

# Victorian Travelling Fellowship Program 2006-08

## Phase 1 travel report

### 1. Project information

Fellow's name	Dr Karen McLean
Title of project	Clinical handover: improving junior doctor shift to shift handover
Fellow's study area	Exploring what is best practice in junior doctor handover and how to implement sustainable change in the area. Travel undertaken between January 15 and February 22 2007 to the USA, Canada and the UK.
Fellow's organisation	Royal Children's Hospital
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Date of report	22 March 2007

## **2. Project summary**

### **Top three outcomes**

- Learning from others' experience and realising that there is no perfect universal handover solution that we can implement, but rather that local development of improvements is vital.
- Clarification of the different aspects of handover that ought to be addressed when considering improvement: content, process and documentation. No single institution had addressed all of these issues.
- Establishing international relationships with those interested in junior medical staff handover.

### **Main activities undertaken**

- Meetings with clinicians and non-clinicians involved in the improvement of handover practices in the hospital setting to discuss their experiences.
- Observing handovers (mainly junior doctor shift-to-shift handovers).
- Meetings with quality improvement and change management experts to discuss the approach to handover in this context.
- Demonstrations of IT systems developed or used to support junior doctor handover.

### **Major learnings**

- Handover improvements should address content, method/process and documentation.
- Checklist development needs to be situation specific. Checklists should be short, and developed and refined by the users.
- Consistency of practice is important for patient safety.
- System supports are crucial in achieving good practices (for example, overlapping shifts, adequate space in a convenient location, minimising interruptions).
- The best IT system is only as good as its users and the system in place.
- Having a designated leader of the handover session improves attendance and efficiency.
- The measurement of any improvements is important, not just for the production of evidence but also for maximal engagement of users and managers through data to support change.

### **Lessons for the Victorian healthcare system**

- Identifying the handovers posing greatest risk to patients is a good place to start for implementation of changes.
- Local champions need to be engaged to drive the process.
- All users should be involved in defining 'safe handover' in their context prior to deciding how that might be achieved (through local development of content checklists, processes and system supports).
- Small trials permit testing and measurement, which can then gradually engage a wider group of users.
- Improvements need to be simple to use.
- Every change of responsibility for patient care (whether shift change of health care worker or movement of patient to a new location) should ultimately be considered to have a safe handover system.
- Other than IT, there are no simple solutions for recording the content of handover.

- To support handover itself and record keeping, HealthSMART ought to have the capacity to enter tasks to be completed in the next shift and to identify unstable patients requiring review, as well as the capability of logging when these reviews or tasks are completed.

### 3. Description of the study itinerary

#### University of Washington Medical Center, Seattle WA (USA)

17-18 January 2007

- The University of Washington Medical Center (UWMC) is a large teaching hospital in Seattle.
- I visited it to meet Professor Karen Horvath, who co-authored two papers describing the development of an electronic rounding/'sign-out' system, UWCores, and a subsequent randomised cross-over trial studying the introduction of the system.
- Professor Horvath is the Director of Surgical Education and Residency Program Director, Department of Surgery, UWMC.

Activities undertaken during the visit included:

Meetings with:

- Professor Karen Horvath, (General Surgery) to discuss the set-up at hospital for resident work practices and development of UWCores.
- Dr Kim Riehle, Chief Surgical Resident, for a demonstration and explanation of UWCores and discussion about usefulness.
- Several residents for informal conversations about UWCores.

Observation of:

- afternoon ward round
- afternoon/evening handover
- morning handover (residents).

The UWCores system is an electronic database accessible via password on the hospital computer system (PC based). It automatically downloads patient demographics, pathology results, vital signs and 'Ins and Outs' (fluid balance) from other electronic databases in use in UWMC. Other sections including diagnosis, patient problem list, lines, procedures, medications, and management plans are updated by the residents. Several different reports are available for patient lists, varying from a short report (including only brief patient details and the diagnosis) to a lengthy report that includes all information entered for a patient. The longer reports may take up to five pages to print and are more commonly utilised by the most junior resident staff.

The information is used both during ward rounds and at handover ('sign-out'). Prior to change of resident shift (0530 and 1800) the lists are updated and printed out by the outgoing resident staff for the incoming resident staff. Other than the expectation that this printed list will be physically handed over to incoming staff, no set procedures were in place for what additional verbal handover should occur and this varied from resident to resident.

The randomised controlled cross-over trial published in 2005 showed that UWCores enhanced patient care by decreasing patients missed on resident rounds and improved resident-reported quality of sign-out and continuity of care.

## **Lessons learned for the Royal Children's Hospital (RCH) project and for potential Victorian improvements include:**

### Strengths of the system:

- Development of the system was by clinicians, and in particular resident staff. During development it was possible to refine the system based on feedback by users. As such, the final product works well to meet junior doctors' needs and uptake by the junior doctors was strong with minimal opposition. Any improvement processes of handover systems in the Royal Children's Hospital or Victoria would likewise benefit from maximal involvement of the users.
- The headings or sections within the system act as prompts to the junior residents with regard to the content of their verbal handover, although the content did vary between different doctors.
- It is possible to produce different reports with varying amount of detail, which increases use by different levels of clinicians.
- Good use is made of automatic updates from computerised systems or databases already in use by UWMC, reducing the risk of transcription errors.

### Weaknesses of the system included:

- Problems with back up in the event of failure of the computer system. The most frequent problem was that the automatic updates were not as frequent as initially designed, thus printed lists may include pathology results that are not the most recent.
- While the system is used by two different Seattle hospitals, in-house development has restricted further dissemination of the product, such that junior doctors on rotation have to learn different systems in different hospitals. Ideally the introduction of HealthSMART in Victoria would mean a statewide approach to such a system.
- Key information is dependent upon updating by the resident staff – and despite observed enthusiastic use by the junior residents, some senior residents were mistrustful of the accuracy of the content of these sections (for example, medications, management plan).
- Some units within the hospital find that it does not meet their needs – one data-set does not automatically fit all units. (For example, the transplant team would like to add a specific section for immuno-suppressant medication).
- The detailed report was seen by one resident as possibly an overload of information – he described it being difficult to realise all the information that was available. An important question arises of how much detail is actually required for optimal safe shift-to-shift handovers and how much of the information should be recorded in a patient's bedside notes. If documentation in patient hospital notes is up-to-date, accurate, legible and inclusive of a management plan, then it is not necessarily helpful to have the same information physically handed over at shift change in an otherwise stable patient.
- One senior resident was concerned that the automatic updating of information such as pathology results meant that junior residents did not spend as much time considering the significance of the results as when they had to look them up for each patient.
- A lack of supervision of handover meant that processes were not standardised at shift-to-shift junior doctor handover and there was no potential to pick up on inaccurate management plans.
- Such a system requires significant IT capability, which is currently not present in many Victorian hospitals.

## **Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA**

22-25 January 2007

- Cincinnati Children's Hospital (CCHMC) is a 475 bed full-service, not-for-profit, tertiary paediatric hospital with a strong resident program (140 paediatric residents). The hospital is consistently ranked amongst the top ten paediatric hospitals in the USA.
- In the last decade the CCHMC has pursued the area of quality improvement and patient safety. In 2002, the hospital was the only paediatric hospital amongst nine health institutions awarded a \$1.9 million 'Pursuing Perfection' grant by the Robert Wood Johnson Foundation. Their commitment and progress in this area has led to the recent awarding of the 2006 American Hospital Association-McKesson Quest for Quality Prize and being named as one of nine paediatric hospitals in the *Leapfrog Top Hospital* list.
- The hospital is widely recognised as an international leader in the field of patient safety and quality improvement and has a team of people experienced in change management.
- Handover has been one area on which such quality improvement has focussed in recent years.

During the visit the following activities were undertaken:

Meetings with:

- Mindy Corcoran (Senior Quality Improvement Consultant) and Gerry Kaminski (Program Manager, Quality Improvement Education), to discuss approaches to change management and quality improvement projects.
- Dr Steve Muething, Director of Clinical Services, and Associate Professor of Pediatrics, to discuss sustainability and reliability/validity in quality improvement projects.
- Dr Liz Schlaudecker, Chief Paediatric Resident, for demonstration of computer system for creating handover sheets and to discuss resident practices.
- Dr Joe Luria, Director of Emergency Department, for discussion of the CCHMC approach to improving handovers.

Observation of:

- morning handover and ward round (general paediatrics)
- ward improvement meeting (quality improvement – weekly meetings on ward that is pilot for improving quality of patient care)
- operating room (OR) to paediatric intensive care unit (PICU) handoff
- neurosurgery ward round by general paediatrician.

From a background that has included very little training in change management, quality improvement or patient safety, there was much to learn at CCHMC of general applicability to this specific project. Key points include:

- To engage participants, the benefit needs to be clear. For example, in the handover project, junior medical staff are most likely to be engaged by a new approach that is timesaving or improves the quality of patient care.
- Both quantitative and qualitative measurements are of use in monitoring the progress and in demonstrating the value of the project to users and managers.
- The use of the Model of Improvement or a similar tool provides useful structure to the process of improvement.

- Defining the problem should always be the first step towards improvement, followed by establishing the known drivers or facilitators and known barriers. Solution finding should come last. Involving the future users (in this case junior medical staff) in these steps is crucial.
- Starting with a narrow scope enables feasibility.
- The 'degree of believability' need only be as large as those involved at any stage – to begin with, it is only necessary to convince those involved in development of the initial stages. Gradually as improvements are piloted and then adopted as widespread practice, the degree of believability needs to expand accordingly.
- Small tests of change are useful at each step.
- Key drivers can be used to track the project.
- Quality improvements are not as good when junior doctors are not involved.
- Quality improvement will be an important skill for future doctors and therefore a teaching hospital ought to be teaching it.
- Sustainability requires a process owner who is responsible for monitoring outcomes and thus able to detect problems early.
- The process owner needs to be reporting to a higher level regularly (not necessarily frequently) to ensure accountability.
- Reliability science suggests that it is important to decide what level of reliability is desired as different approaches are required for increasing levels of reliability (for example, do we want safe handover 90 per cent or 95 per cent of the time?)

CCHMC is another hospital utilising computerised systems. The residents regularly use several systems, including one for orders, another for medication reconciliation, another for discharge summaries and progress notes, and sign-out databases. Most of these systems are yet to be integrated with one another, and as such there is some duplication of entry by the junior medical staff. The programs used for sign-out are separate for interns and more senior residents. This was the result of feedback from the residents – the senior residents thought that the interns were including too much extraneous information, and so would delete what they considered to be superfluous; the interns liked having a lot of patient details on their sign-out sheets. The sign-out databases are used more by the interns than their senior resident colleagues.

The sign-out databases require the user to add a patient by hospital number or by name. Once identified, the weight, diagnosis, treating unit, date of birth, and admission date are all uploaded from another computerised system. The user is then required to enter the relevant management issues and plan. Many units choose to simply use a word-processing document instead, but this requires entry of all patient information manually, posing the risk of transcription errors. While the variety of these mechanisms for producing patient information for handover provide some guide to the desired content of handover, there is not complete consistency. The interns are taught about sign-out during their orientation program and at times there is further teaching on the topic during 'Morning Report' (a daily 30 minute breakfast teaching session run by the senior residents for all paediatric residents).

Current work practices differ from those in Melbourne – an on call resident works a 24 hour shift, and receives handover from the rest of the day teams about their patients at approximately 1730 hours. A night float resident arrives at 2300 hours to see new admissions between 2300 and 0700. As such, morning handover practices include handover by the on call resident of any issues with inpatients overnight, followed by handover of new admissions by the night float. This latter handover is done in a dedicated location and the attending paediatrician may

attend. The residents were observed using a photocopy of their admission notes as a prompt for verbal handover and extensive detail was given. The on-call handover is usually carried out in the junior doctor quarters and is not supervised.

Improvement of handovers at CCHMC has focussed thus far on the following areas:

- A: emergency department (ED) to inpatient ward
- B: OR to PICU
- C: OR to floor
- D: shift to shift nursing report.

These were the areas identified as of highest risk to patient safety. Some of the methods used and lessons learned from their work so far that are relevant to this project at RCH and/or to improving handover practices within Victoria include:

- Working on different types of patient handover concurrently meant that the separate working groups could meet independently and together to share ideas.
- While each group developed their own checklist or minimum data set for the content of the handover, commonalities between groups meant that checklists could be refined to two standardised lists – one for nursing handover and one for physician handover. This has maximised the standardisation of the handovers.
- Challenges included restricting the volume of information included to that which was required for the recipient to be able to adequately care for the patient at the beginning of their 'shift'.
- Rules were developed for the use of the checklists – for example, dividing the information into sections such that there were pre-determined times for the recipient to clarify information. This was to maximise efficiency of the handover process.
- Checklists were produced in several formats to maximise uptake – an A4 printed sheet, a small card to attach to the ID badge, and cards to place near telephones. However, despite this, uptake of the checklists has waned with time – such culture change requires significant input.
- OR to PICU handover has changed substantially to focus upon the method and process rather than specifying content. The process developed now includes the anaesthetist, surgeon and theatre nurse accompanying the patient to PICU from theatre and handing over in turn to the PICU nurse and doctor once the patient is on the PICU bed and ventilator (but prior to transferring any lines or monitors). There is no checklist or prescribed content of handover. A scoring system has been key to the success of implementation – up to 100 points are allocated for steps taking place with a further 100 points providing a more qualitative assessment of the handover. The receiving PICU nurses are still scoring the system and there is ongoing monitoring for problems. Executive support has also been vital to the success; for example, when surgeons do not accompany the patient, the Chief of Surgery is notified and follows up directly with the surgeon. For sustainability, there are plans to continue monitoring the three essentials – that handover took place, who attended, and whether or not quality was satisfactory for the recipients.
- While the checklists used at CCHMC are lengthy, they have been designed by the users of the system and they are comprehensive enough to remind users to include specific information. The first and most important step in the development is defining 'safe handover' for that particular situation. This can then define the measurement or monitoring.

- Concerns were raised about use of the SBAR mnemonic for handovers (Situation, Background, Assessment, Recommendations) as this was initially designed as a communication tool for use in problematic situations rather than specifically to hand over responsibility to another person.
- One general challenge has been to convince people that handover does pose a serious safety threat to a patient. To widen the degree of believability, particularly to include managers, it has been essential to collect and disseminate data.
- Sustainability depends upon a single person 'owning' the process of monitoring handover in each area and some sort of monitoring system being in place to detect problems early. The monitoring has to be as specific as possible (vague terms as 'safe' do not provide consistent measures for comparison).
- Handover is now included as part of orientation.

## Hospital for Sick Children, Toronto, Canada

29-31 January 2007

The Hospital for Sick Children is a large tertiary paediatric hospital with a strong focus on patient safety and quality improvement. Recent work has focussed on the introduction of checklists for different handover situations.

Activities undertaken during the visit:

Meetings with:

- Kim Streitenberger, Quality Analyst, Quality & Risk Management.
- Lynn Mack, Clinical Leader and General Paediatric Nurse on the ward that piloted the checklists.
- Karen Dryden-Palmer – Advanced Practitioner Nurse Educator in Critical Care Unit (CCU) regarding a CCU shift-to-shift handoff nursing checklist.
- Dr Trey Coffe, Consultant Paediatrician to discuss handover of inpatients.
- Ron Turner, Ear, Nose & Throat (ENT) OR Clinical Nurse Specialist to discuss the introduction of an OR to recovery handover checklist.

Observation of/participation in:

- paediatric handover (two different morning handovers)
- quality and risk management department's weekly quality management meeting – during which I presented on my project thus far.

Paediatric handover varies depending on the unit's work practices. Features worthy of consideration when improving practices at RCH or in Victoria include:

- Multidisciplinary attendance – nursing staff, junior medical staff, senior medical staff, pharmacists and medical students all attend morning handover. There was a lot of interaction during handover with clarifying questions from many participants.
- The work on checklists has not yet extended to junior doctor shift-to-shift handover, and as such, there was no defined structure to the handover content. While the widespread participation mentioned previously is a good feature, handover may be more efficient if the structure of the content was defined such that the recipients know what to expect.
- The inclusion of expected elective admissions was a feature of morning handover not seen elsewhere. This would work best in those units with more elective admissions (for example, subspecialty units at RCH) and help the junior doctors to plan their working day.
- Inclusion of an 'if...then...' heading for patient handovers is useful – communicating a clear plan and anticipating potential problems.

The work on checklist development has partly arisen from work done in the aviation industry. Checklists have been developed for a variety of situations in which patient care is transferred from one person to another: ED to ward transfers (nursing), operating room to post-anaesthetic care unit (recovery) – combined nursing and anaesthetic, change of nursing shift in the Critical Care Unit (CCU) and patients attending procedures/complicated diagnostic imaging investigations. These are in a variety of stages of development but similar strategies are being used for development. Principles and strategies that may be helpful when improving handover at RCH or in Victoria include:

- Collection of and then publicity of baseline data to engage participants and raise interest.

- Use of PDSA cycles (plan, do, study, act) to refine the checklist with each trial.
- Frontline users must be involved in the development – and the receiver's input to content is very important (given that the aim of handover is to enable the recipient to adequately care for the patient).
- Users need to be taught how to use a checklist, particularly to minimise interruptions. Interruptions do decrease once the recipients of handover are familiar with the format and know what to expect when. It is also important to give permission to add information that does not necessarily fit into the checklist – patients are all individuals and no checklist will be perfect for all situations.
- 'Just-in-time' education worked during the pilot PDSA phases. There were no easy solutions for the widespread education required for hospital-wide roll-out.
- The Forms Committee was able to provide approval for forms with the expectation that such forms would have revisions with pilots. This flexibility reduced delays for bureaucratic reasons.
- The shorter the checklist the more acceptable it will be to users. Careful presentation can also assist with acceptability.
- A decision is needed regarding how records will be kept (for patient transfers the handover sheet may become part of the patient record).
- Data collection is a challenge but important. Measurements should include satisfaction surveys of users.
- Champions of the checklists in the involved areas are very helpful.
- When rolling out changes to handover, it is important to educate both the givers and receivers of the handover otherwise it will be hard to institute changes.

## Great Ormond Street Hospital for Children, London, UK

2 February 2007

Great Ormond Street Hospital (GOSH) is a tertiary paediatric hospital only with no general paediatrics, no obstetric services and no accident and emergency department. As such, all patients are either electively admitted or transferred from another hospital.

The European Working Time Directive (EWTD) has forced the hospital to address working hours of junior doctors, which has increased the frequency of changes of the clinician responsible for caring for patients. GOSH is one of the UK hospitals that have instituted a 'Hospital at Night' team as one of the ways to improve after hours care in light of reduced junior doctor hours.

Activities undertaken during the visit:

Meetings with:

- Sue Constable, Lead Clinical Site Practitioner (CSP)
- Dr Catherine Peters – Lead Junior Doctor, and then some brief interaction with other junior doctors.

Observation of:

- a handover from day registrar to evening cover (long day shift)
- night handover, both between CSPs and junior doctors.

The Hospital at Night team consists of two clinical site practitioners (senior nurses with a wide range of experience, particularly in acute management of ill children) and three medical registrars. Handover at 9:00pm is a key part of the team functioning well. It has been formalised and has clear leadership from the night CSP. This is in contrast to the handover occurring between day junior doctors and those on a long day shift who are covering in the evening. The latter has no fixed time, or place, and usually happens in stages as the day doctors complete their work for the day. All teams of junior doctors hand over an updated printed list of their patients that includes clinical information but there is no consistency to the structure of these written handovers and the junior doctors have never been taught or told what should be included. All information, including patient demographics, must be entered into these documents manually, which is both time consuming and holds the potential for error.

Strengths of the night handover which provide lessons to the project at RCH and in Victoria are as follows:

- The medical handover is preceded by a handover from the day CSPs to the night CSPs. This handover includes a review of every ward with reference to staffing and bed issues as well as mention of any sick patients with whom the CSPs have been involved.
- The combined attendance at night medical handover of the night doctors and the night CSPs maximises the possibility that all information is available to both disciplines.
- Priority is given to the surgical doctors, as their day shift is rostered to finish first (at 9:15pm). Until this was formalised, the surgical doctors had been reluctant to attend.
- Handover by medical units is provided in turn based on order of arrival to handover. All of the night team are expected to listen to each handover, whether or not they are directly responsible for the patients involved; this means that there are few distractions and in the event of unexpected

illness during the shift, the rest of the team are in a position to cross-cover one another.

- One doctor made a point of specifically asking night staff if they already knew the patient, which recognised the potential that the night doctor might already have had contact with the patient on a previous night shift, and minimised the length of handover.
- The written/printed lists previously given to the evening registrars by the day teams are physically handed over; this minimises the possibility that key information from the day teams is not passed on to the night team.

**Observations of the following weaknesses also provide lessons for RCH and Victoria:**

- Only the registrars that have been working during the evening attend night handover – and not the more junior residents. It is expected that the residents will have spoken to their registrar prior to the registrar attending the handover. This misses an opportunity for them to add pertinent information about patients for whom they may have taken primary responsibility and adds an extra step in communication of problems (increasing the risk of error). It also removes a potential learning opportunity for the more junior residents – they are missing the chance to have good handover practices modelled.
- Morning handover has no formal structure or method. Most doctors will make individual contact with the incoming day team to let them know of any problems arising overnight.
- The handovers tended not to be interactive with few clarifying questions asked. The content and delivery varied between doctors, with some providing more succinct handovers than others.

## University Hospital of Wales, Cardiff, Wales

6-9 February 2007

The University Hospital of Wales (UHW) is a tertiary hospital with an average of 960 beds. It is a referral centre for much of South Wales. It is a teaching hospital with medical students and training programs for physicians, surgeons and paediatricians amongst others.

Activities undertaken during the visit:

Meetings with:

- Delyth Jones, Project Manager, Hospital at Night Team – to discuss development of night handovers and to understand the composition of the team and how it worked.
- Emma King, Senior Staff Nurse on a cardiology ward, for a demonstration and explanation of their electronic system for the production of handover sheet.
- Dr Colin Powell, General Paediatrician/Paediatric Nephrologist for discussion of current practices in handover and possible areas for improvement.
- Dr Ian Bowler, Obstetric Anaesthetist and Lead for Modernising Medical Careers, who has a particular focus on medical education and the Foundation Program (PGY1 & PGY2) for discussion of impact of changes in junior doctor training on handover.
- Dr Sam Rice, Clinical Research Fellow for a junior doctor perspective on handover practices (medicine).
- Joy Whitlock – Service Improvement Manager to discuss patient safety work at UHW.
- Dr Mark Stacey – Obstetric Anaesthetist and Postgraduate Organiser (medical education)– to discuss handover practices and current issues with training practices.

Observation of:

- bed management meeting
- night handover – medical
- night handover – surgical
- morning handover – paediatric
- morning handover – obstetric combined with anaesthetics
- afternoon handover – paediatric.

UHW is another of the UK hospitals that has implemented Hospital at Night teams – there is a medical and a surgical team. Paediatric and obstetrics/gynaecology units are not covered by this system. The night teams include site nurse practitioners – experienced senior nurses who handle all pages from the wards and liaise with the doctors. The focus on handover improvement for the Hospital at Night project has been on the night handover at 2100.

Strategies and observations of interest include:

- The use of a sign-in sheet at the start of the night to confirm attendance at night shift and each team member's pager number. This has addressed some early issues in junior doctors not turning up for night shift as well as improving communication throughout the hospital, as the sheet is faxed to switchboard after handover. There is no space on this sheet to record which of the day doctors attended – and not all units did attend, with an assumption made that they had nothing to hand over.

- The use of the 'Multiple Patient Handover Sheet' – this is used by incoming doctors to take notes, although each doctor makes their own use of the columns (often ignoring the column heading). While the outgoing teams have been encouraged to provide a written handover this rarely occurs. One of the consequences of the team approach to care of patients at night is that often more than one doctor will be taking notes while patient information is verbally handed over, as the person responsible for the task has not been identified at that stage of handover.
- Two less commonly mentioned functions of handover were apparent during the one-off observation of the Hospital at Night team handover – firstly, the peer support that such an opportunity provides. The outgoing doctor was able to debrief about several stressful incidents that had occurred during his shift. Secondly, there was an opportunity for night doctors to ask about outcomes of patients whom they had reviewed or admitted on previous night shifts. Both of these functions were not formal, and probably reflect the somewhat flexible approach given to the content of handover.
- Careful consideration was given to the timing of the introduction of the Hospital at Night teams and night handover to maximise the ease of transition (taking into consideration the timing of change of rotation for junior doctors as well as avoiding Christmas/New Year for the start of a new system).
- While the handover is only one component of the Hospital at Night system, change management overall was aided by the ongoing employment of a project manager. There are still problems being identified with the system, and having someone with dedicated time to address such problems enables ongoing review of processes and promotes sustainability. The use of a communication book has enabled junior doctors to write any feedback during their nightshift and the project manager to respond. As such, frustrations are heard early and dealt with as much as possible.
- One of the wards is a pilot site for the use of an electronic system. This ward has for many years been using an electronic patient list to produce a handover that includes patient demographic information as well as past medical history, diagnosis, operation and date of operation. This system is now being expanded to incorporate a discharge planning tool. While demographic information is available from another hospital database, the remainder of the information must be manually entered. Of interest, the nurses keep the database up to date but both nursing and medical staff prints copies to use for handover and to aid them during their shift. While there is a function that enables task lists to be generated for each patient, these tasks are not available on the printed list and it is not a well utilised function.
- The paediatric handover improvements have focussed on handover from the night to day team and from the day to the evening team. Consultants are present during both these handovers at 0830 (the consultant on for ward service during the week) and 1600 (both the day consultant on for the week and the consultant on call for the night). While the relatively small size of the unit permits discussion of every patient, the close involvement of the consultant does enable clear management plans to be established. The paediatric unit use a word processing table that is updated and printed prior to each handover which has headings for each patient: name, location, age, problems, and jobs. Content has not been further specified but the focus during the handover sessions is on what jobs need to be done and who will be carrying them out for each patient. Patients who have been discharged but for whom there are outstanding tasks (for example, checking pathology results) remain on the list and therefore are on the radar of both junior and senior medical staff. There is

a specified location, which is only just big enough for all the junior doctors that attend.

- There is a combined obstetric and obstetric anaesthetist handover following this at 08:30, attended also by the senior midwife. This concentrates on updating about all patients in the labour ward and their current status/plan.

**Lessons learned for RCH and Victoria include:**

- A record of attendance may be useful for auditing the success of night handover improvements at RCH, and the incorporation of pager numbers may be a useful way to ensure that all team members and hospital switchboard know how to contact one another.
- More efficient handover processes may be possible if there are clearer roles delineated at the commencement of handover, although if a flexible team approach to patient care is being used, it may not be possible to allocate tasks until all are known.
- When making improvements to handover the additional functions of peer support and feedback on patient care should be considered.
- Any new changes to handover should be carefully timed to consider other demands on junior medical staff.
- Provision of an accessible communication tool between users and 'project managers' will aid engagement during the change process.
- In any development of an electronic system, it is important to consider how such a system will be used. If lists will be printed, then all necessary fields should be included in the printed format.
- It would be difficult to replicate this level of consultant involvement in handover in a setting where the covering junior medical staff are covering patients from a wide variety of units.
- A focus on jobs to be done and the identification of the doctor responsible is a simple baseline approach to handover.
- Consultant presence enhanced the educational opportunities inherent in handover; there was clarification of the rationale behind various management decisions.

## Royal Alexandra Hospital, Paisley, Scotland

13 February 2007

Royal Alexandra Hospital (RAH) is a large 500-bed teaching hospital that is part of the Greater Glasgow and Clyde Trust of hospitals. Like many UK hospitals, RAH has been introducing the Hospital at Night team over recent months as part of new systems supporting the reduction of junior doctor hours. It is still a work in progress and there have been some teething problems.

Activities undertaken during visit:

- Meetings with
  - Dr Alistair Dorward, Consultant Physician (lead for Hospital at Night implementation) to discuss the impact of the introduction of the Hospital at Night team at RAH, with a particular focus on handover.
  - Helen Stirton, Clinical Co-ordinator of the Hospital at Night team – Senior Nurse – for similar discussions.
- Attendance of a meeting discussing the progress and problems thus far with implementation of the Hospital at Night team.

Key elements in the current practices are:

- One impact of recent workforce changes has meant that the doctors are now more junior and rotating for a shorter duration and that this is potentially compromising the quality of care.
- The Hospital at Night team that has been introduced includes one F1 (intern), two F2s (PGY2 doctors) and a registrar (medical) who is the team leader. There are also two senior nurses as part of the team and they screen the calls as well as performing minor procedures, pronouncing death and ensuring that sick patients are seen by the right doctor.
- The system relies on a 9:00pm handover, but there have been problems with poor attendance from the surgical junior doctors. Barriers to attendance have included:
  - No paid overlapped time for outgoing surgical junior doctors with the incoming night team.
  - A preference by the surgical doctors for one-on-one handover and a lack of engagement with the concept of the Hospital at Night team.
  - A perception that the changes have increased the workload of the doctor who is on the team from the surgical units.
- Ongoing attempts at engagement and follow-up of these issues will be undertaken by a consultant surgeon who is a part of the steering group for Hospital at Night. It is not clear whether or not many junior surgical doctors have been involved with the implementation of the team, and the scenario highlights the need for comprehensive junior and senior medical staff involvement in any handover improvements at RCH or in Victoria.
- Helen Stirton has noticed that there is improved handover when the registrar on the Hospital at Night team has strong leadership skills.
- Prior to the night team handover the nurses have received a nursing report from each of the wards notifying them of unstable (or potentially unstable) patients. Often patients handed over by medical staff are not the same as those handed over by nursing staff.
- Introduction of the team approach at night has shown up deficiencies in the care of patients on the weekends, and as such a Hospital at Weekend team approach has now been instituted. A junior doctor who has been part of the steering group for the Hospital at Night team is trying to introduce

the concept of a Friday afternoon handover to aid the care of patients at the weekend (with a discussion of plans for unstable patients), however thus far there has been minimal interest.

- There are guidelines as to handover procedures in the morning but thus far there have been problems in having these followed. It is thought that some of these difficulties arise from a lack of senior medical staff involvement in the procedures – as such, the junior doctors can ‘get away with’ not following them. Also, in the morning it is the responsibility of the night doctor to attend the post-receiving ward round to hand over new admissions. Dr Dorward commented that it had been difficult to persuade other consultants to start work early enough for the night doctors to leave the hospital at the time they are rostered to leave.

**Lessons learned for improvement at RCH and in Victoria include:**

- There is a need for comprehensive junior and senior medical staff involvement in any handover improvements.
- Paid overlapped time is essential to attendance at handover.
- The development of multi-disciplinary night handovers at RCH or in Victoria would increase the complexity of quality improvement and change management but may also increase the quality of care delivered to patients and help ensure that no sick patients are missed overnight.
- There is a need for change management support at an executive level if all senior medical staff need to be engaged.

## **Burnley General Hospital, Burnley, Lancashire, UK**

14-16 February 2007

Burnley Hospital is one of the hospitals in the East Lancashire Trust of hospitals. It is in an area of low socio-economic status and a significant population of recent immigrants. The hospital includes general adult medicine and surgery units, an accident and emergency department, a general paediatric unit, an obstetric unit and a neonatal intensive care unit (NICU).

Activities undertaken during the visit varied from those initially planned as Miss Fiona Clark (initial contact) was on holidays and Dr Hari Muppala has changed hospitals, but they included:

Meetings with:

- Dr Ian Swann, Consultant Paediatrician, to discuss the paediatric handover practices.
- Dr Littley, Deputy Medical Director, Consultant Physician, and local lead for implementing the Hospital at Night program, to discuss handover practices in the medical units.

Observation of:

- obstetric handover
- paediatric handover.

### Paediatric practice

When the shift system was introduced for junior doctors following implementation of the EWT, there were several near misses of critical incidents due to communication breakdowns. This led to changes in practice for junior and senior medical staff. The improvements in handover have since been recognised with an award from the Cabinet Office. Key elements in current practices are:

- The consultants now do one week in four of ward service, during which time they have no other responsibilities (including no outpatient clinics). This enables their attendance at handover.
- Paediatric handover takes place formally at 0900 and at 1700 hours. Each session is chaired by the consultant and attended by all junior doctors and the senior nurse. The atmosphere is informal enough for anyone to contribute to discussion about patients or to ask clarifying questions.
- A word-processing document is updated and printed by junior medical staff prior to the handover sessions. This includes all patients on the paediatric ward, in the Children's Observation and Assessment Unit, in the NICU, and any patients who have outstanding issues requiring follow-up after discharge. The document is in table form, with the following headings, which can be completed as appropriate for each patient: bed number, consultant, name, age, problems, treatment and investigations, progress and jobs. All details require manual entry; there is no automatic downloading from any other hospital computer database. Observation of morning handover demonstrated that these details are not always up to date, particularly for the NICU patients. Additionally, there is no current practice of including the date of investigation results with the result that it is not always clear how recent the test results are.
- The paper printouts are shredded after use, but an electronic copy is emailed to all paediatric consultants so that those not on ward service can be aware if patients well known to them have been admitted.
- Each updated version is saved onto the hard drive, which permits review in the future as required.

- During the handover time, all the patients are discussed, including the management plans, which are confirmed or adjusted by the team. The senior nurse in attendance contributed most of the information for the general paediatric patients (the day I observed had no new admissions to be discussed from the night shift).
- At 10pm, the night doctors arrive and a verbal handover takes place that is not supervised. The night registrar is encouraged to contact the consultant if there are any outstanding concerns.
- Following the 0900 handover (paediatric and NICU), the night doctor attends the first part of the morning ward round to present the patients (this usually takes 30-40 minutes) they have admitted overnight. Patients admitted between 1700 and 2200 are not part of this presentation but are discussed during handover.
- The changes have not been audited, but anecdotally there is more efficient patient care, and fewer delays, fewer omissions and fewer errors.
- Sustainability has not been a significant challenge; all participants have benefited from the changes (consultants, nurses, junior doctors).

### Adult medicine

The practice changes in adult medicine have not been as significant at this time. The Hospital at Night team has not yet been introduced and formalised handover processes are limited to two hours in the morning when the outgoing night doctors present patients admitted overnight. However, effort has been put into improving the documentation in patient notes, so that patient information is found readily in the event that junior doctors covering unfamiliar patients after hours need to review a patient. This is in the form of a generic assessment document, a 12-page booklet that includes all admission information (nursing and medical information combined), progress notes (from all disciplines), investigation results, and handover summaries (of management plans and tasks to be completed). This approach has focussed on a support system required for good continuity of patient care – comprehensive documentation for each medical inpatient, which is a passive form of handover.

The tool was developed with widespread consultation of users, led by a nurse employed for the purpose. Audits have demonstrated that the time taken for initial assessment of an admitted patient has been reduced by a total of twenty minutes: four minutes for the doctor, and sixteen minutes for the nurse. No audits have been performed to assess the impact upon ease of care by covering junior medical staff.

### Obstetric medicine

The initial contact with Burnley General Hospital was made because of an article published on the National Health Service (NHS) website: [saferhealthcare.org.uk](http://saferhealthcare.org.uk), which described improvements in the obstetric handover practices as a result of an audit of practice. The improvements had been driven by a junior doctor, Dr Hari Muppala, in conjunction with consultant Miss Fiona Clark. The new system included system changes, with all team members (consultant, incoming and outgoing junior doctors, senior midwife) attending handover at 0900 (previously Senior House Officers had handed over separately to the registrars). Dr Muppala's work also included the development of a handover sheet, which incorporated both attendance records and patient details (current status, plan, outstanding investigations).

Observation of obstetric handover during the visit showed that despite these changes being as recent as 2006, not all components are still in use. All team members did attend at the appropriate time and place, however the handover sheet is no longer in use. Observed practice was that the outgoing team

discussed patients in the labour ward one by one (displayed according to location on a white board), including any overnight events and management plans. The consultant clarified issues and at the end of handover prioritised tasks for the morning. The incoming junior doctor took notes. Patients in other wards were then discussed by memory. While the location was central (the midwives' office), there were many interruptions during the handover – predominantly phone calls.

The consultant and junior doctors described difficulties with use of the handover sheet – it was usually used only to record attendance at handover and not for patient information. Doctors found it difficult to file and a move to a diary for signing attendance is being considered. However, all agreed that the system improvements of a specific time, specific location and expected attendance were useful. At times the handover is used as an opportunity for teaching, with the consultant asking the registrar to take the lead in prioritising tasks – both the junior and senior medical staff found this useful also. The widespread benefit and approval has no doubt contributed to the success and sustainability of these changes. The lack of perceived benefit of the handover sheet has meant that with the change in junior medical staff, it has rapidly dropped out of use.

Lessons for RCH and Victoria include:

- It is possible to have a record of handover, particularly if an electronic tool is used – this then just needs to be saved on a hard drive after each handover.
- Manual entry into an electronic tool has the danger of not being up to date, especially if it is a task separate to the regular duties of junior medical staff.
- Consultant attendance at handover may require changes to consultant work practices.
- The attendance of the relevant ward nurse at handover can provide valuable information about the current status of patients.
- If participants benefit from changes, sustainability is much less of an issue than if they do not.
- The location of handover is important, particularly for minimising interruptions.
- If documentation is good in the patient notes, then less detail about patients needs to be handed over from shift to shift.
- Handover provides an opportunity for teaching that is greatly enhanced by senior medical staff attendance.

## **Nuffield Department of Surgery, John Radcliffe Hospital, Oxford, England**

19 February 2007

The visit to Nuffield Department of Surgery was to meet with Dr Ken Catchpole, a Research Psychologist who has recently completed work on patient handover at the Great Ormond Street Hospital for Children in London. Dr Catchpole has a background as an industrial psychologist interested in human factors research, and his project at GOSH focussed on the handover of patients from cardiac surgery theatre to the intensive care unit. While there are differences to shift-to-shift handover, it was useful to learn from his systematic approach to improvement, which included evaluation.

### **Lessons learned from his experience that are useful for the improvement of handover at RCH and in Victoria include:**

- Combining changes in both process and content while including some documentation of the content of handover is possible (in this scenario, a 'Patient Transfer Form' was used that was completed by the anaesthetist prior to transfer and an 'Information Transfer Aide Memoir' form is completed by the recipient of handover to then form the admission note to the ICU).
- Adapting lessons from other industries to health care is useful, rather than trying to directly superimpose these practices directly onto health care. For example, learning from the Ferrari Formula 1 team and the aviation industry to create generic 'safety themes' and then systematically exploring each theme in developing new approaches to handover.
  - For example – leadership is clear in both aviation (the captain) and the setting of the Formula 1 pit-stop (the 'lollipop man'), but previously had not been clear in the handover of patients to the ICU. The new model introduced gave leadership of, and responsibility for, the handover to the anaesthetist involved in patient transfer.
- In the setting of the patient transfer, observation of the physical movements of the parties involved demonstrated inefficiencies and a lack of structure. Should this project extend to improving handovers involving patient transfers this may become relevant.
- Designing an approach that takes less than 30 minutes for training has been important for sustainability; the turnover of health care staff is much higher than that in a Formula 1 pit crew.
- The use of checklists was introduced (and modelled on the aviation industry) to free the participants to concentrate on the elements of the case that were not routine.
- Measurements should be either clinically important outcomes or factors that will be affected by the intervention. More robust data will be available if the measurements are determined prior to the design of the improvements rather than being based on the improvement.
- There may be relationships between variables that alter with the changes made – if an important relationship is found prior to system change then this relationship should be measured afterwards also.

## Homerton Hospital, London, England

19 February 2007

Homerton Hospital is a 550-bed (300 acute bed) district general hospital in London's East End, servicing a deprived, multi-ethnic and multi-lingual community. It has been a pilot site for many stages of the Hospital at Night project.

Activities undertaken during the visit included:

Meeting with:

- Dr John Coakley, Medical Director, to discuss the development of the Hospital at Night approach and the handover component.

Observation of:

- Night handover (combined medical, surgical and clinical site managers)

The expected content of night handover includes patients about whom the outgoing doctors are worried, patients that need review by the night team, and investigation results that are outstanding. There are no formal guidelines or tools to aid the content of handover. No permanent record is made of the content of handover.

Currently there is no process in place for morning handover other than the post-take ward round where the on-call consultant reviews all new patients admitted overnight. There are current plans to extend the team approach to 24 hours per day for acute general internal medicine, and the suggested shifts include two-hour overlaps for adequate handover at each shift change.

There is clear senior support (the medical director) and the clinical service managers (CSMs) report to him, which maximises the uptake of the changes.

### **Lessons learned from Homerton Hospital for the improvement of handover at RCH and in Victoria include:**

- Aligning shift start and end times maximises efficient handover practice.
- The inclusion of an intensive therapy unit (ITU) registrar at the commencement of night shift improves communication regarding those patients most likely to require ITU attention during the night shift.
- An approach to minimise interruptions during handover would be useful to improve the efficiency and safety of the handover (a number of 'bleeps' occurred during night handover which caused significant disruption).
- Resuscitation status is a key piece of information relevant for incoming junior doctors – particularly in the setting of adult medicine – and may be worth including in pro-formas or checklists.

## National Hospital at Night Team, London, England

20 February 2007

I met with Miss Wendy Reid, Postgraduate Dean (North East & North Central London), London Deanery and Gerry Bolger, Project Director, National Hospital at Night team (NHS). Miss Reid is an Obstetrician who is also the National Clinical Lead for the Hospital at Night project. Wendy and Gerry are involved at the central level for planning, piloting and extending the Hospital at Night project. Both acknowledged that thus far in the Hospital at Night work the focus had only been on the day to night handover, with little attention paid to handover needs at other times of shift change. Lessons they have learned thus far which may be relevant to the improvement of handover in Victoria include:

- Any approach to handover should recognise the potential educational benefits and not be limited to mitigating risk. Educational potential can only be fulfilled if either senior staff are present or a culture is created where inter-professional learning is accepted.
- Handover could be viewed from the perspective of the patient pathway through the health care system, establishing what best meets the patient's needs rather than the doctors or clinicians' needs.
- Best practice handover will depend upon the working practices of the health care institution; as patient care teams become more multi-disciplinary so handover must have a multi-disciplinary approach.
- It is important to ensure that all unstable patients requiring review early in the subsequent shift are identified and communicated at handover. Further work is required to establish how to identify or define such patients.

## 4. Improving the Victorian healthcare system

The Royal Children's Hospital currently has a project that aims to improve the quality of our ward junior medical staff shift-to-shift handover. Thus far, current practices for morning handover have been audited and engagement of stakeholders has commenced. The lessons learned from phase one of the Victorian Travelling Fellowship Program (VTFP) will enhance the next stages of this project. As detailed in the report, these lessons are both specific to junior medical staff handover and general lessons about change management and quality improvement. The exposure to international practice has provided real-life practical examples of handover. While all of the observed handovers had weaknesses as well as strengths, more valuable information was available from direct observation and discussions than is available in any of the published literature.

The next steps at RCH include:

- The development of guidelines for the improvement of junior medical staff shift-to-shift handover. These general guidelines will address content of handover, method/process of handover, and documentation of handover. The guidelines will also include a proposed methodology for implementation at RCH. Guidelines will be based on the lessons learned in the travel phase, as well as available literature and recent guidelines developed by the Victorian Quality Council.
- Meeting with senior level decision-makers to feed back the lessons learned thus far, both from the project work undertaken at RCH and from the international travel. This meeting will provide an opportunity to decide upon the best context in which to pilot the use of the guidelines as a means to improving the quality of handover.
- Pilot of the guidelines in a specific context (for example, morning specialty medical handover).
- Evaluation of handover before and after the pilot.
- Feedback to the senior level decision-makers the recommendations for further improvement of junior medical staff handover throughout RCH, based upon the lessons learned from the project work at RCH and the international travel.

It is hoped that through the dissemination of learnings, as detailed below in section five, broader systems change can be promoted.

Monitoring of improvements will occur in the form of pre- and post-pilot audits of handover. Attendance at handover and user satisfaction is also expected to be evaluated.

## 5. Sharing and promoting the project

It is anticipated that the information and lessons learned will be shared in some or all of the following ways:

- presentation to the Victorian Quality Council working group on handover
- presentation of the findings of both phases of the project at a conference such as:
  - Australian Postgraduate Medical Education and Training Forum or
  - RACP Congress

- publication of the findings of the project, for example, in RACP News or the MJA.

## **Feedback - key lessons learned**

The lack of published material and clear world experts in the area of junior medical staff handover made it difficult to select destinations for the fellowship. However, this difficulty related closely to the main benefit of the Travelling Fellowship for the Handover Project at RCH – it became possible to observe international practices and liaise with those who have already made progress in the area, where other access to the knowledge and experience is limited. Contacts within the field of patient safety previously made by members of the Clinical Quality and Safety Department at the Royal Children's Hospital (one of whom previously was the recipient of the VTFFP) were invaluable in finding appropriate sites to visit.

The provision of templates, particularly for management of expenses, was extremely useful. Having the induction session attended by recent fellows was also helpful in planning the trip and learning from their experiences.

The opportunity to take the RCH Junior Medical Staff Handover project to a higher level through the Fellowship has been greatly appreciated.