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The implementation and impact of “Hospital at Night” pilot projects: An evaluation report

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EXECUTIVE SUMMARY

1. Introduction and background

The effective and safe management of patients in hospitals at night has emerged as a key challenge for NHS organisations in recent years. At night, NHS hospitals have traditionally relied on multiple tiers of specialty-specific, resident “on-call” doctors, with Consultants being non-resident, but available on-call from home. This traditional model of “on-call” medical cover in UK hospitals has been the subject of increasing debate in the medical press with particular concerns about the impact of working excessive hours on the mental and physical health of doctors in training and the quality of care provided to patients. More recently the European working time directive has acted as a major catalyst for changing the working pattern of doctors in training. A wide range of approaches to support the implementation of the working time directive, whilst maintaining or improving the quality of patient care, have now been developed. One approach - The “Hospital at Night” model – has been piloted in four acute NHS hospital Trusts in England. The “Hospital at Night” model essentially proposes that a multi-disciplinary team or teams provide clinical care across the hospital at night on the basis of being competent to provide care, rather than by virtue of belonging to a particular profession. Specific initiatives underpinning this approach include the introduction of multi-disciplinary handovers, bleep filtering and night coordinator roles. Four acute trusts were involved in the pilot project.

This evaluation was part of a wider programme of research to evaluate the impact of the NHS working time directive pilots. The “Hospital at Night” pilots were included in this wider evaluation as one of a number of initiatives designed *inter alia* to support the implementation of the working time directive in the English NHS. Earlier research focused on the *implementation process* within each of the WTD and “Hospital at Night” pilots particularly from the perspective of senior managers and lead clinicians. The key themes and issues emerging from these interviews in the “Hospital at Night” pilots related essentially to the change management process. The views of practitioners involved in the “Hospital at Night” were gathered as part of this “Hospital at Night” evaluation.

2. Evaluation design and methods

The overall aims of the evaluation were to carry out a *qualitative* assessment of the impact of the “Hospital at Night” pilot projects on the staff most closely involved with its implementation (doctors in training; ward nurses; night coordinators) and to carry out a *quantitative* evaluation to establish if changes in how the hospitals are staffed at night have had an impact on the pattern and distribution of workload, clinical outcomes and service targets.

The research questions were:

1. How are staff experiencing the implementation of the key elements of the “Hospital at Night” model?
2. What are staff perceptions of the impact of “Hospital at Night” on doctors’ education and training?
3. What are staff perceptions of the impact of “Hospital at Night” on patient care?
4. What impact has the “Hospital at Night” had on the pattern and distribution of workload during the night-time?
5. Have there been any changes in clinical outcomes since the introduction of the “Hospital at Night”?

6. Has the "Hospital at Night" affected the achievement of national performance targets in the areas of A&E waiting times, cancelled theatre operations and inpatient waiting times?

A multi-method approach, involving face-to-face and telephone interviews (with doctors, nurses and night coordinators), focus groups (with doctors), observation (of handover) and quantitative analysis of national and local audits and databases, was used in the evaluation.

3.Key findings: qualitative evaluation

The main findings from the qualitative evaluation are that doctors, nurses and coordinators involved in the "Hospital at Night" pilots generally have a common understanding of the key elements of the "Hospital at Night" model. However, the degree of knowledge varies according to role, with the more senior doctors (SpRs, SHOs) and coordinators having the most knowledge, compared with ward nurses and PRHOs.

Doctors, nurses and coordinators reported benefits from working more closely together and this multi-disciplinary team working was seen as a very positive component of "Hospital at Night" model. Perceptions varied about the effectiveness of multidisciplinary team working across all specialties and all pilot sites and there was some concern that the "Hospital at Night" multidisciplinary team should have sufficient manpower and skills to provide cross cover. The impact of "Hospital at Night" on doctors' education and training was recognised as having positive and negative effects as well no impact at all - depending upon component of the model being considered and the specialty of doctor. In general the model was considered to have been more successfully implemented in medicine, than in surgery.

The majority of doctors, nurses and coordinators reported that they thought the "Hospital at Night" had a positive impact on patient care. The experiences and impressions of the majority of healthcare professionals interviewed was that, as a consequence of the "Hospital at Night" model, patients were seen more quickly, were less likely to be overlooked or forgotten, were more likely to be seen by the most appropriate professional and the quality of the doctor-patient and nurse-patient was reported to be enhanced because of fewer distractions and greater prioritisation of patients and tasks.

4.Key findings: quantitative evaluation

The main findings from the quantitative evaluation are that the pattern of activity was similar across all three audits with a peak before 11pm and decreased gradually after 11pm. However, the distribution of tasks by grade of staff changed over time, demonstrating an increase in the proportion of tasks being carried out by nurse practitioners, greater prioritisation of tasks and fewer calls requiring attention within the hour. There were no observable detrimental effects on outcomes in death rates of patients, sickness and absence of staff and the critical incidents recorded. There was no apparent impact on national performance targets as measured by inpatient waiting times, A & E waiting times and the proportion of cancelled theatre operations. Finally, there was no useable data available for consultant call-outs or the recording/use of Modified Early Warning Score (MEWS). Overall, the quantitative analysis doesn't indicate any adverse impact of the "Hospital at Night" on outcomes, workload or targets, but these findings must be interpreted with caution due to difficulties in data reliability, validity and sensitivity.

5. Conclusions & recommendations

The key conclusions and recommendations are:

Understanding the context within which "Hospital at Night" was introduced: the "Hospital at Night" pilot sites were working to a very tight implementation schedule. There were differences in terms of the size of Trusts, specialties covered by "Hospital at Night", the extent to which elements were already in place at the pilot and the ways in which "Hospital at Night" was introduced across different sites. All these factors need to be taken into account when transferring learning from the pilot sites.

Communication within trusts: the "Hospital at Night" model was often promoted alongside changes associated with the EWTD, including the modification or introduction of shift working. Changes introduced as part of EWTD (shifts) are associated with "Hospital at Night". There is increasing recognition this has its limitations and the label is now almost seen as a hindrance, perpetuating negative connotations and also alienating non-medical staff. There were also variations in levels of awareness of some of the components of "Hospital at Night". This may have reflected the different communication strategies used to roll out the model. It is important to ensure that the components of the model are communicated to all members of the Trust

Managing cultural change: multidisciplinary team work under "Hospital at Night" challenges traditional practices and ways of working. Some staff felt threatened by the changes and there were different perceptions of the obligations and expectations for different types of staff (e.g. Physicians and Surgeons) working at night. Ensuring clinical champions are drawn on to support roll out of the "Hospital at Night" is crucial for successful implementation. Giving staff information about what is expected of them as a member of the multidisciplinary team is also important.

Staffing levels to support change: reliance on agency nurses, locums and sickness affected implementation of the "Hospital at Night". In some sites and for some grades of doctor, doctors appeared to be "under managed". Full and successful implementation of "Hospital at Night" requires a full complement of skilled staff who understand the model. Ensuring that all staff are aware of their responsibilities in the "Hospital at Night" is also crucial.

Perceived value of change: where the change is perceived to be of value it is more easily implemented, and this is evident in the apparent difference in ease of implementation between the Physicians and Surgeons. The appeal of the model needs to be broadened to surgeons and more senior doctors. Communicating the benefits of the "Hospital at Night" is crucial in the change process. Since most of the respondents perceived the "Hospital at Night" to be good for patients communicating these findings to staff involved in the implementation of "Hospital at Night" may support implementation.

Finally there is potential to improve, consolidate and expand elements of the "Hospital at Night". All of the sites were committed to continuing with and developing the "Hospital at Night" model. Although the value of multi-disciplinary team working was universally recognised, the concept underpinning the "Hospital at Night" model of competency based team working was not fully developed at most sites. Respondents appear to refer to competencies at an individual professional level, rather than in the context of multidisciplinary team working. Handover was working very positively, however respondents from all pilot sites reported room

for improvement, such as combining medical and surgical handovers, increased clarity over who was leading handover, better attendance at handover and having a dedicated room for handover. There was the potential at some sites for the bleep to cover more doctors. Ensuring that the reasons for and the process by which the bleep system is operated is communicated to all that is affected by it, is also important.

1. Introduction and background

1.1 Overview of this report

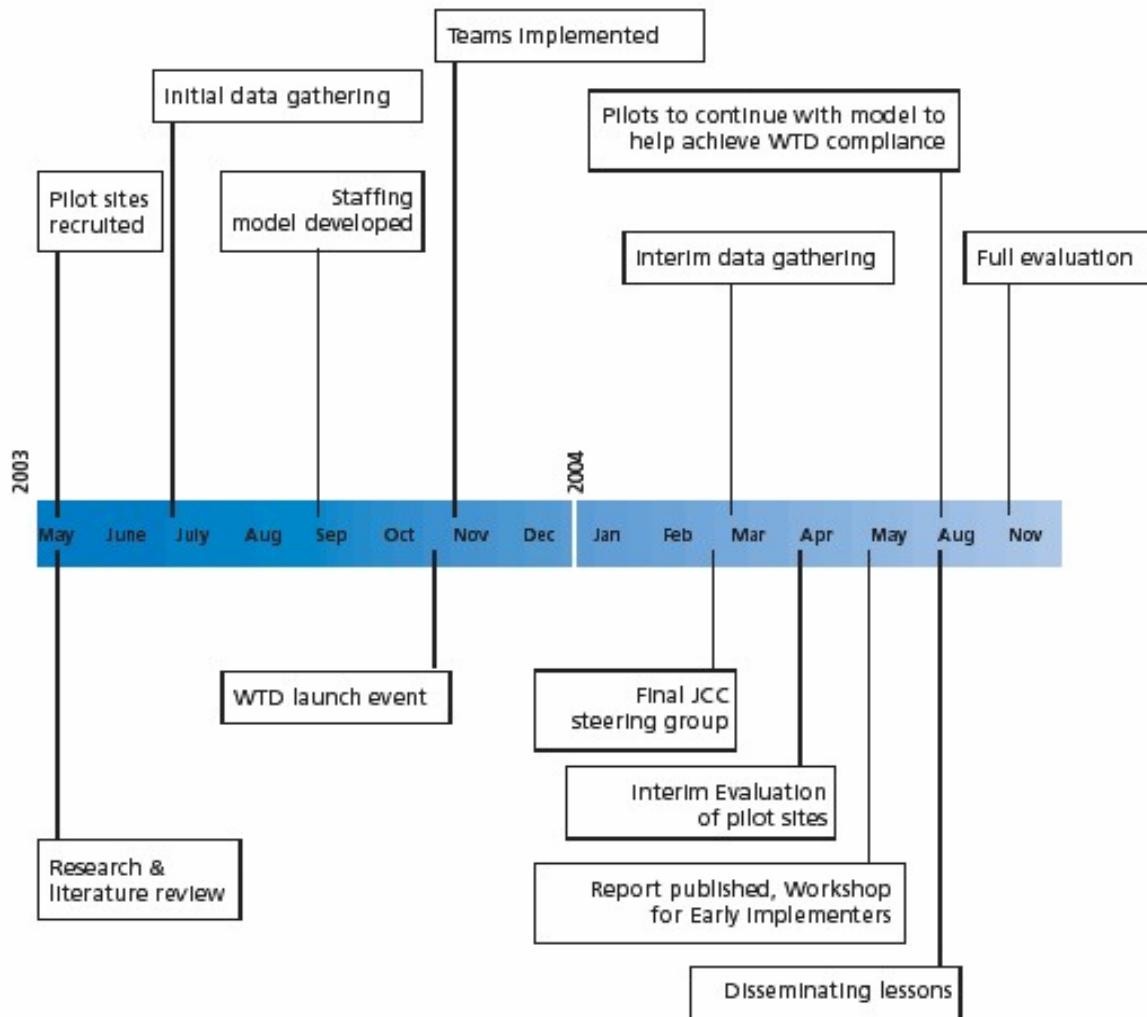
This report describes an evaluation study commissioned by the NHS Modernisation Agency into the "Hospital at Night" pilot projects. Section 1 of this report sets out the background to the NHS "Hospital at Night" pilot projects and describes some of the main features of the "Hospital at Night" model. The aims, research questions and hypotheses explored in the evaluation are set out in sub-sections 1.3 and 1.4. Section 2 details the overall design and methods of the evaluation study, including information on the data sources for the qualitative and the quantitative components of the study. Some of the methodological and practical challenges faced in carrying out this evaluation are also discussed here. The main findings from the *qualitative* component of the evaluation are reported in section 3, which reports findings relating to the implementation of the "Hospital at Night" model in each of the four pilot Trusts and reports respondents' views of the impact of "Hospital at Night" on staff, doctors' education and training and patient care. The findings from the *quantitative* component of the evaluation are reported in section 4. This section reports the key findings relating to the relationship between "Hospital at Night" and the pattern and distribution of workload, clinical outcomes and service targets. The final section, section 5, forms the discussion and conclusion, returning to the hypotheses generated at the start of the evaluation process and assessing the evidence gathered against each of the stated hypotheses.

1.2 The "Hospital at Night" Pilots

The effective and safe management of patients in hospitals at night has emerged as a key challenge for NHS organisations in recent years. At night NHS hospitals have traditionally relied on multiple tiers of specialty-specific, resident "on-call" doctors, with Consultants being non-resident but available on-call from home. This traditional model of "on-call" medical cover in UK hospitals has been the subject of increasing debate in the medical press with particular concerns about the impact of working excessive hours on the mental and physical health of doctors in training and the quality of care provided to patients (see for example Firth-Cozens & Cording, 2004; Hobson, 2004; Nicol & Botterill, 2004). More recently the European working time directive has acted as a major catalyst for changing the working pattern of doctors in training (Hutton, 2004; House of Lords European Union Committee, 2004). A wide range of approaches to support the implementation of the working time directive, whilst maintaining or improving the quality of patient care, have now been developed (DoH, 2004). One approach - The "Hospital at Night" model - has been piloted in four acute NHS hospital Trusts in England. The "Hospital at Night" model essentially proposes that a multi-disciplinary team or teams provide clinical care across the hospital at night on the basis of being competent to provide care, rather than by virtue of belonging to a particular profession. Specific initiatives underpinning this approach include the introduction of multi-disciplinary handovers, bleep filtering and night coordinator roles (Modernisation Agency, 2004).

The four Trusts were recruited to the "Hospital at Night" pilot programme in May 2003 and adopted an ambitious, planned and sequential approach to implementation as set out in the timeline shown in Figure one.

Figure one: A timeline of the “Hospital at Night” pilot projects



Source – Modernisation Agency, http://www.modern.nhs.uk/scripts/default.asp?site_id=50&id=22349

1.3 Aims, research questions and hypotheses

Four acute Trusts, a total of eight NHS hospital sites, were involved in this evaluation study. Although these are now well-known to those managers, professionals and researchers with an interest in the “Hospital at Night” and its impact, it is appropriate, for the purposes of this report, not to refer to the Trusts and the hospital sites directly but to anonymise them to meet the confidentiality and anonymity assurance given to interviewees during the research process. A brief profile of each of the pilot sites and a summary of how the key elements of the “Hospital at Night” model were implemented is given in Section 3 of this report.

1.3.1 Findings from earlier research

The research reported here was undertaken as part of a wider programme of research to evaluate the impact of the NHS working time directive pilots. The “Hospital at Night” pilots were included in this wider evaluation as one of a number of initiatives designed *inter alia* to support the implementation of the working time directive in the English NHS. Earlier research focused on the *implementation process* within each of the WTD and “Hospital at Night” pilots, particularly from the perspective of senior managers and lead clinicians (Mahon, Harris,

Faragher, 2004). The key themes and issues emerging from these interviews in the “Hospital at Night” pilots related to managing implementation, the perceived impact of changes, the factors influencing implementation and the relationship between the Hospital at Night pilots and compliance with the European Working Time Directive. These are summarised in Table one.

Table one: Summary of key themes emerging from qualitative interviews at the “Hospital at Night” pilots (Mahon, Harris and Faragher, 2004)

Managing implementation	<p>Importance of senior management support and appropriate clinical and managerial input was emphasised.</p> <p>Strong support for principle underpinning “Hospital at Night” from senior managers</p> <p>Importance of gaining the views of doctors and nurses implementing the “Hospital at Night” was emphasised.</p> <p>The label of the “Hospital at Night” and its association with the working time directive had both positive and negative impact on implementation.</p>
Perceived impact of Changes	<p>The views expressed about the impact of “Hospital at Night” were largely experiential and anecdotal, reflecting individual theories about the impact of changes.</p> <p>There was a strong sense of the potential for specific changes to improve the quality of patient care and many respondents felt they were beginning to witness this.</p> <p>Concerns were expressed about the quality of care provided through cross-cover arrangements in some pilots, particularly where this was a radical departure from established practices.</p> <p>All pilots reported systems were in place to identify critical incidents and at the time of the interviews no concerns about patient care had been reported.</p> <p>There was widespread recognition that the “Hospital at Night” was one of many connected changes involving new ways of working. No evidence was presented or suggested in the interviews that the changes had reduced or increased activity in any areas.</p>
Factors influencing implementation	<p>Changes were promoting positive cultural changes within medicine (e.g. cross cover); between doctors and nurses and between clinicians and management. Some antagonism <i>within</i> medicine and nursing and <i>between</i> medicine and nursing emerged as proposals were discussed and implemented.</p> <p>Many of the changes introduced were building on previous developments within the Trusts and these were more easily implemented and accepted than those perceived as more radical and different.</p> <p>All felt the timescale for implementation was challenging and some felt a tight timescale generated a greater sense of urgency, needed to promote change. At the same time the importance of communication and the challenges of ensuring all relevant staff were informed of any proposed or planned changes was considerable. Many felt more time to communicate and negotiate change would have been beneficial.</p> <p>Consultants were concerned about workload and the association of changes with WTD and EU and with making financial savings. SpRs were perceived to have the “greatest to lose” through implementation in terms of banding and increased workload. Other challenges associated with new ways of working related to resistance from nurses to adopt new ways of working and inter and intra-professional antagonism.</p>
Hospital at Night and compliance with the Working Time Directive	<p>The measurement of compliance with the European Working Time Directive is challenging and no systems exist to accurately assess the compliance of all junior doctor posts in all NHS organisations. With respect to assessing the compliance of Trusts and the relative impact of pilot interventions the research team were dependent upon the pilot sites themselves to assess compliance and to assess the relative impact of the pilot interventions vis a vis non-pilot interventions, most typically the introduction of shifts in place of partial shifts and resident on-call arrangements¹. All the Hospital at Night Trusts reported that they were compliant or moving towards compliance in specific problematic posts – typically where it was not feasible to introduce full shifts. The general view expressed in interviews conducted in the early stages of the evaluation that the HAN was successful in supporting compliance with the European working time directive. However it was also clear from these interviews that the introduction of shifts was a trend that had been accelerated in the context of EWTD in general, but particularly by the SiMAP and Jaeger rulings.</p> <p>Although most respondents felt it was the legal status of the EWTD that was the major catalyst in</p>

¹ This approach to assessing compliance was adopted after careful consideration of the nature of the pilots, the available data to assess compliance and the resources available to the EWTD/Hospital at night team. The introduction of shifts to meet the August 2004 ETWD requirements was adopted by all Trusts in response to the demands of meeting the Jaeger and SiMAP rulings. The EWTD pilot research was not an evaluation of the implementation of the EWTD in the NHS or more specifically, the implementation of the EWTD in relation to junior doctors (during the course of the pilot evaluation a number of respondents queried why the DH and the EU appeared to be so concerned about the implementation of the EWTD for doctors in training but not for Consultants, nurses or managers).

reducing hours and achieving compliance most saw the role of Hospital at night as a mechanism for fine-tuning some of the crudities associated with the blanket introduction of shifts. Hospital at night dovetailed with the introduction of the EWTD by focusing attention on workload and the distribution of workload, providing the evidence-based impetus for change (including introducing shifts). The components of the Hospital at Night were also considered to suppress what were perceived to be negative aspects of shifts. For example many cited the loss of continuity of care as being a negative consequence of shifts but handover was considered to enhance continuity and multi-disciplinary team working.
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Another component of the wider evaluation programme was to carry out case studies in a sample of "Hospital at Night" and working time directive pilots projects. The purpose of these case studies is to focus on how staff at "grassroots" level were experiencing the intervention(s) being implemented. At the request of the Modernisation Agency, who commissioned this component of the research, all of the "Hospital at Night" pilot sites were selected as case study sites². In addition to the qualitative case study research a quantitative evaluation was also carried out. The overall aims of the evaluation of the "Hospital at Night" pilots were therefore two-fold:

1. To carry out a *qualitative* assessment of the impact of the "Hospital at Night" pilot projects on the staff most closely involved with its implementation:
 - a. doctors in training;
 - b. ward nurses;
 - c. night coordinators.
2. To carry out a *quantitative* evaluation to establish if changes in how the hospitals are staffed at night have had an impact on:
 - a. Pattern and distribution of workload;
 - b. Clinical Outcomes;
 - c. Service Targets.

The three specific research questions addressed by the qualitative evaluation were:

1. How are staff experiencing the implementation of the key elements of the "Hospital at Night" model?
2. What are staff perceptions of the impact of "Hospital at Night" on doctors' education and training?
3. What are staff perceptions of the impact of "Hospital at Night" on patient care?

The three specific research questions addressed by the quantitative evaluation were:

4. What impact has the "Hospital at Night" had on the pattern and distribution of workload during the night-time?
5. Have there been any changes in clinical outcomes since the introduction of the "Hospital at Night"?
6. Has the "Hospital at Night" affected the achievement of national performance targets in the areas of A&E waiting times, cancelled theatre operations and inpatient waiting times?

² Further case studies in the Working Time Directive pilots are currently being designed and the final report of the working time directive pilots evaluation will be submitted to the Department of Health in September 2005.

The research aims and questions set out above generated a series of specific hypotheses that could be explored and tested through the evaluation. The research aims, research questions and associated hypotheses are set out in Table two.

Table two: Research aims, research questions and hypotheses

To carry out a <i>qualitative</i> assessment of the impact of the "Hospital at Night" pilot projects on the staff most closely involved with its implementation: doctors in training; ward nurses and night coordinators.	
Research questions	Hypotheses
RQ1: How are staff experiencing the implementation of the key elements of the "Hospital at Night" model?	H1: Staff have a common understanding of the nature and purpose of the key elements of the "Hospital at Night" model H2: The multi-disciplinary team is working effectively at night-time.
RQ2: What are staff perceptions of the impact of "Hospital at Night" on doctors' education and training?	H3: The key elements of the "Hospital at Night" pilots have had no impact on doctors' education and training.
RQ3: What are staff perceptions of the impact of "Hospital at Night" on patient care?	H4: The key elements of the "Hospital at Night" pilots have had no impact on the quality of patient care.
To carry out a <i>quantitative</i> evaluation to establish if changes in how the hospitals are staffed at night have had an impact on the pattern and distribution of workload, clinical outcomes and service targets.	
Research questions	Hypotheses
RQ4: What impact has the "Hospital at Night" had on the pattern and distribution of workload during the night time?	H5: The pattern of workload will remain similar over the three audits. H6: The urgency of tasks will reduce over the three audits. H7: The workload will be more appropriate by grade of staff over the three audits.
RQ5: Have there been any changes in clinical outcomes since the introduction of the "Hospital at Night"?	H8: There will be no impact on the number of deaths within the hospitals. H9: There will be an increase in requests for pathology investigations (using FBC and U&E as marker tests) during the night time. H10: There will be no increase in the number of critical incidents recorded during the night. H11: There will be no increase in the level of sickness and absence rates. H12: There will be a reduction in the number of call outs to consultants during the night time. H13: There will be an increase in the use of Modified Early Warning Scores (MEWS) scores within ICU/CCU.
RQ6: Has the "Hospital at Night" affected the achievement of national performance targets in the areas of A&E waiting times, cancelled theatre operations and inpatient waiting times?	H14: There will be no impact on inpatient waiting times. H15: There will be no impact on the time taken to admit a patient from A&E H16: There will be no impact on the % of theatre operations cancelled H17: There will be no change in the actual number of theatre operations carried out. H18: There will be an increase in the level of severity of the case mix of operations in theatre.

1.4 Relationship between the stated hypotheses and the “Hospital at Night” pilots

This section sets out the rationale for the relationship between the aims of the research and the stated hypotheses.

1.4.1 The qualitative research

The hypotheses generated from research questions 1, 2 and 3 were informed by the findings from the qualitative interviews with senior managers and from publications reporting policy intentions and reactions from key stakeholders, particularly doctors (Mahon, Harris, Walshe and Higgins, 2003; Mahon, Harris and Faragher, 2004).

The “Hospital at Night” model comprises of several key components aimed to ensure the smooth running of the hospital during the night-time. One of the major components of the model is the multidisciplinary night-team. Research question one (“How are staff experiencing the implementation of the key elements of the “Hospital at Night” model?”) and the associated two hypotheses (H1 & H2) were generated to focus the analysis on practitioners understanding and knowledge of the “Hospital at Night” and on how well they felt multi-disciplinary team working was being implemented. A persistent finding from previous research (Mahon, Harris, Walshe and Higgins, 2003; Mahon, Harris and Faragher, 2004) is that doctors in particular associated any changes related to the working time directive with a detrimental impact on education and training. Thus research question two (“What are staff perceptions of the impact of “Hospital at Night” on doctors’ education and training?”) and the associated hypothesis (H3) focused upon perceptions of the impact of “Hospital at Night” on doctors’ education and training. The third research question (“What are staff perceptions of the impact of “Hospital at Night” on patient care?”) and the associated hypothesis (H4) concerned staff perceptions of the impact of “Hospital at Night” on patient care. Earlier research found concern, particularly amongst doctors, that the quality of care would be reduced as non-medics increasingly assumed medical roles. Others felt that the quality of care would be enhanced for a wide range of reasons. The hypothesis generated therefore assumed that “Hospital at Night” would have no impact on practitioners’ perceptions of the quality of patient care.

1.4.2 The quantitative research

Specific directional hypotheses were formulated for research questions 4, 5 and 6.

Research question 4 (“What impact has the “Hospital at Night” had on the pattern and distribution of workload during the night time?”) and the three associated hypotheses (H5, H6 & H7); were developed to identify the main changes that were expected, following the introduction of the “Hospital at Night” model. Three audits were designed to provide an evidence base of what type of work is undertaken in the “Hospital at Night” (see section 4.1), as prior to this study comprehensive data was not available. However, these hypotheses were designed to reflect changes envisaged due to bleep policies, handovers and night coordinators.

Research question 5 (“Have there been any changes in clinical outcomes since the introduction of “Hospital at Night”?) and the associated hypotheses (H8 to H13) were derived to focus the analysis of data on clinical outcomes. Hypothesis 8 states that “there will be no impact on the number of deaths within the hospitals” for all patients, emergency admissions, patients undergoing cardiac surgery and patients undergoing hip surgery. The Department of Health (DoH) project team and local managers felt strongly that the change in staffing of the “Hospital at Night” should not and would not have an adverse effect on clinical outcomes. The changes

were designed to take account of clinical need and would not be detrimental to patients. This hypothesis was tested to evaluate this. More sensitive indicators were not routinely available. Hypothesis 9 states that "there will be an increase in requests for pathology investigations (using FBC and U&E as marker tests) during the night time". Discussions with local project managers suggested requests for these tests would increase as there would be more activity carried out during the night. Hypothesis 10 states "there will be no increase in the number of critical incidents recorded during the night". It was clear from the DoH project team and local managers that the change in staffing of the "Hospital at Night" was not expected to affect clinical outcomes. Therefore, the number of critical incidents recorded during the night should not increase due to "Hospital at Night".

Hypothesis 11 states "there will be no increase in the level of sickness and absence rates". The team approach adopted within the "Hospital at Night" model should not have a negative impact on staff. In fact, a decrease in sickness levels may occur due to positive aspects of multidisciplinary teamwork during the night. Therefore it was important to determine if sickness and absence rates had changed since the introduction of "Hospital at Night". Hypothesis 12 states "there will be a reduction in the number of call outs to consultants during the night time". A decrease in call outs to consultants during the night-time was hypothesised, as the multidisciplinary team during the night should have the required competences for the majority of cases. Hypothesis 13 states "there will be an increase in the use of Modified Early Warning Scores (MEWS) scores within ICU/CCU". Changes in staffing at night were expected to increase the use of these scores and facilitate communication between the team due to a multidisciplinary approach.

Research question 6 ("Has the "Hospital at Night" affected the achievement of national performance targets in the areas of A&E waiting times, cancelled theatre operations and inpatient waiting times?") and the associated hypotheses (H14 to H18), were formulated to assess the impact of the "Hospital at Night" on performance. Hypotheses 14 – 16 reflect key national performance indicators. It was hypothesised that changes in staffing of the "Hospital at Night" would not have a negative impact on a Trust's ability to achieve the national performance targets. H17 states "there will be no change in the actual number of theatre operations carried out" and hypothesis 18 states "there will be an increase in the level of severity of the case mix of operations in theatre". "Hospital at Night" project managers felt that the model would lead to a refocus on CEPOD guidelines and an improvement in the decision-making process determining whether operations should go ahead. The effects of these two factors were expected to cancel each other as reflected in the hypotheses.

2. Evaluation design and methods

2.1 Overview

Table three shows the main data sources used to evaluate each of the research questions within the qualitative and the quantitative evaluation frameworks³. The key data sources used and the methodologies adopted, within each of these areas, are described in the following sections.

Table three: Research questions and data collection methods

Qualitative study	
Research Questions	Data sources / methods
RQ1: How are staff experiencing the implementation of the key elements of the "Hospital at Night" model?	<ul style="list-style-type: none"> • Observation of "Hospital at Night" handover and shadowing "Hospital at Night" coordinators • Focus groups with PRHOs and SHOs • Interviews with doctors in training, ward nurses and "Hospital at Night" coordinators
RQ2: What are staff perceptions of the impact of "Hospital at Night" on doctors' education and training?	<ul style="list-style-type: none"> • Focus groups with PRHOs and SHOs • Interviews with doctors in training, ward nurses and "Hospital at Night" coordinators
RQ3: What are staff perceptions of the impact of "Hospital at Night" on patient care?	<ul style="list-style-type: none"> • Focus groups with PRHOs and SHOs • Interviews with doctors in training, ward nurses and "Hospital at Night" coordinators
Quantitative study	
Research questions	Data sources / methods
RQ4: What impact has the "Hospital at Night" had on the pattern and distribution of workload during the night-time?	<ul style="list-style-type: none"> • "Hospital at Night" audit
RQ5: Have there been any changes in clinical outcomes since the introduction of the "Hospital at Night"?	<ul style="list-style-type: none"> • Hospital Episode Statistics (HES) • Locally collected data
RQ6: Has the "Hospital at Night" affected the achievement of national performance targets in the areas of A&E waiting times, cancelled theatre operations and inpatient waiting times?	<ul style="list-style-type: none"> • National Performance Indicators

2.2 Data sources: Qualitative study

As shown in Table three there were three main methods employed in the qualitative component of the evaluation. These were observation of the "Hospital at Night" components (including shadowing the "Hospital at Night" coordinators), focus groups with doctors and one to one interviews with a sample of doctors, nurses and "Hospital at Night" co-ordinators. The qualitative research was conducted between December 2004 and February 2005.

Observation of at least one handover was achieved in all four of the "Hospital at Night" pilots, but not in all sites. This observation often took place alongside shadowing the "Hospital at Night" coordinators for part of the night-shift, which was also achieved in all four Trusts (see Table four).

³ Multi-Centre Research Ethics Committee approval for the case study component of the Working Time Directive evaluation (incorporating the "Hospital at Night" pilots) was granted in October 2003.

It is notoriously difficult to arrange research interviews and focus groups with busy clinicians working different shift patterns. At the outset it was recognised that response rates could be increased if the researchers could, where feasible (and alongside the necessary informed consent arrangements), arrange to carry out focus groups or interview individuals “opportunistically”. Four focus groups in 3 Trusts (including doctors from a total of four sites) were carried out “opportunistically” where they could be feasibly incorporated into training sessions or in place of sessions where these had been cancelled or re-arranged. A total of 58⁴ doctors in training contributed to the focus groups.

The aim in relation to the qualitative interviews was to carry out face-to-face interviews with doctors in training (PRHOs; SHOs; SpRs) in the main specialities affected by the “Hospital at Night”; general medicine, general surgery and orthopaedics. Attempts were also made to ensure that all sites within each Trust were represented. For ward nurses, the aim was to interview at least one nurse in these main specialities in each Trust and again to attempt to ensure all sites were represented. Finally, in the case of “Hospital at Night” coordinators, the aim was to interview between 3 and 5 coordinators at each Trust.

The one to one interviews were carried out opportunistically during a quiet period on a night-shift or by telephone at a later date. The total number of face to face / telephone interviews carried out are given in Table four. The interviews with doctors by speciality is given in Table five. The interview / focus group schedules are reproduced in Appendix A.

Table four: An overview of data sources and responses at each “Hospital at Night” pilot

Pilot site	Shadowing & observation ⁵	Focus groups	Interviews with doctors	Interviews with ward nurses	Interviews with coordinators
Trust A	√	√ ⁶	N = 9	N = 6	N = 5
Trust B	√	–	N = 6	N = 6	N = 4
Trust C	√	√ ⁷	N = 2	N = 2	N = 4
Trust D	√	√ ⁸	N = 4	N = 4	N = 4

⁴ 58 is an overall approximation since doctors joined and left the group during three of the four focus group sessions.

⁵ Observation and shadowing was carried out in at least one site in each Trust, but not in all sites.

⁶ This focus group involved 15 PRHOs. Fifteen is an approximate number as doctors joined and left the group during the focus group session

⁷ Two focus groups were held in this Trust. One with PRHOs (23) and one with SHOs (20). These numbers are also approximations as doctors joined and left the group during the focus group session.

⁸ One focus group was held in this Trust with 10 PRHOs.

Table five: Interviews with doctors by speciality

Pilot site	Medicine	Surgery	Orthopaedics	Anaesthetics
Trust A	N = 4 (Consultant; SpR; SHO and HO)	N = 2 (SpR; SHO)	N = 1 (SpR)	N = 2 (SpR; SHO)
Trust B	N = 3 (1 SpR and 3 SHOs ⁹)	N = 2 (SpR; HO ¹⁰)	–	–
Trust C ¹¹	N = 1 (SpR)	N = 1 SpR	–	–
Trust D	N = 2 (1 SpR and SHO)	N = 2 (1 SpR and 1 SHO)	–	–

2.3 Data sources: Quantitative study

Table three shows the four main data sources used in the quantitative component of the evaluation. These were “Hospital at Night” audit data; hospital episode statistic data; locally collected data and national performance indicator data. The impact of the “Hospital at Night” on the pattern and distribution of workload was assessed using data collected through audits conducted in each pilot at three points in time. To assess the impact on clinical outcomes two main sources were used: Hospital Episode Statistics (HES) and additional locally collected data. Finally the impact of “Hospital at Night” on performance was assessed through the analysis of a range of performance indicators. These sources are described in detail in section five of this report.

2.4 Methodological and practical issues

The optimum research design to assess the impact of specific interventions or of clusters of interventions is an experimental or quasi-experimental design (Cook and Campbell, 1979). This was not possible in this study because the research was commissioned and carried out towards the end of the pilot phase. Consequently the research is a retrospective evaluation. This meant it was not possible within the timeframe to design or implement specific prospective evaluation studies.

In addition the research team were operating under considerable time constraints responding to the requests of the DoH to produce a report in early 2005. Taken together, these constraints created two main challenges. First the problem of attribution – the extent to which changes in outcome data could be attributed to “Hospital at Night” interventions and second practical problems relating to the availability of existing data and the feasibility of collecting additional data, both qualitative and quantitative within the time constraints.

Attribution is difficult for a number of reasons. The difficulty in controlling variables that, in addition to the “Hospital at Night” could be causing or suppressing the effects demonstrated through the outcomes. One of the main challenges facing the quantitative evaluation was the availability of data to assess whether any changes in clinical outcomes and service targets were due to the “Hospital at Night” project. The methodology and data used to quantify this impact was not ideal and was a compromise between nationally available data and data that

⁹ One medical SHO from each of the three sites at this Trust were interviewed.

¹⁰ The surgical SpR and HO worked in two different sites in the Trust.

¹¹ Face to face / telephone interviews with SHOs / PRHOs were not pursued in this Trust because two focus groups had been held with these doctors and because of time constraints.

could be collected by the pilot sites. For example in relation to the HES - it is important to note that even if changes were evident, the change will not necessarily be attributable to changes in the staffing of the "Hospital at Night". However, it was felt that this would provide an indication of any changes within the hospital that could be explored in further detail with local staff. It must be remembered that some data sources within the NHS are manual and data summaries are not readily available. This was a crucial factor affecting the design of the retrospective quantitative evaluation as available data items were used rather than the most appropriate.

Another difficulty is the problem of sensitivity: would the data selected be sensitive enough to demonstrate changes? The factors discussed in this section mean that the data available were not necessarily sensitive enough to identify and attribute changes to the "Hospital at Night". Therefore, the analyses were designed to identify changes over a specified timeframe. Any changes would be discussed with the local pilot sites to explore whether the "Hospital at Night" pilot could have had an effect on the particular data set.

Data from the "Hospital at Night" audits were used to evaluate the pilots. However, the approach to data collection within these audits was not necessarily the same in each trust. Some trusts used data shadowing to complete the forms, some used self-completion of forms and in most cases a combination of shadowing and self completion of forms were used. The issue of comparability across sites and between sites is a valid point that must be remembered when interpreting the findings from the audits. This also meant the datasets were used for basic quantitative analysis rather than analysis using in-depth statistical testing.

In summary there were some serious methodological challenges in carrying out an evaluation to assess the impact of the "Hospital at Night". Whilst these challenges affect the confidence with which one can generalise from the findings, the research team went to considerable efforts, within the time constraints, to maximise the availability, validity and generalisability of the data collected, both in the quantitative and the qualitative components of the evaluation. For example in relation to the quantitative component consultation was undertaken with the pilot sites to develop locally collected indicators. For the qualitative phase considerable attempts were made to ensure representation from clinicians involved in the "Hospital at Night" pilots.

3. Key findings: Qualitative Evaluation

3.1 Knowledge and experience of "Hospital at Night"

3.1.1 Implementing the model: Trust A

Trust A is a single site, medium sized (500+ beds) district general hospital, located in an inner city area. It gained Foundation Hospital Trust status in 2004. Four specialities within the hospital were included in the "Hospital at Night" pilot initiative in this Trust. These were general medicine, general surgery, orthopaedics and anaesthetics.

Understanding the concept of "Hospital at Night"

In this single site Trust there was a high and consistent level understanding of the "Hospital at Night". Most respondents made references to specific elements of "Hospital at Night" most frequently handover, the bleep policy and multidisciplinary team-work and the role of the Clinical Site Managers (CSMs).

There were some differences between the groups of staff interviewed. Ward nurses tended to have the least developed views. Doctors tended to emphasise their personal experiences, in the context of their different specialties. CSMs tended to adopt a "bigger picture" perspective, seeing the "Hospital at Night" as a model promoting new and modern ways of working, breaking from tradition and a model to promote more effective communication and reduce tensions between staff.

Some respondents saw it as a model to reduce doctors' hours to support compliance with the working time directive and there was a small degree of cynicism in this respect. Several also saw the "Hospital at Night" as a model to support meeting targets (especially waiting time targets in A&E).

The "Hospital at Night" team

The core "Hospital at Night" team incorporate Senior House Officers, Specialists Registrars and Consultants from the participating specialities and a team of clinical site managers (CSMs) who have both managerial and clinical responsibilities overnight. The CSMs work both night and day shifts and this role was established prior to "Hospital at Night". With the introduction of the "Hospital at Night" the CSM role was extended. In addition to this core team, ward nurses and a junior doctors' liaison manager were also referred to as key members of the team.

The handover

The multi-disciplinary and multi-specialty handover, covering medicine, surgery, orthopaedics and anaesthetics, takes place each night at 9pm. This handover includes the outgoing and incoming medical team, incoming surgical team, incoming CSMs, incoming ITU team and the Orthopaedic Registrar. Handover takes place in a discharge room and is coordinated by the CSMs. Ward nurses do not attend handover, but hand over to CSMs before the "Hospital at Night" handover. There was an overall consensus that the handover was a very valuable component of "Hospital at Night" for patient care. Doctors feel they are picking up the most acutely ill patients:

"So it is very useful because then if you get called about a patient you know about them and hopefully the patients you will get called about are the ones that have been flagged up as being unwell" SHO Medicine

"We basically are picking up the seriously ill patients, patients who require immediate attention" Surgical SpR

The input from other specialities is seen as a valuable contribution to overall care:

"...it is an easy way to make cross-specialty referrals" HO (focus group)

Although doctors thought handover was valuable they did not think that it provided them with a useful training opportunity

"...it is very much a business meeting, it is not really there for teaching" SHO Surgery

The bleep policy

A bleep policy was partially implemented before the "Hospital at Night". Current practice is that in each of the specialities involved in "Hospital at Night", all bleeps are taken by the CSMs after 9pm (except for emergencies where ward nurses are permitted to bleep doctors directly).

CSMs generally thought the bleep policy was good for several reasons: it has supported doctors to finish their shifts on time; doctors are able to see patients more quickly and can concentrate on what they are doing, as they are not constantly bleeped:

"In one way its made life a lot easier (for doctors) because they are not being constantly bleeped which means that they are able to concentrate on the work they need to be doing" CSM

HOs had relatively little involvement because they finish their shifts at 10pm. Some HOs reported nurses tend to bleep them directly between 9-10pm as they know they are going off duty. Some HOs were not aware of the bleep policy.

Most doctors considered bleep filtering very positively:

"It is brilliant as a medical SHO... because your bleep goes off all the time if you don't have somebody screening your bleeps" SHO Medicine

However, some more senior doctors felt it worked in a more negative way by increasing their workload:

"Things used to be sorted out by the SHO or the PRHO and then we would be bleeped and I think it would make more sense for us to give advice. But now what happens is you get bleeped.... it bypasses all the other junior staff" SpR Surgery

Some nurses were not aware that the bleep filtering policy started at 9pm.

The evaluation revealed that, overall the bleep policy was welcomed and adhered to more in medicine than surgery. The medical team may have benefited from having their bleeps filtered at night because the CSM could share work among the whole "Hospital at Night" team. However, some of the surgical team felt that they were being taken away from seeing surgical patients:

“As well as seeing surgical patients on the wards which you want to see, you end up spending less amount of time because you are getting calls from A&E, calls from minor surgical departments. Basically you have less time to spend on your surgical patients because you get dragged off elsewhere” SPR Surgery.

The focus groups with the HOs also revealed that the policy was being adhered to better in medicine than in surgery.

3.1.2 Implementing the model: Trust B

Trust B is a large and geographically dispersed Trust incorporating three main sites. One site, referred to as site B1 in this report, is a District General Hospital with more than 500 beds and located in an urban area. Site B2 is also a District General Hospital with more than 400+ beds and located in a rural setting. Site B3 is a smaller non-acute hospital with 200+ beds, located in a rural setting. The main specialties involved in the “Hospital at Night” pilot are medicine, surgery and orthopaedics.

Understanding the concept of “Hospital at Night”

Overall there was a good understanding of the “Hospital at Night” components across the sites, although in this Trust, with its multiple and diverse sites, the “Hospital at Night” was implemented and experienced differently according to staff group, location and specialty. A general view from respondents was that implementation of handover, the coordinator role and bleep filtering was easier and more successfully implemented in smaller sites.

Night coordinators tended to adopt more of a “bigger picture” perspective more reflective of the views of senior clinicians and managers in their Trusts, who have had considerable input into the design and the implementation of the model. Again more junior doctors tend to focus on their own personal experiences on the ward. Some, in particular doctors, do not distinguish the impact of shifts from the key components of “Hospital at Night” as follows:

“The main advantage (of the Hospital at Night) is that doctors are fresh when they come on night duty, rather than having worked lots of hours already” SpR, Medicine.

The “Hospital at Night” Team

The core “Hospital at Night” team at B1 and B2 incorporated “Hospital at Night” coordinator (Surgery), “Hospital at Night” coordinator (Medicine), Medical Doctors and Surgical Doctors. The Surgical and Medical Night coordinators cross cover for each other if necessary. The coordinators have clinical and managerial responsibilities. At site B3 the “Hospital at Night” team comprises SHO, Support Worker & “Hospital at Night” Co-ordinator (the PRHO stays until 10pm).

The handover

Handover operates in different ways across the sites. Surgical and medical teams handover separately in sites B1 and B2. This happens at 9pm and there is a “Hospital at Night” coordinator present. In B3 there is only one doctor (an SHO) on duty at night and one coordinator and so handover at this site is effectively whole hospital handover. The reasons given for separate handovers included the geography of the building and distance between medical and surgical wards as well as less tangible differences between specialties such as “culture”.

Bleep filtering was perceived to support attendance at handover by the junior doctors as it gave more junior doctors the freedom to attend handover, rather than respond to bleeps from nurses on the ward.

Again as in other sites handover was perceived to work more efficiently for the medical team and involves the whole medical team. The reasons for this vary but at first included the reluctance of surgeons to get involved in handover:

“Surgeons have been the hardest to bring on board...getting them to join in the handover, rather than have team specific discussion has been hard to achieve” Co-ordinator

Staff nurses are not involved in handover (except on their own ward based handovers).

Handover is considered to promote teamwork:

“The handover forces exchange of information...more of a multi-disciplinary team”. Coordinator.

Again the handover was seen to place emphasis on the acutely ill patients so that doctors feel more prepared to care for acutely ill patients.

However it was felt by some that the quality of handover could be improved and some would like more people to be involved, for example the nurse involved in each ward.

The bleep policy

At all three sites, all bleeps after 9pm go through the “Hospital at Night” coordinators (except for emergencies).

In general bleep filtering was viewed as a positive and supportive change. Some nurses reported difficulties relating to accessing a night coordinator during busy periods, feeling it is unnecessary to have to bleep a night coordinator when “you want a doctor”. Nurses understood this, but at times found it frustrating. Others found they could by-pass the bleep filtering system by physically locating doctors themselves. Some bleeps are still being received by doctors inappropriately but are followed up by coordinators.

PRHOS and SHOs benefited most whilst SpRs report less direct impact in this area. SHOs also reported a reduction in work intensity.

The success of the bleep filtering and the role of the coordinator are seen as being dependent upon effective teamwork between doctors and coordinators

3.1.3 Implementing the model: Trust C

There are two main sites in this Trust. The main site, referred to in this report as C1, is a large inner city Teaching Hospital with over 900+ beds. The second site, referred to as C2 in this report, is a non-acute 300-bedded hospital. The specialties included in the “Hospital at Night” pilot are medicine, surgery, care of the elderly and orthopaedics.

Understanding the concept of “Hospital at Night”

There was a good understanding of the “Hospital at Night” concept with respondents emphasising bleep filtering, formal handover, Nurse Practitioners and cross-cover / shared care as being the main components of the model. The nursing staff tended to emphasise easing pressure off junior doctors work load and intensity.

Some members of the team benefit considerably from the “Hospital at Night” model, most notably PRHOs. For others, perceptions of the direct benefits to them personally are much less, in particular for SHOs.

The “Hospital at Night” Team

The core “Hospital at Night” team at C1 incorporated Night Nurse Practitioners (predominantly clinical role), Duty Managers (hospital management role), and doctors working in medicine and surgery. At site C2 the team comprises of ODA, Night Manager (Duty Manager) and one SHO.

For doctors, being with a team of people over a period of a week was considered to be very valuable. SHOs highlighted the “challenges” of working in specialties *not* included in the “Hospital at Night” – these doctors felt they were working in more difficult circumstances than their peers in general medicine and general surgery, with one SHO feeling the culture in her sub-specialty, not included in the “Hospital at Night”, was to “grind the SHO into the ground”.

The handover

Handovers were reported at different times and in separate locations for medicine and for surgery. At site C1 medical and surgical handovers are separate but both are attended by all Nurse Practitioners on duty. All grades of doctor attend medical handover with the Nurse Practitioners on duty. It takes place at 9.45pm in AMAU. Typically PRHOs attend Surgical handover (other grades don't always attend). At site C2 medical handover takes place in A&E at 9pm, surgical handover takes place in the conference room. Duty Managers do not. Initially, at site C1, the goal was to have joint surgical and medical handover – but this was not considered feasible because of the amount of space needed to get everybody together and because of the different shift patterns of the medical and surgical staff.

Some doctors were very positive about aspects of handover, including formal and timely feedback about patients who were acutely ill. One to one feedback between colleagues was seen as less satisfactory than formal handover in a team:

“One problem is that if you are busy at handover you may miss it and end up handing over on a one to one feedback” SHO, Medicine

Some doctors felt it was an anomaly not to have a handover at the end of the shift as well as at the beginning and most felt that handover at the weekend would be beneficial.

The perceived quality of the handover and the potential for it to be a positive educational experience depended upon who attended. Regular and willing attendance from all grades of doctors in medicine was reported and there was a strong view that the handover in medicine was more useful to doctors and better attended than the handover in surgery.

The surgical handover was attended by PRHOs but more senior doctors tended not to attend. Doctors were vague as to why this was the case. Whilst surgeons may be in theatre at the time of handover, this was not the only factor affecting attendance. Lack of communication with regards to the existence and nature of a surgical handover (which would involve the Night Nurse Practitioner) was mentioned – but this was thought to reflect the culture of the trust rather than “Hospital at Night”.

Medical nurses have their own handover, which the Nurse Practitioners attend. Surgical nurses bleep the Nurse Practitioners to handover individual sick patients.

The bleep policy

Only PRHOs bleeps are filtered in this Trust.

SHOs reported that when they worked as PRHOs in the “Hospital at Night”, bleep filtering had made a “huge difference” to the quality of their work experience. However working as SHOs they felt the impact of the “Hospital at Night” was less apparent. Although some felt that the intensity of their workload had reduced, many felt they had not experienced tangible benefits for themselves, with the exception of handover, through the “Hospital at Night”.

SHOs were very positive about the “Hospital at Night” but primarily because of the positive impact that bleep filtering (and the Nurse Practitioner’s role) had on PRHOs. One of the SpRs, however, felt that PRHOs were now “over protected” by the bleep policy.

Some doctors reported difficulties with the bleep filtering. They were somewhat reluctant to be negative but reported that the main concerns came from the nurses on the wards. Some felt this was due to nurses’ concerns about losing the authority to bleep doctors. Another view of the consequence of change was that nurses felt very comfortable bleeping junior doctors but more nervous about bleeping experienced nurses. Some nurses reported that it felt like a “waiting game” after bleeping the Night Nurse and waiting for the PRHO to get back to them.

3.1.4 Implementing the model: Trust D

Trust D is also a two site Trust. Site D1 is a large district General Hospital with over 800 beds. The second site, referred to as Site D2 is a small 200 bedded non-acute hospital. The specialties included in the “Hospital at Night” were surgery, orthopaedics, medicine and care of the elderly.

Understanding the concept of “Hospital at Night”

Broadly, there was a good understanding of the concept of “Hospital at Night” from the staff interviewed, although coordinators and doctors had more familiarity with its components than nurses. For some doctors, the distinction between “Hospital at Night” initiatives such as bleep filtering and handover were difficult to distinguish from the introduction of shifts and from the requirements of the European working time directive. In part this is because this was how it was promoted and communicated within the Trust.

Junior doctors recognised the overall philosophy underpinning the “Hospital at Night” as well as the specific components of “Hospital at Night” including bleep filtering, handover and the multidisciplinary approach to care. In the focus group the junior doctors described “Hospital at Night” as being about the appropriate allocation and distribution of tasks based, not on tradition but the prevailing situation. They saw it as meaning the clinical team should be able to cover all eventualities in the hospital and adequate and accessible support should be available for

doctors and coordinators. The availability of hot food for the clinical team on night shift was a component that underscored the concept of “doctors working a shift and not being on-call”.

For coordinators, the “Hospital at Night” was seen as expanding, consolidating and increasing the profile and effectiveness of a well-established role. Handover and bleep filtering were new elements that raised the profile and effectiveness of the role.

Ward nurses tended to have the most limited understanding of the “Hospital at Night” and some were not aware of it at all.

Many respondents in this Trust felt that the “Hospital at Night” consolidated and expanded and initiatives that were already established in the Trust, such as the coordinator role and handovers.

The “Hospital at Night” Team

The most common features of the “Hospital at Night” multidisciplinary team included the “Hospital at Night” coordinator and cross cover.

At the second site, Site D2, one of the “Hospital at Night” coordinators from the main site visits the site during the night shift. A senior nurse manager is on duty at the hospital each night.

The coordinator role at this Trust was well established and had been extended by the “Hospital at Night”. Some of the coordinators in the Trust also have site management responsibilities.

There were 16 coordinators in post in this Trust. Normal practice was for two coordinators to be on duty up to midnight. Three coordinators came on duty at 9pm and worked up to 7.30am. Thus, between 9 and midnight there is an overlap of shifts with five coordinators being on duty at the same time.

The handover

There are different models of handover for surgery and for medicine.

Doctors in surgery reported that a system of handover was well-established. Doctors going off-duty meet with those coming on and meet at 8.30pm. This is well-established practice but is uni-specialty and often uni-disciplinary. Doctors reported the coordinator attended their surgical handover occasionally. The multi-disciplinary handover in surgery never got off the ground. In surgery the SHO goes round the wards and gathers information about patients in preparation for the handover at 8.30pm.

The medical handover takes place at 9pm and includes day SpRs, SHOs, PRHOs, and incoming SpRs, SHOs, PRHOs and coordinators. They use a pro-forma for their notes.

There was a general consensus from those interviewed that handover worked well in medicine. The surgical area did start to have multi-disciplinary handovers at the same time as medicine but

“...it fell by the wayside because of the way surgery is run” Night Coordinator

Doctors reported that a handover in surgery and orthopaedics tended to be a “fragmented process” involving a series of one to one reports and ward rounds. The doctors tend to gather

information separate from the system used by night coordinators, although there is an expectation (from coordinators) that the medical model of handover will be re-introduced to the surgical units in the near future.

There is no morning handover. Duty manager hands over to duty manager and doctor to doctor, one to one.

Handover was also considered to help reduce the adverse consequences of shift work:

"Without handover it would not work. The thing about doing shift work is that you need continuity" SpR Medicine

The process of handover could be improved including giving more clinical information about patients. Senior doctors saw the potential for handover as a learning opportunity although did not feel that it was being realised in its current format. The quality of the handover was seen to depend on the qualities of the person leading the handover often, in all Trusts, by default, the SpR in Medicine. Handover (in all Trusts) could also be enhanced if it was more IT driven than it currently is.

The bleep policy

The bleeps of the PRHOs in medicine and surgery were "filtered" by the "Hospital at Night" coordinator. In practice this was implemented more successfully in medicine than in surgery. Although the precise reasons for this were not clear from the interviews, it is apparent that the concept of bleep filtering is more readily accepted and valued by doctors and nurses working in medicine. The roles of PRHOs and SHOs working in medicine appear to be clear and established, with PRHOs being ward based and SHOs working in A&E and medical admissions. Ward nurses in medicine appear to recognise and value the role of the coordinator and comply with the bleep filtering policy.

In surgery the bleep filtering appears to be less consistently implemented and less valued. PRHOs report being bleeped by the ward nurses and some were unclear as to whether the coordinators' role was intended to serve surgery.

Although overall nurses felt there were advantages with the bleep filtering, some nurses felt aggrieved and frustrated at not being able to bleep doctors directly in the first instance:

"I do have an issue with it in that we used to be able to bleep doctors directly. The house officer was your first port of call and now we have to go via the coordinator first. If they deemed it appropriate then we bleep the doctor. I can understand that doctors could be bleeped inappropriately, but if you need a doctor quickly it could waste valuable time". Ward Nurse – Medicine & Care of Elderly

"and they are not usually very happy about it.....its "we want the doctor, we don't want you but we are trained now to do all the junior doctors work and a lot of people on the wards don't realise that, no matter how many time you tell them" Coordinator

Some nurses continue to phone doctors directly and then the doctors themselves refer the call to the coordinator.

Other nurses were very supportive:

"It works for me. The coordinator always responds promptly and it's ok to bleep for advice. They are more involved than they were two years ago" Ward Nurse, Medicine

Table 6 gives a summary of the key findings relating to the implementation of the "Hospital at Night" across the four pilots

Table six: Summary of the key findings relating to the implementation of the "Hospital at Night" across the four pilots

"Hospital at Night" Pilot	Key features of the implementation
Trust A	High level of understanding of the model (Ward nurses slightly less so). Clinical Site Managers co-ordinate H@N. Multi-disciplinary multi-speciality handover – viewed positively. Bleep policy – covers all doctors - viewed positively – maybe working "better" in medicine than surgery.
Trust B	High level of understanding of model (but implemented differently at different sites). Night coordinators co-ordinate H@N. Separate surgical/medical handovers – some mixed views – but perceived to work better in medicine. Bleep policy – covers all doctors, generally viewed as positive.
Trust C	High level of understanding of the model. Night Nurse Practitioners / Duty Managers co-ordinate H@N. Separate surgical/medical handovers – viewed positively, but perceived to work better in medicine. Bleep policy - only covers PRHOs – viewed as positive but may be improved.
Trust D	High level of understanding of model (Ward nurses slightly less so) Night coordinators co-ordinate H@N. Separate surgical/medical handovers – generally positive views – but perceived to work better in medicine. Bleep policy – only covers PRHOs – works better in medicine than surgery.

3.2 The impact on staff

The impact of the "Hospital at Night" on doctors, nurses and coordinators is summarised below:

3.2.1 Impact of team working on doctors

The nature of the "multi-disciplinary" team varied according to the site within which it operated. For all Trusts, the multidisciplinary team comprised of highly trained nurses in charge in the "Hospital at Night" and a range of doctors from specialities involved in the "Hospital at Night" at each site. In some sites PRHOs were not considered as part of the "Hospital at Night" team, because they tended not to work during the night. The only site with a multidisciplinary team handover was site A. The bleep policy only covered the most junior doctors in sites C & D. In general, respondents reported that medicine tended to be "busier" at night than surgery and so the impact of multidisciplinary teamwork tended to fall more on the surgical staff who were increasingly asked to "help out", in A&E for example. At least one respondent from each site mentioned the need to ensure that all doctors working full shifts at night recognised that they should actually work all night rather than sleep.

For some doctors team working and particularly the introduction or extension of the "Hospital at Night" coordinator role offered a support mechanism for doctors. This was particularly the case for medicine and for the most junior of doctors. However, all grades of doctors reported benefits from working more closely with other professionals. The main benefit for doctors was that it reduced the intensity of their workload, allowed them to concentrate on specific patients and tasks without interruption, removed some of the administrative pressures from all grades of doctors and generally added a feeling of support. In addition, it was perceived that team working should enable doctors to discuss cases with other doctors and nurses from different specialties.

There was concern that the night team should have sufficient skills and manpower to provide cross-cover. Some doctors, particularly those working in surgery, felt support from clinical colleagues was variable. Some doctors (SpRs) in some Trusts are "disappearing" even when on shifts and are therefore not available for junior doctors (or coordinators). Again the differences between specialities of medicine and surgery were apparent. The working patterns of doctors working in medicine and surgery are different. Surgical activity reduces during the night shift whilst medical activity remains more constant. The concept of shift working and the expectation of working a full shift appears to be more accepted in medicine than surgery, where there are reports that some doctors still behave as if on-call. The experiences for doctors again was variable:

"The SHOs in surgery were excellent but again it depends on their personality and experience." PRHO

"The surgical registrar went to bed at 2am and I had to wake him up at 7am. I was on my own all night" PRHO

In all Trusts there was a feeling it works better for some specialities than for others:

"Not all doctors will want to go into the "Hospital at Night" project, everybody is protective of their speciality... There are limitations to the general implementation of the model. It works better for medicine than for surgery" SpR Medicine

"Some doctors have not adapted their behaviour to working a week of nights as opposed to providing night cover." Coordinator

3.2.2 Impact of team working on nurses

The most commonly reported impact of the "Hospital at Night" by nurses was the introduction or expansion of the "Hospital at Night" coordinator role. This was viewed as a support mechanism for nurses and as such this made nurses feel more confident, less stressed and less isolated and this in turn was felt to relate directly to improvements in patient care.

Nurses feel more supported with the coordinator role, which they saw as providing a point of contact before the doctor (although as reported later some nurses feel frustration at not being able to bleep the doctor directly themselves). Nurses felt the coordinators were more responsive with the "Hospital at Night" and more readily respond to requests because poorly patients have already been identified. Nurses felt they were more willing to bring problems to the attention of the coordinator earlier than they would to the doctor and when they did present problems they were dealt with more quickly. As a consequence nurses reported that they felt less isolated.

"It is easier to access them and it has made my job easier as I feel I have more back up". Ward Nurse

"You have a senior nurse who is always there for advice and before you had to go to a doctor. It is great back up. You feel more secure and satisfied. You can ring for advice on something you wouldn't bother a doctor" Bank Nurse

Coordinators themselves saw this as an important part of their role:

"It can be very scary for more junior nurses on nights. I can remember being on my own on a ward and I would have found comfort knowing that there were people around for you to call on. There were some but not to the extent they are now". Coordinator

3.2.3 The experiences of co-ordinators in their role

The "Hospital at Night" coordinator role was developed differently in each of the Pilot sites. Across all sites it was a very popular component of the "Hospital at Night" model, held in high regard by both doctors and nurses. The coordinator role formalised and extended roles already taken on by nurses in all Trusts.

The coordinator role offers a "stimulating and motivating role" where development needs are being addressed, and a career pathway for nurses. Some reported greater job satisfaction in the role whilst others found the role demanding with training needs being met in their own time. Coordinators learn from working much more closely with Doctors, in particular SpRs but also felt that some doctors could learn from them.

The coordinators feel their role is more accepted by doctors:

"We are identifiable now, before people said "what do you do?" Coordinator

The coordinators have built up support from doctors:

"I think at first doctors felt threatened by us, they thought "they are our patients not your patients". Education and patience have changed the views and they see we are there to help". Coordinator

"Doctors take more notice of a coordinator than a junior nurse"

Coordinators were seen as having a key role in supporting the development of teamwork, especially by the coordinators themselves and the medical doctors:

"It has worked well. It has brought the doctors together and us together as a team. We have a lovely bunch of people and we work extremely well together as a team" Coordinator

"There is more cohesion between doctors and nurses and the bridge is the coordinator role. It is better for patient care that there is more co-operation" SpR Medicine

3.3 The impact on doctors' education and training

3.3.1 Positive Impact

More time to observe procedures

The multidisciplinary team provides support for doctors at night and frees up time to spend with senior medical colleagues and coordinators, observing procedures carried out by senior colleagues, for example.

More focused

The job of junior doctors is reported to be more focused because of "Hospital at Night" and attention is more focused on enhancing learning.

"Nights are where I learnt most medicine. I felt totally supported. The clinical co-ordinator and the Registrar talked me through lots of situations and didn't take over. It was brilliant for learning" PRHO

Some respondents also felt that doctors were getting taught how to prioritise their work better.

Still have ward rounds

Ward rounds are seen by most doctors to be the main learning event.

"You learn on nights but there is no formal training" SpR medicine

Shift work means senior colleague support junior colleagues

Positive impact attributed to shift changes which occurred at same time as "Hospital at Night" has meant that many (but not all) SpRs are *"up and about a night"* providing support and learning for SHOs and PRHOs and coordinators.

3.3.2 Negative Impact

Difficult to use the nighttime for education

Difficult to use this time (at night) more proactively because one is less motivated to create formal training opportunities at night.

Some doctors don't work nights so miss out on education & training opportunities

PRHOs who do not work nights felt it was detrimental to training not to be on night shifts.

Coordinator role may deskill junior doctors

Some were concerned about deskilling due to the role of the coordinator and extended role of nurses.

Introduction of shifts with "Hospital at Night" means lack of continuity

Some respondents perceived that the negative impact attributed to shift changes, which occurred at the same time as the "Hospital at Night", results in a lack of continuity of care. This is considered by many doctors to have had a negative impact on learning *"as doctors don't get to see cases through from start to finish"*.

Bleep policy may have negative impact on junior doctors

Having all calls “vetted” by a nurse was perceived to have a negative impact on the training and education of junior doctors and their exposure to patient management experiences.

3.3.3 Neutral impact

Many felt the impact on education and training to be neutral. Whilst handover was a very popular component of “Hospital at Night”, its value was seen more in prioritising acutely ill patients and promoting teamwork and less in providing educational and training opportunities. Handover as a learning environment was seen more in potential rather than actual experiences and one that is dependent upon a number of other factors.

“It’s had no effect on doctors education and training either way. The main teaching takes place through ward rounds, which has not changed. Handover is very useful from patient care point of view, but it’s not educational” SHO Medicine.

“No, it has no impact and it would be wrong to think it did” SpR Medicine

3.4 The impact on patient care

There was a general consensus that the combined elements of the “Hospital at Night” had had either a positive impact or a neutral impact on patient care. This was reported by all members of the multi-disciplinary team.

3.4.1 Positive impact

Patients treated more quickly

The mechanisms introduced by “Hospital at Night” prioritise acutely ill patients. This was emphasised by all respondents. This meant that:

- Patients are seen more quickly
- Nurses seek help more readily
- Doctors and coordinators respond more promptly and there were reports that “batching”¹² practices has reduced
- Patients gets medication more quickly

In addition, in one Trust (Trust A), the “Hospital at Night” was seen as a facilitator for meeting targets.

Patients don’t get “missed”

Patients don’t get missed or forgotten. In the past, it was reported that tired doctors may have gone to bed before seeing patients. Care is considered to be more planned and proactive rather than reactive (for example during handover doctors can put in place management plans for patients) as it was under the traditional on-call system and the responsibility of the whole team rather than an individual doctor.

Patients seen by most appropriate person

The most appropriate person sees the patients because the co-ordinator can let the most appropriate doctor know about the sickest patients. In addition, the co-ordinators skills have been enhanced so they can treat patients and prescribe some medication.

¹² Batching refers to the practices of saving tasks until a critical mass has been achieved and are carried out in a batch.

Patients get more time with the doctor

Doctors and nurses can spend more time with their patients as doctors are not distracted by bleeps and both doctors and nurses report being able to plan and anticipate patients needs.

Patients seen by more alert doctors

Despite concern about education and training opportunities being lost with the introduction of shifts, doctors are reported to be less tired, "fresher" and have a better work life balance. These factors are considered to have a positive impact on patient care:

"If we have got a very sick patient we have access to someone who is there, awake, that can see the patient, we have not got to get somebody out of bed" Coordinator

Better continuity of care

Continuity of care between teams is reported to have improved with handover and the coordinator role acts as a "bridge" between members of the team:

"There is more cohesion between doctors and nurses and the bridge is the coordinator role. It is better for patient care that there is more co-operation" SpR Medicine

Patient safety improved

Two key aspects were identified as improving patient safety. First coordinators were seen as potentially preventing junior doctors from making common mistakes and could *"keep them out of trouble"*. Secondly *"more pairs of eyes on acutely ill patients"* was seen as inevitably improving safety.

3.4.2 Negative impact

The negative impact of "Hospital at Night" tended to be associated with shifts rather than aspects of the "Hospital at Night" model:

"The disadvantage is lack of continuity of care... you can come on at 9pm when an operation is just starting...your knowledge of the history leading up to this is entirely dependent on the Registrar. Most of the time it works fine but if he/she omitted information it could lead to problems" SpR - Surgery

3.4.3 Neutral impact

"...no effect either way on patient care" Staff Nurse – Medicine & Surgery

"Some patients may get seen by a nurse rather than a doctor ...but if someone needs a doctor they get one" SHO – Medicine.

Table seven shows a summary of the key findings relating to the impact of the "Hospital at Night" model on staff, doctors' training and patient care across the four pilots.

Table seven: Summary of the key findings relating to the impact of the “Hospital at Night” on staff, doctors’ training and patient care across the four pilots

<p>Impact of the “Hospital at Night” on staff</p>	<p>Extension of the “Hospital at Night” coordinator role was perceived to offer a support mechanism for junior doctors and ward nurses.</p> <p>Bleep policy tended to have the most positive impact on more junior doctors as it was perceived to free up their time for patient care. For nurses the bleep policy was sometimes perceived to add another administrative level to accessing the doctor.</p> <p>Handover was perceived to have potential to have a positive impact on doctors learning, it was perceived to mitigate the effects of shift work and encourage teamwork.</p> <p>Multidisciplinary team working was perceived to impact on the surgical doctors by “helping” out other specialties.</p>
<p>Impact of the “Hospital at Night” on doctors’ training</p>	<p>Extension of the “Hospital at Night” coordinator role was perceived to enable junior doctors to learn from the co-ordinators – although there was also fear that if the coordinators do some tasks they may deskill the doctors.</p> <p>Bleep policy was perceived to both help more junior doctors prioritise and reduce their ability to manage patients.</p> <p>Handover was generally not perceived to be an educational opportunity, but some respondents saw the potential for doctors to learn from it.</p> <p>Multidisciplinary team working was perceived to enable doctors to learn from other doctors and nurses.</p> <p>The introduction of shift work alongside “Hospital at Night” was perceived to be positive for junior doctors learning from more senior doctors and negative in terms for junior doctors working only part of the night-time and or working fewer hours in total.</p>
<p>Impact of the Hospital on patient care</p>	<p>Extension of the “Hospital at Night” coordinator role was perceived to be positive for patients, as they were able to treat patients, prescribe some medicines and stop more junior doctors making common mistakes.</p> <p>Bleep policy was perceived to have a positive impact on patient care as it enabled doctors to see the sickest patients quickly.</p> <p>Handover was perceived to have a positive impact on patient care as patients do not get “missed” during the night and it helps protect continuity of care.</p> <p>Multidisciplinary team working was perceived to have a positive impact on patient care as it means the most appropriate person will see the patient.</p> <p>The introduction of shifts alongside the “Hospital at night” was perceived to have both positive and negative impacts on patient care. Positive impact included more alert doctors, negative impact included loss of continuity of care.</p>

4. Key findings quantitative evaluation

This section outlines the main data sources for the quantitative study and discusses the key findings.

4.1 Quantitative data sources

4.1.1 Pattern and distribution of workload

Specific data collection exercises were funded by the DoH as part of the first phase of work within each pilot site in July 2003 (see the timeline of the "Hospital at Night" projects in section 1.2). These were designed to audit all activity undertaken in each of the hospital sites at night. Two further audits, in March 2004 and between November 2004 and January 2005, in each of the four "Hospital at Night" pilot projects, have also been completed. A copy of the form used in the audit can be found in Appendix B. Data was collected on the following activities:

- Grade and specialty of staff
- Time of call/task
- Who called
- Urgency of task
- Level of skill required the patient's condition
- Whether the patient's condition was stable or worsening
- The location of the task
- A description of the task and its duration.

Free text was used to describe the task; this was coded to a 3-digit code for ease of analysis. Clinical experts designed the 3 digit codes and medical staff carried out coding.

4.1.2 Clinical and non-clinical outcomes

The impact on clinical outcomes is a difficult area to evaluate, as routine data is collected on some but not all relevant indicators. York Health Economics Consortium (YHEC) held discussions with the managers in the pilot sites to ascertain what relevant data could be collected locally and whether other clinical outcomes could be monitored. This resulted in the evaluation framework listed in Appendix C and was based upon two sources of data; Hospital Episode Statistics and locally collected data.

4.1.2.1 HES data

Hospital Episode Statistics (HES) were obtained for all patients discharged from the four pilot Trusts from April 1999 to September 2004. These dates were selected for two reasons. The five-year time period is sufficient to allow identification of any general trends in the Trust and the date of September 2004 was, at the time of analysis, the most up to date period for which data was available. Changes to staffing were introduced in the pilot sites during Autumn 2003, therefore, any change as a result of this should be evident by the end period of the data (September 2004). The data for April to September 2004 is provisional data and was obtained with special permission from the DoH, therefore any particular trends would need to be interpreted with caution. The main specialties selected for detailed analysis were general medicine, general surgery, gynaecology, trauma and orthopaedics and cardiology.

The justification for analysis of these specialties is that the first four in the list are the specialties with the highest number of admissions within all specialties and incorporated the main specialties covered by the “Hospital at Night”, with the exception of gynaecology. Cardiology was selected due to the perception within the pilot sites that the number of in-hospital cardiac arrests had reduced¹³.

4.1.2.2 Local data

National data (HES) can only provide a limited insight into the effect of the “Hospital at Night” pilots. Therefore, discussions were held with the local project leads and the research team to devise a series of indicators that could be collected to establish the impact of the pilots. These discussions resulted in the development of an evaluation framework, which incorporated locally collected data and HES data. The detailed framework is included in Appendix C. In summary the data included information on:

- Theatre usage
- Investigations
- Admissions
- Discharges
- ITU and CCU
- Consultant call-outs
- Sickness and absence rates
- Critical Incidents

The data was collected from a number of computerised sources, such as A&E management information systems; theatre management information systems; pathology management information systems; workforce information systems and financial information systems. Data for a number of indicators was recorded in manual systems; for example, the number of critical incidents or consultant call-outs.

Each project lead was provided with a detailed data specification, which listed proposed approaches to data collection. Each lead decided the most appropriate method to collect these data within their site. Despite the development of the evaluation framework with local project leads, the pilot sites have not been able to access all the data. Appendix D identifies where data has been received, and where appropriate, the reasons for lack of data availability.

4.1.3 National performance indicators

All hospitals are assessed against a set of national performance targets that allow comparison between an individual Trust and the national targets. Typically these cover the whole 24-hour and not specifically nighttime activity. However, it was felt that the reconfiguration of the team at night might have had an impact on certain targets.

In particular three specific national target areas were identified as relevant. These were:

1. Cancelled operations for non-clinical reasons: Since April 2002 all patients who have operations cancelled for non-clinical reasons are to be offered another date within 28 days.
2. In-patient waiting time: To achieve a maximum wait of 9 months for all inpatient waiters and reduce the number of 6-month inpatient waiters by 80% by end of March 2005, against the baseline of December 2002, as progress towards

¹³ This perception was reported during discussions held with two project managers

achieving a maximum 6 month wait for inpatients by December 2005, and ensuring an overall reduction in the total list size.

3. Admissions through major accident and emergency departments: By 2004 no one should be waiting more than four hours in accident and emergency from arrival to admission, transfer or discharge. Average waiting times in accident and emergency will fall as a result to 75 minutes.

Data for relevant nationally available performance indicators were collected for each pilot site. [www.performance.doh.gov.uk/hospitalactivity/ data_requests/index.htm] and supplemented with locally collected data. A detailed description of the indicators is included in Appendix E. Again it was important to identify whether the performance at the pilot sites in meeting the targets had changed over the time period under consideration. This was to provide an indication of performance of the Trust overall, as it was recognised that, although changes in staffing the "Hospital at Night" may have had an impact on achievement of the targets, other factors were likely to have been more important, such as specific local initiatives taken to improve performance. However, changes identified could be explored with the local pilots to discuss the potential impact of the "Hospital at Night" project.

4.2 Background information

Table eight summarises the total number of emergency admissions at the four pilot sites. This trend data provides an overview of activity within the trusts. This information can also be used to interpret other data indicators within the quantitative evaluation and is presented graphically in more detail in Appendix F. Staffing does not directly influence the numbers of emergency admissions within the trusts. However, changes in how the hospital is staffed at night may mean the team is more able to deal with the emergency admissions.

Table eight: Number of emergency admissions

	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05 (6 months)
Pilot A	8,609	8,063	8,158	8,828	9,957	4,259
% Change previous year		-6.3%	1.2%	8.2%	12.8%	n.a.
Pilot B	19,842	22,024	22,539	24,216	25,420	13,173
% Change previous year		11.0%	2.3%	7.4%	5.0%	n.a.
Pilot C	26,651	25,279	23,488	25,222	27,447	14,271
% Change previous year		-5.1%	-7.1%	7.4%	8.8%	n.a.
Pilot D	29,379	29,483	30,665	29,975	31,772	15,710
% Change previous year		0.4%	4.0%	-2.3%	6.0%	n.a.
Total	84,481	84,849	84,850	88,241	94,546	47,413
% Change previous year		0.4%	0.0%	4.0%	7.1%	n.a.

Table eight and the graphs in Appendix F show a gradual increase in the number of emergency admissions since 2001/02. The largest increase was evident in 2003/04. For example, Pilot A had a 13% increase in emergency admissions and Pilot C had a 9% increase. However, analysing the emergency admissions as a percentage of total activity shows the percentage within each trust has remained similar over the five-year period.

This shows each trust has seen an actual increase in workload over the 2003/04 period in comparison to previous years. This increase means it is more difficult to interpret any trends apparent within the indicators discussed in the following sections, as increases in activity would be expected due to this increase in demand as well as from changes in the staffing of the hospital at night.

4.3 Impact on the pattern and distribution of workload

4.3.1 Pattern of workload

There is currently very little published information on the pattern and distribution of workload during the nighttime. A scoping literature search identified only small-scale studies or specialty specific studies. An important part of the project was to undertake an audit of all the activity that is undertaken in the "Hospital at Night". The data from the audits are very rich and valuable data sources that provide the most reliable data currently available on the pattern and distribution of workload during the nighttime.

The detailed analysis of the audit data and tales are included in Appendix G. However, the main findings from this analysis are discussed in this section.

The "Hospital at Night" model means that doctors who would have previously been on call at night are working shifts during the night. This should allow the time available for tasks to increase. This is reflected by the audit findings as the percentage of time spent on tasks was similar in the 2nd (52%) and 3rd (54%) audit and both were considerably higher than the initial audit (18%). Although concerns exist about the comparability of the data across audits, this clearly shows a big increase in the percentage of time spent on tasks. This increase is likely to partly reflect improved completion of forms. However, the magnitude of the percentage (34-36%) suggests a real increase in time spent on tasks.

The pattern and distribution of workload during the night showed a distinct peak in activity before 11pm across all sites. After 11pm the workload gradually decreased throughout the night, with a small increase in tasks occurring after 7am. This would be expected due to patient sleep patterns and greater staffing during the twilight shift.

Seventy percent of tasks were undertaken before 11pm in the 1st audit, this had decreased to 66% by the 3rd audit. This small decrease could reflect the "Hospital at Night" model as more staff were actively working during the nighttime.

The audit captured information on the type of tasks undertaken. This showed that over a third of all tasks during the night were classified as administrative. A further 28% were reviewing patients and seeking help accounted for 14% of tasks. The smallest numbers of tasks were medical (2%) and operative (3%). This is to be expected, as clinical tasks would generally only be undertaken on emergency admissions and existing patients in a critical condition. No changes were expected to the type of tasks undertaken due to the "Hospital at Night" model, as the model is more concerned with how these are carried out and who undertakes them. This is confirmed by the fact that there was very little change in the type of tasks undertaken over the three audits.

4.3.2 Urgency of tasks

The urgency of the tasks were recorded as part of the audit. It was expected that the "Hospital at Night" model would reduce the urgency of the tasks due to bleep filtering, the nightly

handover and the role of the night coordinator. The data shows a reduction from 50% of tasks required within the hour in the 1st audit to 33% required during the hour in the third audit. Similarly, the number required during the shift increased from 15% in the first audit to 37% in the third audit. The number required at once remained fairly constant (26-29%) between the 1st and 3rd audit. Although the model does not appear to have had an impact on the urgent cases, there is a shift from being required within the hour to required during the shift. This suggests that bleep filtering, the nightly handover and the role of the night coordinator is having an impact on the prioritisation of the urgency of tasks.

4.3.3 Appropriateness of work

Bleep filtering, the nightly handover and the role of the night coordinator were also expected to improve the appropriateness of tasks undertaken by each grade of staff. For each task, the person undertaking the task had to indicate whether they felt the level of skill needed was appropriate for them; less than their skill; more than their skill or non-medical. Overall across all pilot sites, tasks that required a level of skill of 'more than just mine' increased from 7% in the 1st audit to 14% in the 3rd. However, analysis by site showed an increase at Pilot sites B, C and D but a decrease at Pilot A.

The overall percentage classified as 'appropriate for me' decreased from 84% in the first audit to 80% in the third. However, this pattern is not apparent in Pilot A as in this trust the percentage in this category increased to 92.5% by the third audit.

The overall trend apparent in Pilot A is what you would expect, i.e. an increase in the percentage of tasks classified as "appropriate for me" and a decrease in the tasks classified as 'more than just mine'. This suggests the model adopted in pilot A is more able to assist with allocation of appropriate tasks - the coordinators co-ordinate those specialities involved in the "Hospital at Night" through a multidisciplinary handover and filter bleeps for all grades of doctor. They also undertook clinical duties during the night time in addition to managing the wards etc.

The grade of staff undertaking the tasks was recorded during the audits. The majority of tasks in all trusts at the 3rd audit were undertaken by the nurse practitioners, PRHOs and SHOs. This is likely to reflect changes in staffing introduced as part of the "Hospital at Night" models.

4.4 Impact on clinical outcomes

A detailed analysis of clinical outcomes and related activity is included in Appendix H. This analysis suggests that the "Hospital at Night" models had no adverse impact on activity as measured by:

- Death Rates
- Pathological investigations
- Critical incidents
- Levels of sickness and absence

4.4.1 Death rates

It was clear from the DoH project team and local managers that the change in staffing of the "Hospital at Night" would not affect clinical outcomes. The changes were designed to take account of clinical need and would not be detrimental to patients. Death rates were analysed to explore this, as more sensitive indicators were not routinely available. Detailed analysis in Appendix H shows that there have been no observable impact on death rates of emergency

patients or patients undergoing cardiac or hip surgery following the introduction of the "Hospital at Night".

4.4.2 Pathological indicators

Data was collected on the changes in use of pathological investigations during the nighttime and at weekends. This enabled a comparison in the number of marker tests requested overnight in November 2003 and November 2004. Marker tests are U&E for chemical pathology and FBC and pro-thrombin for haematology. Both these tests would usually be carried out on patients admitted to hospital. Therefore, it was hypothesised that there would be an increase in these tests as it was expected that there would be more activity carried out during the night, especially between 5pm and 9pm, following the introduction of staffing changes. This would occur, as the night team would have more staff to deal with the admissions. A small change in the number of tests was evident across the pilot sites. However, as discussed an average increase in emergency admissions of between 6 and 13% was evident across the pilot sites. This suggests the increase in investigations is a reflection of this increase rather than as a result of "Hospital at Night" changes. To attribute the increase to "Hospital at Night" staffing changes, an increase over and above the increase in emergency admissions would have been expected, but this was not found.

4.4.3 Critical incidents

Hospitals are required to monitor the number of critical incidents occurring. This covers incidents such as treatment incidents, staff/environment incidents and communication incidents. This is an ideal dataset to evaluate the changes in staffing of the "Hospital at Night". The hypothesis was there would no increase in the number of critical incidents recorded during the night after changes in staffing. Overall, the data for November 2003 – November 2004 shows that there was no particular upward trend in the number of critical incidents during the night and, although some months showed an increase in incidents, this has been fluctuating. Where changes are apparent, discussions suggest the figures reflect improvements in reporting of incidents due to "Hospital at Night" staffing changes rather than a real increase. However Trust C produced data for a two-year period and this showed a decrease of 20% in the overall number of critical incidents between 2003 and 2004. This decrease was attributed to the "Hospital at Night" model.

4.4.4 Levels of sickness and absence

The quantitative evaluation tried to establish if changes in staffing of the "Hospital at Night" had an impact on staff by decreasing levels of sickness and absence. It was hypothesised that there would be no change in the level of sickness and absence rates. Across all trusts the data showed that there was no trend that could be attributed to a decrease in levels following staffing changes at night.

4.4.5 Call outs

Unfortunately useable data was not readily available to monitor the impact of the "Hospital at Night" on call outs to consultants.

4.4.6 MEWS

Unfortunately useable data was not readily available to monitor the impact of the "Hospital at Night" on any increases in use of the MEWS scores in ICU/CCU.

4.5 Impact on national performance targets

A detailed analysis of performance targets is included in Appendix I. The link between the "Hospital at Night" and the performance targets is not direct and a wide range of factors including local waiting list initiatives, prevalence of flu etc, affects the performance of the trust. However, changes to the staffing of the "Hospital at Night" since autumn 2003 have not had an observable negative impact on achievement of the national performance targets as measured by:

- Inpatient waiting times
- Waiting times in A&E
- % Cancelled theatre operations

4.5.1 Inpatient waiting times

There are few specific trends evident in the number of patients on the inpatient waiting list at each of the pilot sites between April 2002 and September 2004. In general the numbers are fluctuating. This confirms that changes in staffing of the "Hospital at Night" appear to have had no impact on the inpatient waiting times.

4.5.2 Waiting times in A&E

Similarly, times taken to admit a patient from A&E have been maintained or improved slightly across the sites. No particular trends are evident following the introduction of the "Hospital at Night".

4.5.3 Percentage of cancelled theatre operations

The theatre analysis suggests that there have been no change to the % of theatre operations cancelled for non-clinical reasons and the number of these patients not admitted within 28 days of the cancellation as measured by the national performance targets.

4.5.4 Actual number of theatre operations carried out

Variable patterns in the actual number of theatre operations carried out are apparent across the pilot sites. Data from Pilot A shows that there has been a decrease in the number of patients undergoing emergency theatre operations during the night time, however, the numbers of emergency operations during the daytime also decreased. This suggests changes in workload have been evident rather than changes instigated by the "Hospital at Night". Data from Pilot C indicated there was a small increase of around 10% in the number of operations undertaken during the night. However, this increase is in line with the overall increase in the number of emergency admissions. Data for Pilots B and D suggested little change in the number of theatre operations undertaken.

4.5.5 Severity of the case mix of operations in theatre

The research team were not able to identify any particular changes in the case mix of patients undergoing operations during the night.

Table nine shows a summary of the key findings relating to the impact of the "Hospital at Night" model on workload, activity and performance.

Table nine: Summary of the key findings relating to the impact of the “Hospital at Night” on workload, activity and performance

Pattern and distribution of workload during the night in the pilot sites
<p>The pattern of workload remained similar over the three audits.</p> <p>The overall total number of tasks undertaken peaked between 9pm and 11pm and decreased gradually throughout the night.</p> <p>The urgency of tasks reduced over the three audits.</p> <p>Between 26-29% of all tasks undertaken during the night were categorised 'needed at once'.</p> <p>The percentage of tasks required within the hour fell from 50% in the first audit to 33% in the 3rd audit. This change is reflected in the fact that there was an increase over the three audits for the percentage required during the shift (15% - 37%).</p> <p>A greater percentage of tasks were felt to be appropriate for the grade of staff undertaking them at Pilot A than in the other three pilot sites.</p> <p>General medicine, general surgery and trauma and orthopaedics accounted for 79% of activity in the 1st audit, 60% in the 2nd audit and 76% in the final audit.</p> <p>The percentage of tasks located within A&E at Pilot A increased from 18% in the 1st audit to 45% in the 3rd audit. Whereas, Pilot C saw an increase in tasks undertaken on the wards (44% to 61%).</p> <p>During the 3 audits, the main tasks undertaken were categorised as advice, reviewing patients and admin work (between 64% to 82% overall).</p> <p>The majority of tasks in all trusts at the third audit were undertaken by the nurse practitioners, PRHOs and SHOs.</p>
Activity
<p>There was no observable impact on death rates of emergency patients or patients undergoing cardiac or hip surgery;</p> <p>There was an increase in the number of requests for pathology investigations (FBC and U&E). However this increase is not higher than the overall increase in admissions.</p> <p>Small changes were evident in the number of critical incidents recorded. These changes reflect improvements in reporting of incidents due to changes in staffing of the “Hospital at Night”, rather than an actual increase. However Trust C reported a 20% decrease in the overall number of critical incidents attributed to the “Hospital at Night”.</p> <p>There was no trend in levels of sickness and absence that could be attributed to staffing changes at night.</p>
Performance targets
<p>The link between the “Hospital at Night” and the performance targets is not direct and a wide range of factors including local waiting list initiatives, prevalence of flu etc, affects the performance of the trust.</p> <p>Changes to the staffing of the “Hospital at Night” since autumn 2003 have not had an observable negative impact on achievement of the national A&E, theatre or inpatient waiting time targets.</p>

5. Discussion and Conclusions

In this section the research questions and the hypotheses generated for this evaluation will be assessed against the evidence.

5.1 The qualitative component of the evaluation

Four hypotheses relating to staff perceptions of the “Hospital at Night” were formulated;

- Staff have a common understanding of the nature and purpose of the key elements of the “Hospital at Night” model
- The multi-disciplinary team is working effectively at night-time.
- The key elements of the “Hospital at Night” pilots have had no impact on doctors’ education and training
- The key elements of the “Hospital at Night” pilots have had no impact on the quality of patient care.

5.1.1 Staff understanding of the “Hospital at Night” model & effectiveness of teamwork

Overall doctors, nurses and coordinators involved in the “Hospital at Night” generally had a common understanding of the key elements of the “Hospital at Night” model. The degree of knowledge varied according to role. More senior doctors such as SpRs and SHOs tended to have a good understanding of the “Hospital at Night” components. This might be because they are most likely to be involved in all components (e.g. multidisciplinary team work, handover and bleep policy). However to some degree the introduction of shifts was perceived as synonymous with the introduction of “Hospital at Night”. The more junior doctors (PRHOs) tended to be aware of the various components of the “Hospital at night” model to a lesser degree and this may be because in some sites the PRHOs finish their shifts between 10pm-12pm. The coordinators tended to have the most knowledge about the components of “Hospital at Night”. Ward nurses tended to have more knowledge about the bleep policy than the other components, probably because this was the component that had the biggest impact on them. In general the evidence supports the hypothesis that staff have a common understanding of the nature and purpose of the key elements of the model but this varies in relation to degree of involvement.

There were varied perceptions as to the effectiveness of multidisciplinary team working across specialties and pilot sites. For some doctors teamwork and particularly the introduction or extension of the “Hospital at Night” coordinator role, offered a support mechanism for doctors. This was particularly the case for medicine and for the most junior of doctors. However, all grades of doctors reported benefits from working more closely with other professionals. There was concern that the night team should have sufficient skills and manpower to provide cross-cover. Some doctors felt support from clinical colleagues was variable. The only site to hold a multidisciplinary handover was site A and only two sites filter all doctors’ calls as opposed to just the PRHOs calls. If these two elements contribute to the sense of multidisciplinary teamwork, as respondents suggested, then the second hypothesis, that the multi-disciplinary team is working effectively, is partially supported depending on pilot site, role and specialty.

5.1.2 Impact of “Hospital at Night” on doctors’ education and training

The impact of the “Hospital at Night” was perceived to be positive and negative depending on the component of the model. It is important here to distinguish between “Hospital at Night” and the introduction of shift work as most sites introduced both at the same time and some of the

perceptions of the impact of the “Hospital at Night” are synonymous with the introduction of shifts. For example, some more junior doctors were concerned about the impact of not working nights would have on their education and training. Other respondents associated “Hospital at Night” with senior colleague availability and being more alert – which may be more of a result of shift work.

The views about the impact of “Hospital at Night” on doctors’ education and training appeared to be most positive for the coordinators and Physicians and less positive for the Surgeons. Some doctors felt it was difficult to use night time to study and create training opportunities and that the coordinators role and bleep may deskill the junior doctors. Others felt that multidisciplinary teamwork (including the coordinators) enabled doctors to learn from colleagues (including senior doctors, nurses and coordinators). Some respondents mentioned that the biggest learning opportunity for the doctor was the ward rounds and since, this didn’t alter with “Hospital at Night”, “Hospital at Night” had no impact on training and education. Overall the views expressed support the third hypothesis - that “Hospital at Night” has had no impact on doctors’ education and training.

5.1.3 Impact of “Hospital at Night” on quality of patient care

Overall the majority of respondents thought that the “Hospital at Night” had a positive impact on patient care. The coordinator role was perceived to benefit patients through their clinical skills and their ability to help junior doctors. The bleep filtering was perceived to enable patients to be seen and treated more quickly. Handover prioritised acutely ill patients and meant that patients do not get “missed” and the multidisciplinary teamwork meant that patients see the most appropriate person. The qualitative reports indicate that for most respondents patient care has improved as a result of “Hospital at Night”. The quantitative data appear to support this to some degree – the quantitative data show that on the whole the “Hospital at Night” model has not had an adverse impact on patient care.

5.2 The quantitative component of the evaluation

5.2.1 Pattern and distribution of workload

Three hypotheses were formulated here:

- The pattern of workload will remain similar over the three audits.
- The urgency of tasks will reduce over the three audits.
- The workload will be more appropriate by grade of staff over the three audits.

The analysis showed that the pattern of workload remained similar across the three audits. There was a distinct peak in activity before 11pm across all sites, workload gradually decreased throughout the night, with a small increase in tasks occurring after 7am. This would be expected due to patient sleep patterns and greater staffing during the twilight shift.

The urgency of tasks over the three audits showed a reduction in the tasks required within the hour and an increase in the number required during the shift. This was expected, as the “Hospital at Night” model should reduce the urgency of the tasks due to bleep filtering, the nightly handover and the role of the night coordinator. This finding was confirmed by the qualitative interviews, in particular it was felt that the handover was useful in providing feedback about patients who were acutely ill, therefore care could be anticipated in advance. The latter

could partly explain the reduction from tasks being required during the hour, as the task would be carried out before it was urgent, therefore it would be classified as required during the shift.

The hypothesis that the workload will be more appropriate by grade of staff over the three audits was not supported in all pilot sites. In pilot A, the overall trend apparent was as expected, i.e. an increase in the percentage of tasks classified as “appropriate for me” and a decrease in the tasks classified as ‘more than just mine’. This suggests the model adapted in pilot A is more able to assist with allocation of appropriate tasks. This might be because the coordinators co-ordinate those specialities involved in the “Hospital at Night” through a single multidisciplinary handover and filter bleeps for all grades of doctor.

5.2.2 Clinical and non clinical outcomes

Six hypotheses were generated in relation to outcomes:

- There will be no impact on the number of deaths within the hospitals.
- There will be an increase in requests for pathology investigations (using FBC and U&E as marker tests) during the nighttime.
- There will be no increase in the number of critical incidents recorded during the night.
- There will be no increase in the level of sickness and absence rates.
- There will be a reduction in the number of call outs to consultants during the nighttime.
- There will be an increase in the use of Modified Early Warning Scores (MEWS) scores within ICU/CCU.

It was clear from the DoH project team and local managers that the change in staffing of the HaN would not affect clinical outcomes. The changes were designed to take account of clinical need and were designed not to be detrimental to patients. The number of deaths was used as a proxy to evaluate this, as more sensitive indicators were not routinely available. No noticeable differences in the numbers of deaths were apparent across any of the pilot sites. This could be used as confirmation that the changes in staffing have not had a negative impact on clinical outcomes when measured by the number of deaths occurring. This quantitative finding was also reiterated by the qualitative interviews as all members of the multi-disciplinary team reported that there was a general consensus that the combined elements of the “Hospital at Night” had had either a positive impact or a neutral impact on patient care.

The number of pathology investigations undertaken during the nighttime did not appear to increase during the time period studied. However, this is contradictory to the findings in the qualitative interviews that patients are seen more quickly and patients get medication more quickly. Therefore these results should be interpreted with caution, as they could be a result of imperfect data or artefacts in the data for the time period studied rather than any ongoing trends. To fully investigate the impact on pathological tests a prospective study would need to be undertaken, which collected the relevant data rather than relying on retrospective data for two one month periods.

Small changes were apparent in the number of incidents classified as communication incidents during the night. It is difficult to determine if this is a result of improved recording mechanisms rather than an actual increase. Informal discussions with the pilot sites suggest the former is apparent since the introduction of the staffing changes. Furthermore, the qualitative interviews highlighted the benefits of the coordinator bringing together the team and improving communication and this is likely to be quantitative evidence of this role. This is an important

routinely available indicator that is ideal to evaluate the “Hospital at Night” and mechanisms should be introduced to assess this on an ongoing basis. The impact of improved recording mechanisms will provide a baseline against which to compare future events.

Sickness and absence rates were analysed to see if any changes in the rate was apparent following changes in the staffing of the “Hospital at Night”. Positive impacts on staffing could be reflected in a decrease in these rates whereas negative impacts on staffing could be reflected in an increase in these rates. No particular changes, neither increases nor decreases, were evident in the sickness and absence rates. However, the qualitative interviews suggested that in general staff viewed the changes positively. This implies the overall sickness and absence rates were not sensitive enough to enable this to be identified and more detailed information would be required, such as the reason for the absence, to allow the reasons within the control of the trust to be identified, (e.g. stress) to be separately analysed. However, such data is very sensitive and was not available to the research team.

Unfortunately, data was not available to evaluate the hypotheses on consultant call outs and the use of MEWS scores within the timeframe for analysis. However, discussions should be held within the trusts and a simple prospective study could be undertaken to measure the impact of, the “Hospital at Night” in the future.

5.2.3 Performance targets

Five hypotheses were formulated relating to performance

- There will be no impact on inpatient waiting times.
- There will be no impact on the time taken to admit a patient from A&E
- There will be no impact on the % of theatre operations cancelled
- There will be no change in the actual number of theatre operations carried out.
- There will be an increase in the level of severity of the case mix of operations in theatre.

National performance targets are used routinely to assess each trust. It is important to demonstrate that the “Hospital at Night” staffing changes did not adversely affect the achievement of performance targets for inpatient waiting times, admission times from A&E or the percentage of theatre operations cancelled. This enables confidence in the staffing changes to develop and provide wider acceptance of the proposed models at a national level. The analysis undertaken as part of this evaluation showed that there have been no particular changes in these national performance targets. Again, this is evidence to indicate no negative impact has occurred. In some adaptations of the “Hospital at Night” model, particular emphasis was placed on the “Hospital at Night” as a model to support meeting targets (especially waiting time targets in A&E). This was particularly the case in Trust A where the “Hospital at Night” model was seen as a facilitator for meeting targets.

Discussions with project managers suggested that the “Hospital at Night” model would lead to a refocus on CEPOD guidelines and an improvement in the decision-making process determining whether operations during the night should go ahead. The effects of these two factors were expected to cancel each other out as reflected in the hypotheses. Again, although some variable changes were apparent in the number of theatre operations carried out across the pilot sites, the magnitude of the changes meant they were not likely to be attributable to “Hospital at Night” and were a result in changes in workload such as overall increases in admissions. The

research team were not able to identify any particular changes in the case mix of patients undergoing operations during the night.

In summary the main findings from the quantitative evaluation are:

- The pattern of activity was similar across all three audits
 - Peak before 11pm
 - Decreased gradually after 11pm
- The distribution of tasks by grade of staff changed over the audits:
 - Increased % of tasks by nurse practitioner
 - Greater prioritisation of tasks
 - Less required within the hour
- There were no observable detrimental effects on outcomes in the areas of:
 - Death rates of patients
 - Sickness and absence of staff
 - Critical incidents recorded
- There was no useable data available for:
 - Consultant call-outs
 - Recording/use of MEWS scores
- There was no apparent impact on national performance targets as measured by:
 - Inpatient waiting times
 - A & E waiting times
 - % cancelled theatre operations

The quantitative data analysis does not indicate any adverse effects of the “Hospital at Night” on outcomes, workload or targets. There is some evidence of changes in the pattern and distribution of workload, which may be a consequence of the introduction and consolidation of bleep filtering, multi-disciplinary handover and the role of the “Hospital at Night” coordinator. The findings from the quantitative evaluation must be interpreted with caution due to the difficulties in accessing data, issues of reliability, validity and sensitivity and the problem of attribution.

5.3 Conclusions & recommendations

The “Hospital at Night” was regarded positively by most members of staff interviewed. Overall PRHOs and SHOs, particularly in medicine, were considered to be the staff who benefited most from the components associated with the “Hospital at Night”. Implementation of the various components was not perfect and the evaluation has highlighted a number of key issues and challenges facing the pilots and NHS trusts more widely, seeking to implement the “Hospital at Night” model. The key conclusions / recommendations from the evaluation focus on the following themes:

- Understanding the context within which “Hospital at Night” was introduced
- Communication within trusts
- Managing cultural change
- Staffing levels to support change
- Perceived value of change
- Potential to improve, consolidate and expand elements of the “Hospital at Night”

Understanding the context within which "Hospital at Night" was introduced: the "Hospital at Night" pilot sites were working to a very tight time schedule in implementing the "Hospital at Night" model. There were differences in terms of size of Trust, specialties covered by "Hospital at Night", the extent to which elements were already in place at the pilot sites and the ways in which "Hospital at Night" was introduced. All these factors need to be taken into account when transferring learning from the pilot sites.

Communication within trusts: the "Hospital at Night" model was often promoted alongside changes associated with the EWTD, including the modification or introduction of shift working for doctors. There is increasing recognition this has its limitations and the label is now almost seen as a hindrance, perpetuating negative connotations and also alienating non-medical staff. There were also variations in levels of awareness of some of the components of "Hospital at Night". This may have reflected the different communication strategies used to roll out the model. It is important to ensure that the components of the model are communicated to all members of the Trust

Managing cultural change: multidisciplinary team work under "Hospital at Night" challenges traditional practices and ways of working. Some staff felt threatened by the changes and there were different perceptions of the obligations and expectations for different types of staff (e.g. Physicians and Surgeons) working at night. Ensuring clinical champions are drawn on to support roll out of the "Hospital at Night" is crucial for successful implementation. Giving staff information about what is expected of them as a member of the multidisciplinary team is also important.

Staffing levels to support change: reliance on agency nurses, locums and sickness affected implementation of the "Hospital at Night". In some sites and for some grades of doctor, doctors appeared to be under managed. Full and successful implementation of "Hospital at Night" requires a full complement of skilled staff who are familiar with the model. Ensuring that all staff are aware of their responsibilities in the "Hospital at Night" is also crucial.

Perceived value of change: where the change is perceived to be of value it is more easily implemented, and this is evident in the apparent difference in ease of implementation between the Physicians and Surgeons. The appeal of the model needs to be broadened to surgeons and more senior doctors. Communicating the benefits of the "Hospital at Night" is crucial in the change process. Since most of the respondents perceived the "Hospital at Night" to be good for patients, communicating these findings to staff involved in the implementation of "Hospital at Night" may support implementation.

Finally there is potential to improve, consolidate and expand elements of the "Hospital at Night". All of the pilot sites were committed to continuing with and developing the "Hospital at Night" model. Although the value of multi-disciplinary team working was universally valued the concept underpinning the "Hospital at Night" model of *competency based* team working was not fully developed at most sites. Respondents appear to refer to competencies at an individual professional level, rather than in the context of multidisciplinary team working. Handover was working very positively, however respondents from all pilot sites reported room for improvement, such as combining medical and surgical handovers, increased clarity over who was leading handover, better attendance at handover and having a dedicated room for handover. There was the potential at some sites for the bleep to cover more doctors. Ensuring

that the reasons for and the process by which the bleep system is operated is communicated to all that is affected by it, is also important.

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