In-hospital Paging Systems: An Effective Method of Communication between Hospital Staff in 2015?

Abstract:
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Policies in relation to paging are designed to achieve effective in-hospital communication. This study recorded data
in relation to pages received by interns over a two-week period. A survey was conducted assessing perceptions on
paging and existing hospital policy. Four interns collected data in relation to 20 regular-day, 4 extended-day and 4
on-call (two weekday and two weekend) shifts (n=423 pages). Sixty-nine pages (16%) were made during pager-free
periods. On average 3 minutes per hour were spent dealing with pages. Compliance with ISBAR ranged from 50.1% to
83.4%. Of the episodes where pages were made during protected times (n=85), 67% did not meet urgent criteria. While
the majority of these pages were from nurses, they were less likely to violate the policy than other staff (relative
risk 0.648, p=0.016). Efforts need to be made to ensure pager-free periods are respected in the interest of effective
communication, staff morale and protected training time.

Introduction
A good communications system is the backbone of hospital activity and fundamental to clinical task management. In our
hospital, a numeric pager is provided as the official system of communication between ward staff, including junior
doctors. A policy restricting paging has been in place since 1995, pages are a one way form of communication. There is no way of
distinguishing between routine and more urgent calls received on a standard pager. The pager lacks accountability and
governance and carries no relevant information to help staff prioritise work. It is well-recognised that doctors often
have to interrupt patient care to answer a page
. Studies indicate that anything up to 65% of calls interrupt patient care
. It has been suggested that reducing interrupting would help reduce work-related stress, while at the same
time improving efficiency and decreasing medical errors
. Nurses and doctors perceptions of call urgency can differ,
with doctors considering many calls via pager to be less urgent than labelled
. An important factor in the initial
management an acutely ill patient is the quality of the communication between the clinical staff involved. It has long
been recognised that when this communication is sub-optimal, patient safety is compromised. The ISBAR tool represents
a standardised model that all healthcare professionals use to structure clinical communication in hospital. The key
elements of the framework are introduction, situation, background, assessment and recommendation (ISBAR)
. Attempts have been made to define the level of abnormal physiological parameters that should prompt nursing staff to
request a medical review
. The Early Warning Score (EWS) is utilised in conjunction with clinicians’ judgement to
detect a deteriorating patient. It is based on a simple scoring system in which a score is allocated to physiological
measurements i.e. respiratory rate, oxygen saturation level, temperature, blood pressure, pulse rate and level of
consciousness (Glasgow Coma Scale). A score is attributed to each parameter and then aggregated to calculate the EWS.
If a score of 3 in any parameter or an aggregate score of 3 or more is attained, the EWS escalation protocol is
activated
. It has been shown to facilitate early detection of a deteriorating patient which improves outcomes for patients
. Studies indicate it to be a good predictor of patient mortality and hospital length of stay
. The current paging
policy in our university teaching hospital was introduced in July 2012 to provide guidance on agreed paging
practices that should be used in order to achieve appropriate and effective use of the hospital pager system. It
states pages should be restricted from 23.00 to 05.00 to urgent duties, between 23.00 and 09.00 all pages should be
discussed with the nurse in charge, non-urgent duties should be recorded on the RCID worksheet, ISBAR used when
communicating details and it provides for specific pager-free periods (except emergencies) to facilitate training and
rest periods for junior doctors during core hours and on call shifts. The objectives of this study were to assess
compliance with the use of the existing paging policy and to identify areas where future improvements can be made.

Methods
Data were collected prospectively over a two-week period. Four interns recorded data in relation to pages received
during five consecutive working days (8am-5pm), a single extended day shift (5-8pm) and a single on-call shifts
(9am-5pm). Data were also recorded for pages received on regular working days outside of the recognised 8am-5pm period,
when interns were not on call. Urgent calls were defined as violations of bleep-free periods. A local bleep policy, included those relating to a major change in patient condition, patient symptoms causing suffering, urgent admission, patient symptoms causing suffering, urgent IV line for sepsis/chemotherapy/ transfusion, all calls from ED or the communication of high EWS scores. Compliance with ISBAR was recorded for all pages. Interns and staff nurses were surveyed in relation to their awareness and understanding of the pager policy and also their perceptions of
current work practices. Data analysis was carried out using SPSS (version 20, Chicago USA).

Results
Over a two-week period, four interns collected data relating to a total of 20 regular day, four extended day (5pm to
8pm) and four on-call (two weekday, 5pm to 8am and two weekend, 24 hours) shifts. This amounted to 252 hours and
interns received 423 pages during this period (Table 1). Acute medical wards accounted for 187 (44%) of pages, 55(23%)
were from surgical wards and 82 (19%) were from non-acute medical wards, with the remainder of pages (n=59, n=14%)
from other locations. The majority of pages (n=316, 75%) received were from nurses, with 30 % from pharmacists and
26 (6%) from doctors (Table 2). The commonest reason for bleeping was in relation to medication prescription (n=78,
18%), acutely unwell patients (n=46, 11%), to discuss patient management (n=35, 8%), insertion of IV cannula (n=32,
8%), reporting EWS (n=25, 6%), patient discharges (n=25, 6%) and non-urgent clinical queries (n=182, 43%). Further
details are provided in Table 1. Mean number of pages received per hour was 6. Mean time to answer pages was 45
seconds (standard deviation 80.6). Mean time to answer pages was 60 seconds (standard deviation 55.1). This equated
to just under 3 minutes per hour (5%) spent dealing with pages. Repeat pages were made in 24 cases (5.7%). Compliance
with ISBAR ranged from 50.1% (assessment) to 83.4% (background) (Figure 1).
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Sixteen pages (4%) were made to regular services, rather than the on-call intern, outside of the recognised daytime working hours (8am-5pm). In addition, twenty-nine pages (7%) were made during pager-free periods on regular day shifts and 40 (9%) during pager-free periods on-call. Of all episodes where pages were received during protected times (n=85), 13 (15%) related to acutely unwell patients, 7 (8%) EWS score reporting and 5 (6%) were for patients experiencing acute pain. Fifty-seven bleeps (67%) during these periods did not fulfil urgent criteria and three had no data recorded. While the majority of these 85 pages were placed by nurses (n=71, 84%), nurses were less likely to violate the policy than other staff (n=11; relative risk 0.648, 95% confidence interval 0.546 - 0.769, p=0.016).

Survey Results

Twenty-eight interns, of a total of 51 interns, and 25 nurses answered the survey. Twenty-two interns (79%) and 18 nurses (72%) were aware of the existing pager policy. Fifty-seven per cent of interns and 28% of the nursing staff had not read this policy. Interns estimated they allocated 14 minutes per working hour dealing with pages, while nursing staff estimated 11 minutes per hour and study data indicated 2.8 minutes per working hour is spent dealing with pages.

Discussion

Pager policies can be extremely effective when used properly. Repeated interruptions have been shown to have a psychological impact, causing distraction and forgetfulness, resulting in both increased production of errors and compromised patient care. Frequent paging also directly interrupts patient care and is an important cause of workplace stress. A study in 2005 showed that nurses spent 8% of their time on the telephone, while nurses on night shifts spent nearly 18% of their time on the telephone. A 1992 study by Blum et al found that almost 50% of calls interrupted patient care, 24% interrupted ward rounds or teaching conferences, 34% changed management and 25% were unimportant. Evidence from similar studies suggest that anything up to 65% of calls may interrupt patient care. Reducing the number of unnecessary pages and postponing non-urgent ones could result in as much as a 42% reduction in disruptions of patient care and more rest periods for junior doctors. While our study showed that staff were generally compliant with the pager policy, some areas still require attention. There is a need to inform allied healthcare professionals and other doctors of the pager-free periods and these should be displayed at ward level. Further efforts need to be made to ensure pager-free periods are respected in the interest of more effective communication, junior doctor morale and protected education and training time. Both interns and nurses vastly over-estimated the amount of time spent on pages. The reasons for this were beyond the scope of the study, but suggest both groups perhaps hold a negative perception in relation to the use of the pager system. Further elucidation of this may inform future direction in the modification and development of newer in-hospital communication systems.
Urgency matrices have been utilised in other fields to enable stratification of duties in terms of urgency and importance. Using a 2x2 matrix, tasks are classified as urgent and non-urgent on one axis, and important or non-important on the other axis. Important activities are those that have an outcome that leads to the achievement of one's own goal, while urgent activities are those we are likely to neglect but should focus on to achieve medium to long-term goals. Important urgent tasks often demand attention, whereas urgent non-important tasks, many of which were not completed during the previous working day, are mixed in with more urgent calls and are often associated with the achievement of someone else's goal. Our study suggests that many pages focus on urgent and non-important tasks. The items that are non-urgent and important are the ones we are likely to neglect but should focus on to achieve medium to long-term goals.

There are communication technologies now available that improve information facilities in comparison to existing pagers. Evidence for beneficial effects of mobile and smart phones on healthcare systems is accumulating. A study by Flynn et al. showed nurses strongly preferred the use of smartphones over conventional pagers with perceived improvements in all items measured. The nurse-doctor relationship and its direct effect on patient care has been widely studied. Disagreement between medical and nursing staff on appropriate use of the pager is a frequent cause of conflict. Unless nurse and doctor perception of call urgency are similar, an alternative communication system will continue to be a cause of potential conflict. Further research is required to determine a communication system which improves workflow continuity and more importantly, quality of care. It is vital to engage doctors and nurses primarily in developing such a system.

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References

8. Ting JYS, Humphrey KJ. AFTER HOURS MEDICAL WARD DUTIES IN A TEACHING HOSPITAL. Aust Health Rev. 2005;29:37-42
18. Covey S, Merrill KA, Merrill MR. FIRST THINGS FIRST: TO LIVE, TO LOVE, TO LEARN, TO LEAVE A LEGACY. New York: Simon and Schuster; 1994
24. Wu X, Tran K, Lo V, Galey KC, Morra D, Quan SD, Perrier L. EFFECTS OF CLINICAL COMMUNICATION INTERVENTIONS IN HOSPITALs: A SYSTEMATIC REVIEW OF INFORMATION AND COMMUNICATION TECHNOLOGY ADOPTIONS FOR IMPROVED COMMUNICATION BETWEEN CLINICIANS. Int J Med Inform 2012;81
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