

## Preferences to improve rounding efficiency amongst hospitalists: a survey analysis

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### ABSTRACT

**Background:** There is no ‘gold standard’ method of rounding for hospitalists. This study investigates hospitalist rounding preferences to improve efficiency based on resources categorized under work assignment and communication.

**Methods:** An anonymous survey containing demographics and questions on preferences for rounding efficiently by hospitalists were widely distributed online. Responses were presented using descriptive statistics and SPSS v26.

**Results:** There were 143 respondents, majority male (60%) with (40%) female. Most (80%) expect higher patient volumes when working with an advanced practitioner (AP). Half (50%) preferred rounding independently, (34%) with an AP, and majority (62%) with a resident. Geographic rounding was most efficient at 85%. Text messaging for paging was preferred (70.1%) to pagers (23.4%). Respondents preferred calling a consultant (52%) or text messaging (40%). Majority have not used a WOW yet (74%) believe WOWs could improve efficiency. Majority prefer dictation via Dragon (47%) to the phone application (23%). Only 29% believe their EMR is too complex to navigate. Preference difference due to age was insignificant.

**Discussion and Conclusion:** In this study, 143 hospitalists provided preferences for improving rounding efficiency based on elements from work assignment and communication. This analysis can provide insights on designing best practices for hospitalists rounding efficiently.

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## 1. Introduction

The role of the hospitalist has traditionally been to increase efficiency in medicine. In the 1990s, as the market for healthcare became increasingly competitive, hospitals have begun using hospitalists more efficiently and economically to maintain quality care while decreasing cost [1,2]. Hospitalists are continually encouraged to improve proficiency in rounding by maximizing resources while eliminating waste and redundancy [3]. In addition to changing rounding practices, hospitalists have the power to improve quality and productivity by changing their habits to achieve a quality dynamic [4]. However, at any given time, if improvement is attempted by changing any of the variables in an attempt to achieve a quality dynamic, this manipulation will ultimately come at the expense of the other variables [5]. A quality dynamic can be further examined through the ‘iron triangle’ that demonstrates the relationship between cost, access, and quality [5].

Rounding models are not well understood by physicians or other medical providers. In a review of eight models, one study found that most physicians who already use one of these models are unable to

identify the other types of rounding [6]. Although there is no data on what is declared as the ‘gold standard,’ different components of the rounding process can be evaluated as process design concepts. Often, two general categories are used for analysis: work assignment and communication. Work assignment includes: the volume of patients assigned to the hospitalist, the geographic location of these patients, the electronic medical record (EMR) used by the hospital, and the composition of the team within which the hospitalist functions. Communication includes: paging hospitalists, communication between hospitalists and consultants, hospitalist use of dictation, and hospitalist use of workstations on wheels (WOWs) versus mobile devices. Unfortunately, the literature is sparse for further analysis of many of these topics.

Hospitalists often face not only an enormous workload and patient volume but also a decreased amount of time per patient [7,8]. While 15 patients appear to be an ideal number, not many studies have been done to show that this is the preferred patient census amongst hospitalists [8]. According to one study, capping the patient census improved resident workload [9]. Of note, geographic rounding, or

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rounding on patients on the same floor, decreases the average care time per patient significantly when compared to non-geographic rounding [10]. Geographic rounding increases efficiency, especially because it allows for more personal, coordinated care with staff, even when this type of rounding suffers from an increase in the number of interruptions [10–12]. When discussing EMRs, the system preference of the hospital can be implemented to influence hospitalist rounding proficiency [13]. EMRs have been shown to have greater benefits than paper charts but may cause additional problems [14].

On average, hospitalists are paged 3.5 times per hour and spend 7% of their time returning pages [15]. 8% of these pages are from other physicians and 80% of these pages are from nurses. These pages often lack standardization, content, format, urgency level, and clarity within the message [16]. Hospitalists were found to prefer in-person interactions with consults instead of over-the-phone consults or pages due to a higher level of productive communication, reducing turnaround time by up to 50% [17–19]. When documenting, dictating notes resulted in increased coherence due to an improvement in the quality of information due to a decrease in errors [20]. Multiple studies have shown that these systems increase satisfaction and efficiency positively, while decreasing overall monthly medical transcription cost [20,21]. Another form of dictation is through a voice-recognition app on a smartphone that allows hospitalists to create notes quickly or record a voice file that can later be used as a progress note [22]. Often when rounding, hospitalists use workstations on wheels (WOWs) as a resource to provide updates and information in real-time with easy accessibility [23].

In analyzing the process design concepts of rounding, general preferences may be established and standardized. The aim of this study is to investigate hospitalist rounding preferences to improve efficiency based on the two categories of work assignment and communication.

## 2. Methods

### 2.1. Survey development

As there are no established, validated surveys examining the preference of the rounding process by hospitalists and their perspectives in efficiency and satisfaction, a survey was developed through an iterative process, including discussions with colleagues and members of the study team. The twenty-five-question survey (Supplemental Table 1) was reviewed and refined for content validity by two PhDs and two MDs. The survey questions address components of both work assignment and communication. Each

**Table 1.** Patient volume/team composition.

Question	Frequency	Percentage
<i>When working with an AP, should volume be higher than when working independently?</i>	114	79.7%
Yes	29	20.3
No		
<i>How many patients should be carried by an AP while working with a hospitalist?</i>	47	32.9%
Less than 8	79	55.2
8–12	15	10.5
13–16	2	1.4
More than 16		
<i>Ideal max number of patients when working independently?</i>	36	25.2%
Less than 12	89	62.2
12–16	18	12.6
17–20	0	0.0
21–24	0	0.0
More than 24		
<i>Ideal max number of patients when working with AP?</i>	9	6.3%
Less than 12	49	34.3
12–16	54	37.8
17–20	27	18.9
21–24	4	2.8
More than 24		

question has a limited number of multiple-choice options. Nine out of the 25 questions had only ‘yes’ or ‘no’ options. A comment box was provided at the end of the survey. The survey was created using the online survey software, Qualtrics XM. The study has been reviewed and deemed exempt by the Institutional Review Board (IRB) of Quinnipiac University.

### 2.2. Participants

Participants included a national sample of currently practicing hospitalists. Pediatric hospitalists and medical trainees (i.e., medical students, residents, and fellows) were excluded. No identifying data from the participants was recorded.

### 2.3. Survey administration

The survey was distributed nationally via email and medical online forums. Email invitations were sent to program administrators, program coordinators, and program staff for internal medicine programs of the Northeast. Online forum requests to complete the survey were submitted to the following: Society of Hospital Medicine and the ACP Hospital Medicine. All email invitations and medical online forum invitations included a cover letter outlining the eligibility criteria for participating physicians and the statement of waived consent.

### 2.4. Statistical analysis

Descriptive statistics, including frequencies and percentages, were used to present the responses to the

survey questions. All analyses were conducted using SPSS v26.

### 3. Results

#### 3.1. Demographics

There were 143 participants who completed the survey of whom 57 (40%) were female. Most respondents were between 30 and 50 years old (65%) and just a few were under 30 or over 70 (2%). There were no statistically significant differences between age groups on any of the survey questions. There were gender-based differences in two survey questions. A higher proportion of females, compared to males, preferred working independently when rounding (60% vs 43%,  $p = 0.05$ ) and were more satisfied with current paging practices than males (65% vs 47%,  $p = 0.03$ ).

#### 3.2. Volume/team composition

The responses to the survey questions regarding patient volume are shown in Table 1. Most respondents (80%) thought patient volume should be higher when working with an advanced practitioner (AP) than working alone and the most frequent choice for number of patients an AP should carry while working with a hospitalist is between 8 and 12 (55%). When working independently, the ideal maximum number of patients for a hospitalist was between 12 and 16 (62%) with no one choosing more than 20. However, when working with an AP, (22%) of respondents thought the ideal maximum was greater than 20.

#### 3.3. Geographic rounding

Over 85% (122) thought geographic rounding was efficient, while less than 6% (8) believed non-geographic rounding was more efficient. An additional 8% (11) thought both were equally efficient.

#### 3.4. EMR

Almost all respondents (142/143 = 99%) had received EMR training and most (127/143 = 89%) have used paper charts. Nearly all preferred EMR to paper charts (133/143 = 93%), although 41 (29%) respondents found EMR too complex to navigate.

#### 3.5. Paging

Response frequencies to the paging questions are shown in Table 2. The majority (52%) of respondents use text messaging for paging, while 61 (43%) use a physical pager. Responses were nearly split with

**Table 2. Paging.**

Question	Frequency	Percentage
<i>Hospital paging preference?</i>	75	52.4%
Text message, cell phone application	61	42.7
Physical pager	7	4.9
Other		
<i>Satisfied with current practice?</i>	77	53.8%
Yes	66	46.2
No		
<i>Are pages in a clear format with patient name, urgency, location, call back number, etc.?</i>	18	12.6%
Never	45	31.5
Sometimes	29	20.3
About half the time	47	32.9
Most of the time	4	2.8
Always		

whether they were satisfied (54%) or not (46%) with the current practice. It was fairly split between those who get a page in clear format less than half the time (44%) versus those who get it over half the time (36%). Females, compared to males, were more likely to be satisfied with current paging practices (65% vs 47%,  $p = 0.03$ ). Those who used text message when compared to a physical pager were more satisfied with current practice (54/75 = 72% vs 18/61 = 30%,  $p < 0.01$ ) and more likely to receive page in clear format most of time (33/75 = 44% vs 14/61 = 24%,  $p < 0.01$ ).

#### 3.6. Consults

Table 3 shows the responses to the consulting specialists' questions. Respondents thought the most efficient interaction with a consultant was calling and speaking with the consultant (52%) and text messaging (40%). Most (73%) would prefer not to see a patient with the consultant. The preferred follow-up method with a consultant was speaking by phone (67%) followed by paging/messaging (24%).

**Table 3. Consulting/specialists.**

Question	Frequency	Percentage
<i>Which interaction with consultant/specialist is most efficient?</i>	3	2.1%
Calling and leaving message to specialist	75	52.4
Calling and speaking to specialist	4	2.8
Paging	57	39.9
Text message	4	2.8
Other		
<i>Prefer seeing patient with consultant/specialist?</i>	39	27.3%
Yes	104	72.7
No		
<i>How would you prefer consultant/specialist to follow-up with you?</i>	2	1.4%
Calling and leaving message	96	67.1
Speaking over the phone	34	23.8
Paging/messaging the recommendation	10	7.0
Notification by consultant to read her note	1	0.7
Other		

### 3.7. Documentation

The most efficient style of dictation for documentation was thought to be using Dragon (59/143 = 41%) followed by typing on a computer (52/143 = 36%). When using Dragon, the hand-held microphone method (67/143 = 47%) was preferred to the phone application (33/143 = 23%).

### 3.8. Workstation on wheels (WOWs)

Most respondents work in a hospital with WOWs (73%) but the majority do not use them even though most (74%) think they can improve efficiency. There are only (12.6%) of respondents that use WOWs, (37.8%) that have WOWs available but do not use them, and (23.1%) have WOWs that are not assigned to hospitalists. Slightly over 16% thought an EMR phone application is more useful than WOWs, while 24% did not think so. The number of respondents that have not used either or were unsure were both at (15.4%) while (29.4%) of respondents believe that the EMR phone app and the WOWs are not mutually exclusive.

### 3.9. Rounding preference

50% preferred rounding independently, 34% preferred rounding with an AP, and 62% preferred rounding with a resident. A higher proportion of females, compared to males, preferred working independently when rounding (60% vs 43%,  $p = 0.05$ ). Reasons chosen that prevent rounding from being efficient were receiving non-urgent pages inappropriately (63%) followed by large page volume (42%). Also, short time span between pages and receiving pages with poor content were chosen by one-third (33%) of respondents.

## 4. Discussion and conclusion

In this widely distributed survey, there were noticeable preferences by hospitalists when it comes to improving efficiency while rounding. With over 140 respondents, only 40% were female. This surprisingly corresponds with data from 2012 to 2013 noting that the primary care workforce in hospital medicine was 60% male and 32% female [24]. While this shows a continued, unchanging disparity in hospitalist medicine, this survey directly represents physician preferences dependent on gender. Furthermore, it was found that women significantly prefer rounding independently more than men and were significantly more satisfied with current paging practices than men.

The preference by hospitalists to have a patient census when rounding independently between 12

and 16 aligns with the commonly found volume of 15 in another study [8]. Most respondents (80%) thought patient volume should be higher when working with an advanced practitioner (AP) than working alone. The most frequent choice for number of patients an AP should carry while working with a hospitalist is between 8 and 12 (55%), with 'Less than 8' being the response of another 33% of respondents. This is somewhat aligned with hospitalists' response to the 'ideal maximum number of patients when working with an AP' where 57% choose 17 to 24. There is a discrepancy between the patient volume stated for APs and the total number, when rounding with an AP. This may warrant further exploring of how APs can be best integrated into hospital settings for maximum efficiency. Additionally, it was more preferable for hospitalists to round independently than to round with an AP with rounding with a resident to be the most preferred. Perhaps this may be due to hospitalists having a desire to be a part of an academic environment.

Further studies are needed to investigate why there is a preference for hospitalists to round with residents as this may be a cost-effective decision for the hospital. It is well-known that residents are paid less on average (\$61,200) [25] compared to APs (\$122,973) [26]. Since there is some discrepancy amongst the ideal patient census a hospitalist should have with an AP, hospitals may consider having more hospitalists round with residents. In addition, a greater issue may be addressed due to the shortage of general internists in the US possibly due to dissatisfaction [27–29]. Having more residents may help close that gap and increase hospitalist satisfaction. More research should be done to determine whether having more hospitalists round with residents than APs would be a more efficient model for both hospitalists and hospitals.

In correlating the respondents' satisfaction with the hospital paging preference, an interesting finding may be concluded. Only 23.4% of hospitalists working in a hospital that use physical pagers are satisfied with the current practice yet 70.1% of those who use text messaging or a cell phone application are satisfied with the current practice. Those who are satisfied with current paging practices, with majority being those who use text messaging or cell phone application, only 23.7% report getting a page not in a clear format. This value is 63.7% for those who are not satisfied with current paging practices with majority being those who use a pager. This can provide clear evidence that physical pagers should be replaced by text messaging or usage of phone applications.

This study suggests hospitalists have a preference for utilizing technology to improve efficiency. There was no significant difference in age when accounting for rounding preferences that involved technology

and hospitalists were found to prefer paging through texting or a physical pager. They also prefer to communicate with the consultant via text or phone call, not in-person. Regardless of age, only 29% of respondents felt their EMR was too complex. Unfortunately, while hospitalists have technology and resources available, they do not always use them. Most hospitalists noted to have access to WOWs and that they felt WOWs would improve efficiency. Additionally, dictation via Dragon microphone is the preferred method for documentation over using a phone application. This is shown amongst hospitalists who have used both the hand-held mic and phone application for dictation.

As stated earlier, there is currently no data on what is declared as the gold standard for rounding processes. In the absence of a recognized process, a collection of this survey's findings can serve a leader well when designing the rounding process at a new hospitalist unit. Shift volume of patients should be set to 17 to 20 for hospitalists working with an AP, and 12 to 16 for those without one. If hospitalists' job satisfaction is the primary decision criterion for the leadership, rounding with an AP should be an option based on each hospitalist's preference. Residents may firstly be considered to work with the hospitalists since that was preferred to rounding independently or with an AP. Assigning patients to hospitalists should be based on geographic proximity. After making sure all staff receive the necessary EMR training, with sufficient knowledge to proficiently navigate the system, EMR should be the sole medium to use; paper charts should not be used. Hospitals should use text messaging or phone applications over physical pagers. Since 80% of pages come from nurses [16], it is imperative that nurses and other staff responsible for sending pages be properly trained to use standardized templates. They should be fully aware of the negative impact non-urgent pages have on a hospitalist's performance. For hospitalist communication with specialists, calling and speaking directly should be the method of choice. In the absence of a live connection, text messaging should be the substitute. For documentation purposes, hospitalists should use Dragon dictation, using a hand-held microphone. Lastly, WOWs should be provided to the hospitalists, along with appropriate training to resolve all usage issues.

There are several limitations to this study. There are limitations to the survey design, including the lack of additional demographic information such as type of hospital (medium-sized, academic, etc.), geographic location, age of respondent, and years in practice as well as a limited sample size. Hospital type and geographic location may impact the amount of APs, patients, consultants, and technology available to hospitalists. Years in practice may directly

impact preferences for technology use. Additional information was not gleaned regarding why physicians prefer working with residents instead of APs or why physicians noted that WOWs improve efficiency but do not use them. There was a lack of the option 'other' for certain questions, which may cause a hospitalist to forcibly choose an answer which was not their intended choice. A slight selection bias was present as hospitals with internal medicine programs were targeted specifically in the Northeast when the survey was distributed via email. Additionally, some of the respondents who accessed the survey via forums may have little to no experience when rounding with residents or advanced practitioners.

Overall, this survey of over 140 hospitalists provided preferences for improving efficiency based on elements from communication and work assignment. Implementation of these preferences along with studies conducted to further analyze preferences of hospitalists may lead to increased productivity and contentment of hospitalists in any domain.

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## Author's contribution

All authors made substantial contributions to the conception and design of the work or the acquisition, analysis, or interpretation of data for the work; drafted the work or revised it critically for important intellectual content; had final approval of the version to be published; and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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