doctors and nurses, and pharmacy staff.

Automatic updating of systems through the MCA also improved communication between the dispensary and the ward which was another factor in more efficient discharges. Importantly, pharmacists also had more time to spend on core clinical tasks.

## Cost optimisation

Because the MCAs enabled much of the work previously carried out in the dispensary to be carried out on the wards the overall cost of a discharge was reduced from an average £19.47 to £11.52, representing a 69 percent reduction in the cost of processing a discharge. A similar effect was also seen with the processing of inpatient requests. Prior to the pilot the average cost was £10.82 and with the MCA this dropped to £7.78, a 39 percent reduction. Furthermore, the introduction of MCAs and medical technical officers (MTOs) onto the wards resulted in a 227 percent reduction in drugs that needed to be recycled, a saving of £14 in labour costs. Thanks to better management, enabled by the MCAs, there was also a 672 per cent reduction in drugs that needed to be destroyed resulting in a £12.60 labour saving cost. While the labour saving costs are relatively small the cost of drugs being destroyed could be very high. The pilot did not measure these costs because it was difficult to establish whether the destroyed drugs were representative. However, based on observations during the pilot, it could be safely assumed that annualised savings in this area might be substantial.

## Patient access/satisfaction

Because patients can see their medication being ordered at the bedside they feel reassured that they are being treated in a professional and timely manner, for example, they receive care faster through quicker ordering of medications and dispensing. Overall, by having all relevant information at their finger tips, the MCAs help the pharmacists and MTOs present a more professional service,

The mobile point of care solution ensures greater professionalism in treating patients which in turn assures patients they are receiving high standards of service

By using mobile clinical assistants on the wards, pharmacists are able to directly access important information from the patient's bedside and send information directly to the dispensary. This provides them with much greater freedom to carry out clinical tasks while ensuring greater accuracy when administering medication

### Employee satisfaction

The MCAs led to increased confidence in decision making because the information was stored electronically rather than on paper files and was therefore considered to be less prone to errors, for example, in transcription. Pharmacists and MTOs also felt more supported in their work with modern working methods and technologies. Because they spent more time on the ward, integrating better with the ward team, it resulted in a more satisfying team working environment.

### Patient safety

All the participants in the pilot highlighted this particular value as being one of the most significant. Because the pharmacists had real-time access to information, such as a patient's previous medication history, clinical decisions were informed by the most up-to-date information available. Because all the patient information is also available at the bedside, there was a reduced risk in missing a prognosis or of a test being forgotten in the rush of the daily workload. Bedside access to complete medication histories also reduced the risk of inappropriate prescriptions. Importantly, there was a 27 per cent reduction in missed medicine doses for patients, a critical measure when evaluating patient safety. Missed doses generally happen when there is staff shift change on the ward or there is a delay in dispensing. Prior to the pilot, when requests for medication were sent to the dispensary, there was no record on the ward. If the medicines were returned after a shift change, a dose could be missed and it would not be picked up until the following day. However, during the pilot all information was recorded on the MCA so it was immediately clear what medications had been dispensed, to whom and when. The medicines were sent in a timely manner and put into the patient's own medication box by the MTO.

### Quality of care

The MCAs helped deliver accurate summaries of medical history and prescribed medicines which made a difference to the quality of patient care. More effective decision making was also noted, due to closer working between the pharmacists, MTOs, ward teams and doctors. There was also a reduced potential for miscommunication between the pharmacist, MTO and the dispensary because transcription errors were reduced. The MCA could also enable a 'complete episode' of care delivery - review, diagnosis and clinical decision making could be made during a single visit to the patient. This would reduce the likelihood of errors and changes in the patient's condition that might previously occur because of the time delay between diagnosis and the administering of medication. Diane Slater, Pharmacy Modernisation/Electronic Prescribing Project Manager, East Cheshire Trust summed up some of the benefits: "First, there have been substantial time savings. Previously, for example, it might have taken a long time to clarify a prescription with the doctor, but with the MCA accurate information is immediately available. There's also a greater chance that the doctor and the pharmacist will be on the ward at the same time, because the pharmacist does not need to spend as much time in the dispensary. The MCA also reduces the potential for transcription errors, improving quality of care."

It should also be pointed out that prior to the pilot, a business value dial to assess revenue enhancement was also established. However, the pilot revealed that no revenue enhancement opportunities were observed nor did any of the participants feel that there would be any opportunities to enhance revenue.

| Impact Summary   |                       |                                       |                  |                        |                   |                    |
|--|-----------------------|---------------------------------------|------------------|------------------------|-------------------|--------------------|
| 2 Week / 2 Ward Resource Costs                         |                       |                                       |                  |                        | Annualised Saving |                    |
| <b>Drugs</b>   |                       | <u>Before MPOC</u>                    | <u>With MPOC</u> | <u>Savings (@ 50%)</u> | <u>2 Wards</u>    | <u>22 Wards</u>    |
|  | Recycled              | £25.00                                | £11.00           | £7.00 28%              | £182.00           | £2,002.00          |
|  | Destroyed             | £14.80                                | £2.20            | £6.30 43%              | £163.80           | £1,801.80          |
|  | <b>10-day Total</b>   | <b>£39.80</b>                         | <b>£13.20</b>    | <b>£13.30 33%</b>      | <b>£345.80</b>    | <b>£3,803.80</b>   |
| <b>Inpatient Request</b>                               |                       | <b>2 Week / 2 Ward Resource Costs</b> |                  |                        | <u>2 Wards</u>    | <u>22 Wards</u>    |
|  |                       | <u>Before MPOC</u>                    | <u>With MPOC</u> | <u>Savings</u>         |                   |                    |
|  | Request on Ward       | £841.00                               | £800.14          | £20.43 2%              | £531.22           | £5,843.41          |
|  | Request in Pharmacy   | £414.58                               | £101.16          | £156.71 38%            | £4,074.44         | £44,818.87         |
| <b>Total</b>   | <b>£1,255.58</b>      | <b>£901.29</b>                        | <b>£177.14</b>   | <b>£4,605.66</b>       | <b>£50,662.28</b> |                    |
| <b>Discharges</b>                                      |                       | <b>2 Week / 2 Ward Resource Costs</b> |                  |                        | <u>2 Wards</u>    | <u>22 Wards</u>    |
|  |                       | <u>Before MPOC</u>                    | <u>With MPOC</u> | <u>Savings</u>         |                   |                    |
|  | Ward Discharges       | £469.05                               | £217.27          | £125.89 27%            | £3,273.12         | £36,004.36         |
|  | Dispensary Discharges | £679.90                               | £459.18          | £110.36 16%            | £2,869.44         | £31,563.85         |
| <b>Total</b>   | <b>£1,148.95</b>      | <b>£676.45</b>                        | <b>£236.25</b>   | <b>£6,142.56</b>       | <b>£67,568.21</b> |                    |
| <b>Total</b>   |                       |                                       |                  |                        | <b>2 Wards</b>    | <b>22 Wards</b>    |
| * Time releasing savings calculated at 50% of observed |                       |                                       |                  |                        | <b>£11,094.03</b> | <b>£122,034.29</b> |
| * Gross savings prior to implementation costs          |                       |                                       |                  |                        |                   |                    |

Figure two

Figure two illustrates the potential cost savings across the three main workflow areas that the pilot measured. For example, the cost of ward discharges over two weeks before the pilot was £469.05. During the pilot, and in a two week period, the cost fell to £217.27, a 27 per cent saving. If the medication had to be brought from the dispensary, the baseline cost for two weeks was £679.90. During the pilot this fell to £459.18, a 16 per cent saving.

When the savings across the three workflow areas were totalled together and then annualised across the hospital's 22 wards, the savings were projected to be £122,034.29.

However, it should be emphasised that while the potential cost savings were significant and could actually be much higher if the true cost of medicines that had to be destroyed were accurately calculated over a year, the pilot actually benefited by placing greater focus on workflow improvements.

The majority of the participants felt that it would have been psychologically detrimental and undermining to both staff and patients if the pilot focused exclusively on cost-cutting. However, by concentrating on the daily workflow areas, staff felt that participation was more meaningful and that any costs benefits would be more meaningful too.

The mobile clinical assistants provide the pharmacists with a complete 'episode of care' including medical history review, diagnosis and clinical decisions, enabling greater accuracy in prescribing medicines

## Moving forward: a platform for the future

The Mobile Point of Care value model helped Macclesfield District General Hospital define the scope of the projects, identify key performance indicators and establish baseline benchmarks

The mobile point of care (MPoC) and use of mobile clinical assistants (MCAs) at Macclesfield District General Hospital met its immediate objectives by clearly demonstrating significant improvements in the three main workflow areas it measured; ward discharges, inpatient requests and medicine management.

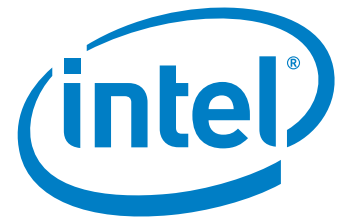
For example, there was a 40 percent increase in the number of discharges assessed on the ward while the number of actual discharges completed on the ward increased from 12 percent to 35 percent. The overall cost of processing a discharge also fell from an average of £19.47 to £11.52, a 69 per cent reduction. Annualised this represented a potential saving of £6,142.56 for both ward and dispensary charges across the two wards. If extended to all of the hospital's 22 wards an estimated annual saving of £67,568.21 would accrue. This financial saving could contribute to supporting the additional role of the medical technical officer (MTO) on the ward.

However, all participants felt that improvements in the patient safety and quality of care value dials represented the most significant benefits in the MPoC trial with the 27 per cent reduction in missed medicine doses marked as particularly beneficial.

Fingertip access to accurate medical history summaries and dispensing records made a marked difference to the quality of care that was delivered while the ability to view a complete 'episode of care' was considered invaluable.

It should be noted that it was the combined results of using the MCAs and also the introduction of the MTO on the wards that contributed to providing the full benefits demonstrated. Without introducing the additional technical resource onto the wards the pharmacists would still have been required to carry out duties related to the supply of medicines rather than concentrating on the clinical aspects of their work.

In summary, Macclesfield District General Hospital, not only saw significant improvements in the three work flow areas that it analysed, it also measured a raft of further important benefits across the other value dials that had been established. Cheshire ICT Service is encouraged by the results and feels that the pilot demonstrates a much needed shift from IT driven to business driven technology initiatives. Overall, the MPoC was widely considered to be a success and will be used by the hospital as a foundation to explore how IT can offer further opportunities to gain greater efficiencies in patient care.



For more about the Intel Healthcare IT Value Model, talk to your Intel Digital Health Representative or download the paper, The Value of Healthcare IT, [http://www.intel.com/healthcare/hit/providers/hit\\_value\\_model\\_whitepaper.pdf](http://www.intel.com/healthcare/hit/providers/hit_value_model_whitepaper.pdf)

For more about the business value of IT, see the whitepaper, Measuring IT Success at the Bottom Line at <http://www.intel.com/technology/techresearch/itresearch/locations.htm>

and David Sward's Measuring the Business Value of Information Technology (Intel Press, 2006). [http://www.intel.com/intelpress/sum\\_bvm.htm](http://www.intel.com/intelpress/sum_bvm.htm)

For more information about the mobile clinical assistant, please visit [www.intel.com/healthcare/ps/mca](http://www.intel.com/healthcare/ps/mca)

For more information about i.Pharmacy from iSOFT please visit [www.isoftware.com](http://www.isoftware.com)