

# BMJ Open Quality Improving the Written Medical Handover

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## ABSTRACT

The handover of large numbers of medical patients, during on call periods when staffing levels are reduced, is a challenge for all acute medical services. At the Royal Cornwall Hospital, a large district general hospital, we identified that foundation doctors were reviewing medical inpatients during weekend on call periods with limited written handover information. We chose to address this problem by developing an intervention, a weekend handover sticker, and piloting it. We used the review of documentation to measure improvement and feedback from users to assess the processes involved. Use of the weekend handover form improved the written communication between weekday and weekend teams. The number of weekend plans documented in the notes increased from 15% to 84% and the provision of a patient summary within the last 7 days increased from 26% to 94%. The feedback from users confirmed it was a useful intervention and 100% (15/15) of doctors and nurses responded positively to the question “Do you think the weekend sticker should be introduced and used at the weekend for all medical patients?” The feedback also identified concerns regarding additional workload for weekday ward staff and this has led to ongoing work to try and ensure that the weekend handover form continues to be used effectively to maintain an improved level of written handover information for on call staff. While we have not included a direct measure of patient care, we hope that by improving the quality of written handover information we are acting to ensure patient information is shared effectively, with likely positive impact on patient care.

## PROBLEM

The Royal Cornwall Hospital Trust (RCHT) is a large teaching district general hospital. It serves an estimated population of 500 000 people, which increases with holiday makers during the summer months. The Trust employs approximately 5000 staff and has over 750 beds. In the medical department at the RCHT, there are two verbal handover meetings per day where on call staff come together and discuss acutely unwell and unstable patients. The on call foundation doctor often reviews patients who are medically complex and may have been in hospital for some time, with limited specific handover information. Not all medical patients are handed over verbally, only the patients highlighted as being unwell or at risk of becoming unwell at the time of the meeting. The reviewing doctor

is often reliant on the written handover in the notes for patient information. Therefore, there is a need for an accessible, high-quality written handover for weekend on call staff to use to aid decision making around the care of patients over the weekend.

The overall aim of the project was to improve the written handover between weekday ward doctors and out of hours doctors.

We developed the following SMART aims, for completion over an 8-month period:

1. To develop a weekend handover structure for use in the medical notes;
2. To improve the number of notes with a documented weekend plan from 15% to 100%;
3. To improve the number of notes with a documented escalation of care from 10% to 100%;
4. To improve the number of notes with a documented recent summary from 26% to 100%.

## BACKGROUND

A high-quality, effective handover has significant benefits for doctors and patients. The General Medical Council states doctors ‘must contribute to the safe transfer of patients between healthcare providers’, which requires doctors to “share all relevant information with colleagues involved in your patients’ care within and outside the team, including when you hand over care as you go off duty”.<sup>1</sup> It is our responsibility, as junior doctors, to ensure all relevant information is available and handed over at the weekend. The British Medical Association (BMA) ‘safe handover, safe patients’ guidance, states lapses in information in handover, can and do lead to mistakes being made, which could increase morbidity and mortality.<sup>2</sup> A good handover is educational for doctors, reduces stress and improves jobs satisfaction. The BMA advises written handover should include access to up-to-date summaries and management plans for all patients under a team’s care, anticipated problems, to clarify management plans



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and ensure appropriate review and a list of outstanding tasks with expected completion time.

The Royal College of Physicians have published a guideline on the 'Standards for the Clinical Structure and Content of Patient Records'.<sup>3</sup> The information recommended to be available for handover, including for hospital at night and on call teams, should include reason for admission, clinical summary, past medical history, summary of the problems and issues, advanced decisions about treatment, including escalation plan and tasks to be done. The Royal College of surgeons also has very similar advice in their guidelines 'Safe handover: Guidance from the Working Time Directive working party'.<sup>4</sup>

## BASELINE MEASUREMENT

Our measures for the project were the number of notes with a documented weekend plan, the number of notes with documented escalation of care and the number of notes with a recent summary. We planned to make baseline measurements of these parameters and to monitor them, immediately following intervention (introduction of the weekend handover sticker) and after 1 month to assess effectiveness and sustainability.

One hundred and ten patients' notes were evaluated (March 2015). The written documentation, in preparation for the weekend, was assessed for the presence of a weekend plan, documented escalation of care and a patient summary within 7 days. Over a weekend, a minimum of 10 patients' notes were reviewed from each medical specialty. The sample included eight medical specialties (nephrology, endocrinology, respiratory, cardiology, oncology, stroke, neurology, elderly care and gastroenterology) across 11 medical wards. The notes were selected in order of patient beds, that is, A bay, B bay and so on until the required number were sampled.

For the purposes of this initial assessment, the following were defined as acceptable:

1. A weekend plan was considered to be present if there were any tasks documented to be completed over the weekend (including discharge), with or without a heading of weekend plan, or documentation stating no jobs to be completed over the weekend.
2. Escalation of care was considered to be present if there was any documentation regarding escalation of care or discussion with family and/or relatives about escalation of care. The presence of an ANDO (Allow Natural Death Order) was not accepted as evidence of documentation regarding escalation of care, unless it contained additional written information on escalation, for example, 'would be considered for non-invasive ventilation'.
3. A documented patient summary (reasons for admission, background, medical history and current problems) within the previous 7 days was deemed acceptable. We opted to exclude all patients who had been in hospital for <7 days because their admission clerking would be a recent summary. Fifty-three of the

110 patients had been in hospital for >7 days and were included in this analysis.

The baseline measurement demonstrated that 15% (16/110) patient notes contained a weekend plan, 10% (11/110) of notes had clear documentation of escalation of care and 26% (14/53) had a patient summary in the last 7 days. The longest time a patient went without a patient summary was 31 days (see online supplementary appendix 1).

## DESIGN

The baseline measurement confirmed the written documentation for weekend handover in the medical notes often did not include a weekend plan, escalation of care or recent patient summary. The first stage of the project was to develop an intervention with the aim of improving this and the second stage was to assess its effectiveness.

In designing our intervention, we considered the written handover system operating in the surgical directorate at the same hospital. The surgical department at the Royal Cornwall Hospital use a sticker (see online supplementary appendix 1), completed by the ward team and placed in the patients' record on a Friday, to document reasons for admission, any procedures, anticipated complications and weekend plan for every patient. It was the experience of the foundation doctors working in surgery that the sticker enabled a thorough and robust written handover for the weekend, making weekend work more controlled, less stressful and more efficient. Therefore, it was felt that the preferred intervention was a sticker, designed for use in acute medicine, based on a system that worked well in another directorate. If successful, this would lead to a congruent system across medicine and surgery in the same hospital. The published Quality Improvement work on weekend handover also provides supporting evidence that a sticker can be used to improve written handover.<sup>5-7</sup>

Therefore, we opted to develop a sticker, to include key prompts, to improve the written documentation in the patients' notes and increase communication from the weekday team to the weekend on call team. In considering the challenges of this intervention, we recognised the need to use consultation cycles to design in the intervention (a weekend handover sticker), collecting feedback from healthcare professionals, and then use Plan Do Study Act (PDSA) cycles to test it and build up supporting evidence of its effectiveness. We also recognised that the intervention was a major change and therefore we sought advice from the Governance Lead for Medicine from an early stage and all pilot documents were reviewed by the appropriate Governance Group before use.

## STRATEGY

Development of the weekend handover sticker (April 2015)

We used two consultation cycles to develop the intervention (weekend handover sticker). We asked junior doctors and a consultant nurse (13 people) what information

they would like to be included on the weekend handover form. We predicted that they would like a brief overview of the patient and clear weekend plan, the outcome of the consultations were the staff wanted quite detailed information on the handover form and they requested clear documentation of a plan for the weekend, escalation of care and an up-to-date patient summary. This feedback confirmed our aims and measures to be appropriate. There were a few additional requests to include prompts for venous thromboembolism prophylaxis (VTE), warfarin prescription and weekend blood tests. Therefore, the first draft of the weekend handover sticker was a design which included as much information as possible.

Consultation cycle 2 was to further develop the intervention by collecting initial feedback on our design. Verbal feedback was sought on the medical weekend handover sticker from 10 junior doctors.

Feedback was requested on the content, the design and layout and also whether doctors thought it would improve the weekend handover. The feedback was largely positive, most junior doctors thought the sticker would improve the communication between the weekday ward teams and the on call team. The main criticism was that it was busy and contained a lot of information. This could discourage the ward team from completing the form and could be more difficult for the on call teams to read. The extra prompt for VTE prophylaxis was deemed a duplicate prompt because there was already one on the electronic prescribing system used at the hospital. There was concern expressed that it would add a large volume of work on a Friday for the ward staff. There was a lot of discussion and opinions regarding the layout and size, with the majority wanting an A5 size. As a result of the feedback, the form was simplified and reduced to A5 size. We were mindful of the feedback regarding workload for the weekday staff and decided to seek specific feedback on workload for both weekday and weekend staff in the next PDSA cycles.

### Testing the weekend handover sticker

PDSA cycle 1 (July 2015) was the first pilot. Our aim was to see if the weekend handover sticker would improve the documentation provided in the medical notes in preparation for the weekend and to obtain feedback from the users of the form. We hypothesised the weekend medical handover sticker would increase the percentage of weekend plans, up-to-date summaries and documentation regarding escalation of care. We planned to pilot the sticker on two medical wards who agreed to testing our intervention over one weekend.

However, we did not anticipated the cost of this and could not get agreement from any budget holders to fund the printing of a small number of stickers. Therefore, we printed the 'sticker' onto clinical continuation sheets and the intervention became a form rather than a sticker. In addition, during the period of the intervention development the hospital replaced the ANDO with a Treatment Escalation Plan (TEP) on 1 July 2015. Therefore,

our intervention was modified to reflect this. The junior doctors on the ward were asked prior to the weekend whether they could complete the form in preparation for the weekend. This was a task taken on voluntarily.

The medical weekend handover form was piloted on two wards over one weekend. The results demonstrated 92% (23/25) of the notes contained the weekend handover form and with that 92% (23/25) had documented weekend plan, 88% (22/25) documentation re-escalation of care and 92% (23/25) had a documented summary within the last 7 days.

Eight per cent (2/25) of the notes did not have the weekend handover form in the notes. On one form the escalation of care prompt was left blank.

We learnt the weekend handover sticker was effective in increasing the percentage of weekend plans, up-to-date summaries and documentation regarding escalation of care in patient notes prior to the weekend. Where the weekend handover form was not used, the notes were reviewed and it was identified that there was no written weekend plan, escalation of care or up-to-date summary documented. The data were only collected over one weekend; therefore, it is unclear whether the sticker would be used consistently by junior doctors and we sought to test this further in the next PDSA cycle.

Written feedback was received from four junior doctors and three nurses who used the form at the weekend, and four junior doctors completing the form prior to the weekend. The feedback in this cycle was largely positive. The weekday doctors completing the form highlighted that it helped them to consider the high workload the on call team has to manage and encouraged them to prepare more thoroughly for the weekend. In considering additional workload, the doctors estimated it took approximately 1 hour to complete weekend handover forms for 30 patients. The on call junior doctors and weekend nursing staff reported the weekend handover form provided a clear and concise summary of patient information and reported this increased their confidence in managing the patient and saved them time reviewing the notes. Some of the most positive feedback was from members of the nursing staff, indicating the weekend handover form is likely to have a wider usefulness to other groups of health-care professionals.

This confirmed our hypothesis that the weekend handover form was effective in prompting the weekday team to document information for the on call team, and that when it was not used the required information was not documented. The feedback from users confirmed its usefulness and although there was recognition that it created an additional workload for the weekday medical teams this was not raised as a major issue.

The positive outcome and feedback from the first pilot enabled the project to move forward. The weekend handover form was represented to the forms review group and was approved. The Royal Cornwall Hospital logo was added (see online supplementary appendix 2) and this form was then used for PDSA cycle 2.

**Table 1** Results of PSDA cycle 2

	Week 1 (n=12) %	Week 2 (n=12) %	Week 3 (n=14) %	Overall (n=38) %
Completed weekend handover form	11 (91)	9 (75)	12 (86)	32 (84)
Documented weekend plan	11 (91)	9 (75)	12 (86)	32 (84)
Documented escalation of care	11 (91)	10 (83)	13 (93)	34 (89)
Documented patient summary within 7 days	12 (100)	11 (92)	13 (93)	36 (95)

PSDA cycle 2 (February to March 2016) was an extended pilot. The aim of this pilot was to further assess the effectiveness of the weekend handover form in improving the written handover on a larger scale (seven wards) and to assess workload and sustainability over several weekends. We hypothesised the weekend handover form would be an effective prompt, but that use of the form might reduce over consecutive weeks. Therefore, the weekend handover form was tested on seven medical wards over three consecutive weekends.

The junior doctors were emailed informing them of the availability of the weekend handover form and requesting they completed the form in preparation for the weekend. A sample of 12 to 14 notes, one or two from each pilot ward, were assessed each weekend. The same method for note selection was used. Again we collected feedback from doctors and nurses using the form.

The results, over the 3-week pilot, are shown in [table 1](#). In total, there was a weekend handover form completion rate of 84% (32/38) over the 3 weeks and all those with a completed form had a weekend plan, up-to-date summary and documented escalation of care. Of the six (16%) notes which did not contain a form there was no weekend plan documented. Only 2/6 had a documented escalation of care and 3/6 had an up-to-date summary.

Again the feedback received was positive, with feedback from junior doctors and nurses. In total, we received verbal feedback from 21 junior doctors and 5 nurses and written feedback from 3 junior doctors and 8 nurses. Hundred per cent (11/11) of healthcare professionals responding to the written questionnaire thought the form should be introduced on a permanent basis. There was some constructive criticism surrounding the layout of the form, with some feedback suggesting it should be larger than A5 size; however, the majority of people were happy with the layout of the form. There was more concern expressed over the time required for the weekday teams to complete the document prior to the weekend.

The results again confirmed an increase in the documented handover information where the weekend handover form was used and this was sustained across a larger number of wards. There was some fluctuation in the number of forms completed each week, but we did not see the drop in use we were anticipating over the 3-week period. The feedback from weekday ward doctors expressed a some frustration relating to the additional workload associated with form completion over the 3-week period.

## RESULTS

The combined results ([table 2](#)) clearly demonstrate improvement of the written documentation of weekend plans and patient summaries when the medical weekend handover form was used and this was sustained when we extended the use of the form to a larger number of wards. We have also demonstrated an improvement in documentation of decisions around escalation of care, however the introduction of the TEP in July 2015 in the hospital during the project is a confounding factor. It is important to note that when the TEP was introduced, we adapted the weekend handover form to include a prompt for TEP completion prior to the weekend and this may be positively contributing to the high use of the TEP form.

The feedback received was positive and all healthcare professionals completing the written survey thought the medical weekend handover form should be introduced across all medical wards. However, weekday ward doctors expressed reservations regarding the extra workload it would introduce through informal methods of feedback (verbally and in email) (see online supplementary appendix 2).

## LESSONS AND LIMITATIONS

The development of the medical weekend handover form has been a project that has run over a much longer

**Table 2** Comparison of results

	Initial assessment (%) March 2015	PSDA 1 (%) July 2015	PDSA 2 (%) February 2016
Completed weekend handover form	N/A	92	84
Documented weekend plan	15	92	84
Documented escalation of care	10	88	89
Documented patient summary within 7 days	26	92	95



time period than we initially anticipated. We recognised the need to work within the governance structure of the Medical Directorate; however, we did not anticipate the time that this would add to the duration of the project. As a result of this, some aspects of the project that we had hoped to be able to further develop were put to one side to ensure completion of the core project.

Over the project period, the hospital issued key messages to highlight the importance of an effective handover in response to a Care Quality Commission report. The Trust also introduced a TEP form, while the project was in progress. These changes could both have contributed to some of the improvements we have recorded. In future cycles, we plan to collect baseline data more regularly to allow better correlation between the intervention being tested and the change. We would then be able to monitor improvement using a run chart.

In selecting patient notes for review, we reduced bias by sampling notes from across all medical wards who took part in the PDSA cycles. One to two notes were selected from each ward and specialty, using a consistent sampling method. In the PDSA cycles, we included patients who had been in hospital for under 7 days and their admission clerking was allowed as an up-to-date summary, whereas during baseline data collection we excluded patients who had been admitted within the last 7 days. This may have introduced some negative bias.

Our results can only demonstrate the the weekend handover sticker would improve the written handover in the medical department at RCHT. Other hospitals and departments might have a different handover system or already have a similar process in place.

However, our intervention and our results are an example of a prompt which could be used to improve the documentation in the medical notes prior to the weekend.

One of the ongoing issues that we are still working to address is sustainability. PDSA cycle 2 showed good levels of use of the form over a 3-week period; however during this time, junior doctors were prompted to use the form and sent weekly email reminders. Given the concerns expressed by weekday staff around workload, we are aware that the use of the form may diminish over time. Therefore, we have sought opportunities to present the information at consultant level and to the medical governance leads, to encourage senior support of weekday ward doctors completing the forms.

## CONCLUSION

At the outset, the aim of this project was to improve written handover between weekday ward doctors and junior doctors on call. Our baseline measurement confirmed that written weekend handover could be improved and we developed an intervention, the weekend handover sticker/form. We subsequently tested the intervention and demonstrated improvement in documentation of weekend plans and patient summaries. Overall, we demonstrated

that the percentage of weekend plans increased from 15% to 84% and the percentage of patient summaries increased from 26% to 94%. During the intervention period, there was also a clear increase in documentation around escalation of care from 10% to 89%; however, this cannot be fully attributed to the intervention as there was a TEP introduced at the hospital during the project. Our measures included review of the documentation in the notes to demonstrate improvement and verbal and written feedback from the users of the form on the process. The feedback was very important in giving clear positive feedback that the intervention was helpful to weekend on call staff, with 100% of healthcare professionals responding to the survey expressing that the sticker should be introduced as a permanent intervention. The feedback was also very important in identifying the concerns of weekday staff regarding additional workload. This barrier to sustained use was addressed by involving senior governance leads and consultants to support the weekday teams in completing the weekend handover form. We did not use any measures to formally assess additional workload for weekday staff or increased efficiency for on call staff and therefore we cannot draw any conclusions on the impact of the intervention with regard to on call efficiency.

Our results, although not directly comparable, show similar findings to the current literature regarding the written handover. Din *et al* developed a weekend handover tool, similar to our intervention across surgical wards in St. Peters Hospital. They demonstrated with introduction of their weekend handover sticker the percentage of documented weekend plan increased from 35% to 85%. With 90% of healthcare professionals surveyed finding it a useful intervention.

Bethune *et al* demonstrated the percentage of weekend plans increased from 28% to 80% with introduction of a weekend handover pro forma at the Royal Devon and Exeter hospital. They also found there was an increase in the percentage of weekend tasks completed, which improved from 75% to 100%, suggesting the handover sticker is an effective communication tool. Boyer *et al* introduced a weekend handover sticker in substitute for a ward round entry, they demonstrated a compliance with use of the form was 86.67%, similar to our results, and 100% of people using the form found it useful.

Going forward, the sticker is now available throughout the hospital and individual departments can order a supply for their respective wards. The final project will be presented to the medical consultants and governance leads and we hope that they will support their junior doctors to use the forms. Further PDSA cycles could be used to monitor the quality of written handover information, alongside ongoing work to raise the profile of the weekend handover sticker and its value as an effective prompt. We have also identified key handover information should the hospital move to an electronic handover system in the future.

In summary, the weekend handover form developed is an effective intervention in improving the written

communication between weekday and weekend on call staff. While we have not included a direct measure of patient care, we hope that by improving the quality of written handover information we are acting to ensure patient information is shared effectively, with likely positive impact on patient care.

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