Patient Characteristics and Disposition After Pediatric Medical Emergency Team (MET) Activation: Disposition Depends on Who Activates the Team

abstract

OBJECTIVES: This study focused on health care staff (HCS) responsible for activating the medical emergency team (MET) at a pediatric tertiary hospital using a well-established rapid response system. Our goals were to report the patient characteristics, MET interventions, and disposition by activating HCS.

METHODS: This is a retrospective cohort study of pediatric patients who received MET activation at the Children's Hospital of Eastern Ontario in Ottawa, Canada. Data were obtained from a prospectively maintained rapid response system database. The primary outcome was PICU admission, with the number and type of interventions performed as secondary outcomes.

RESULTS: The most common MET activators were physicians (410, 53.3%) with nurses generating a comparable number (367, 47.7%). Significant differences in PICU admission rates were observed between activator groups, with physicians having statistically higher PICU admission rates when compared with nurses (25.2% vs 15.0%, \( P = .001 \)). Compared with physicians, nursing-led activations on surgical patients had significantly lower odds of PICU admission relative to medical patients (odds ratio 0.19 vs 0.67; \( P = .03 \)). No significant difference was observed in the type or number of interventions between any subgroup based on patient (surgery vs medical) or activator type.

CONCLUSIONS: This study suggests that when nurses activate MET, patients are less likely to be transferred to the PICU despite receiving similar type and number of interventions. Our study results may help direct education initiatives aimed at enhancing the effectiveness of the afferent limb through informing specific HCS as to the importance of their role in using the MET.

Rapid response systems (RRSs) are recommended to improve patient outcomes through the early identification and management of deteriorating ward patients by a Medical Emergency Team (MET). The essential “limbs” for successful RRS implementation include the administrative component, the afferent component (the event detection and response triggering), the efferent component (crisis response), and a process improvement component. The afferent limb is designed to identify clinical deterioration in patients and trigger a response. This includes the criteria for calling the MET, the health care staff (HCS) who trigger a MET activation, and the mechanism of activation.

This study focused on the afferent limb and the HCS responsible for initiating a MET activation. Late identification of evolving critical illness in hospitalized patients is common and leads to delayed interventions, and worse clinical condition at ICU.
admission. The success of any RRS relies on the ability of the ward HCS to not only recognize patient deterioration but also their own belief that activating the MET will result in patient benefit. Some evidence suggests that HCS may not appreciate their important role in and the benefits to MET. The MET may not appreciate their importance in patient care. Some evidence suggests that HCS may not appreciate their importance in patient care. Shearer et al (2006) suggested that many bedside staff believe that even when a patient meets activation criteria, no harm will come to the patient if they don’t activate the MET. Jones et al (2006) also suggested that nurses, specifically, may not fully appreciate the benefit of calling the MET, as they are unaware of the outcome for their patients if they activate the MET. Currently, there are no studies describing the relative contributions of different HCS in MET activations and the differences in patient outcomes. Understanding the differences in patient characteristics and disposition among HCS could be an important part of RRS process improvement initiatives aimed at enhancing the effectiveness of the afferent limb.

The objective of this study was to report patient characteristics, MET interventions, and patient disposition by the type of activating HCS at a pediatric tertiary hospital with a well-established RRS. Our goals were to explore whether HCS activate the MET differently and, if so, whether the difference is associated with patient disposition.

METHODS
Study Design and Setting
This is a cohort study of patients <18 years old, who received MET activation during hospitalization at the Children’s Hospital of Eastern Ontario (CHEO) in Ottawa, Canada, over a 49-month period between February 2007 and December 31, 2011. CHEO is a freestanding tertiary pediatric hospital affiliated with the University of Ottawa and is accredited for training by the Royal College of Physicians and Surgeons of Canada. There is a pediatric cardiac surgical program and a Pediatric Critical Care Training Program. CHEO has 166 inpatient beds, including 10 beds in the PICU and >6000 admissions to the hospital each year. There are no in-house overnight hospitalists.

Description of RRS
The Ministry of Health and Long Term Care of Ontario funded CHEO to implement an RRS by using a physician-led MET in 2006. The MET is composed of a critical care physician, critical care nurse, and critical care–trained respiratory therapist. A dedicated PICU physician attends all daytime activations with overnight coverage provided by in-house PICU fellows or residents with PICU attending back-up. Any HCS can activate the MET day or night with patients’ parents/guardians activating the MET through their primary nurse or physician. The criteria for MET activation are based on the criteria by Tibballs and Kinney and include activation for parent/guardian or HCS concern. The MET is activated by using a dedicated pager with the MET arriving within 5 to 10 minutes at the patient bedside. The MET assessment involves participation of the HCS who activated the team and the patient’s primary nurse and physician, with the MET deciding whether the patient requires PICU admission. The patient’s primary medical team usually consists of 1 attending physician, 1 senior resident, and multiple junior residents and medical students. If the patient remains on the inpatient ward, he or she may be followed until the MET and the primary medical team agree that the patient no longer requires follow-up. The MET does not respond to patients in the emergency department, operating room, post–anesthetic care unit or NICU. MET activations replaced all PICU consultations for inpatients with transfer to the PICU occurring only through an activation of the MET. Replacing all PICU consultations with MET activations was done to increase MET utilization and interprofessional care during patient deterioration; the rationale being that if a patient was sick enough to require PICU consultation, and possible transfer, he or she would benefit from all MET members at the bedside. The CHEO RRS is a 2-tiered system, as MET activations and code blues are distinct with 2 separate teams responding. Patients discharged from the PICU are followed by the MET with 2 visits in 48 hours to ensure a smooth transition to the inpatient ward.

RRS Electronic Database
Since January 2007, CHEO has prospectively collected information on RRS activity through a data collection tool and database developed by experts. Data are collected on each MET assessment and recorded on a standardized data collection tool by the MET nurse and transcribed into the electronic database. Detailed information on the outcome of each MET assessment is recorded and includes patient demographics, as well as presence and type of organ dysfunction, recent surgery, ward type, most responsible service, HCS type responsible for activating the RRS, interventions performed, plan...
for follow-up, and disposition. Multiple HCS types can be recorded when the decision appears to have occurred jointly. Seasons were defined as follows: spring (March 20 to June 20), summer (June 21 to September 21), fall (September 22 to December 21), and winter (December 22 to March 19).

**Cohort Identification, Exposure, and Outcome Variable Determination**

After CHEO Research Ethics approval, patient assessments representing MET activations and follow-up visits were identified and extracted from the database. A MET activation was defined as a new referral to the MET. A follow-up visit was defined as a planned assessment by the MET for a patient triaged to remain on the inpatient ward. A PICU discharge assessment was defined as a planned visit of a patient recently discharged from the PICU. An unplanned PICU discharge assessment occurred when the MET was called to see a patient before, or in addition to, the planned PICU discharge assessment. An unplanned MET follow-up assessment occurred when the MET was called to see a patient before, or in addition to, the planned MET follow-up after an activation. MET activation and follow-up visits were linked such that a full patient encounter could be described and evaluated. The primary exposure of interest was the activating HCS, grouped into 3 categories: physician (including attending physician or resident), nurse, and other (respiratory therapists, physiotherapists, social workers, administrative staff, and parents/guardians). The outcome of primary interest was PICU admission; the analysis evaluated not only the assessment as part of the MET activation, but included subsequent follow-up visits. Secondary outcomes were the number and type of interventions performed. For each patient assessment, the database recorded the specific interventions and investigations performed by the MET, including airway repositioning or suctioning, artificial airway placement, intubation, noninvasive ventilation, nebulized medications, chest physiotherapy, insertion of pleural drain, vascular access, fluid or blood product administration, inotropes or vasopressors, antiarrhythmics, mannitol/3% saline, or request for chest radiography. Patient charts were also reviewed and the following interventions or investigations were recorded: antiepileptics, steroids, analgesics and sedatives, antihypertensives, magnesium sulfate for asthma, diuretics, antibiotics, oxygen, laboratory testing, imaging, and modification to intravenous fluid. When data elements were missing in the RRS database, MET activation forms were reviewed.

**Statistical Analysis**

For descriptive statistics, continuous variables were provided as medians with interquartile ranges (IQRs) and categorical variables were presented as point estimates with 95% confidence interval (CI). Associations were sought between exposure, outcome, and other patient characteristics by using \( \chi^2 \) or Fisher’s exact (categorical variables) and Wilcoxon rank sum (continuous variables) tests. Multivariate logistic regression analysis was used to control for potential confounders of the association between the activating health care provider type and PICU admission. To avoid multivariate model overfitting, only variables with \( P < .20 \) in univariate analysis were considered. A backward elimination regression approach was used beginning with all potentially significant variables and eliminating the least significant variable until all remaining had \( P < .05 \). Odds ratios (ORs) were reported with 95% CIs. A \( P < .05 \) was considered statistically significant. SAS software (version 9.3; SAS Institute, Inc, Cary, NC) was used for the statistical analysis and sigmaplot (version 12.3; Systat software) for graph preparation.

**RESULTS**

**Number and Type of Activations**

During the 49-month study period, there were 800 MET activations on 626 separate patients identified within the database, for an activation rate of ~31 activations per 1000 hospital admissions (~26,000 admissions in 49 months). There were 672 (84.0%) new activations, 61 (7.6%) unplanned PICU discharge assessments, with the remaining 67 (8.4%) representing unplanned MET follow-up assessments of ward patients.

**Cohort Characteristics**

The median patient age at time of activation was 34 months (IQR 4.5–134). For the study cohort, 625 (83%) were admitted under a medical service, with the remaining 17% cared for by a surgical specialty. In total, 86 (10.8%) were recorded as having had surgery in the past 7 days. More than half (59.4%) of the patients were identified as having 2 or more diseased organs at time of the MET activation. There were 458 activations (57.3%) daytime (07:00–19:00) with 74 (10.9%) occurring on a weekend day. Activations during the winter months were most common (279, 34.9%) with activations during summer and spring months having the lowest frequency (144, 18%). Broad categories were used to identify the reason for activation, and included respiratory (388, 48.5%), circulatory...
(145, 18.1%), neurologic (130, 16.3%), and other (273, 34.1%) concerns.

**Activation Outcomes**

A total of 174 activations (21.8%) resulted in a PICU admission at the time of first assessment. Twenty-three patients (2.9%) were admitted to the PICU on a planned follow-up visit after the new activation. At the initial MET activation, the MET performed at least 1 intervention in 595 (74.4%) cases, with 614 (76.7%) of the cases receiving at least 1 MET intervention over the course of the patient encounter (activation and follow-up visits).

**Activator Characteristics**

At least 1 HCS activator could be defined from the electronic database for 753 activations, and after review of the patient chart this number was increased to 769. As the database allowed >1 activator to be recognized, 47 (5.9%) of the MET activations had 2 or more HCS activators. The most common activators were physicians (410, 53.3%). Nursing staff generated a comparable number of activations (367, 47.7%), whereas other HCS were involved in 40 activations (5.2%).

**Comparison of Patient Disposition and Characteristics by Activator Type**

As shown in Fig 1, there were significant differences between activator groups and PICU admission rates (P < .004). For the direct comparison of physicians and nurses groups, nurse-requested activations had statistically lower PICU admission rates after both the initial MET activation (25.2% vs 15.0%, P = .001) and over the entire encounter (29.0% vs 17.8%, P = .0006). Given the small size of the other activator category, no further comparisons concerning this group were performed.

Table 1 compares patient characteristics, activation characteristics, and other MET outcomes between nurse- and physician-requested activations. Nursing-requested activations were 3 times more likely to occur on children already being followed by the MET after PICU discharge (a planned follow-up visit) and to involve surgical patients. Physician-requested activations were more likely to occur during the daytime and on the weekend. No difference, between physicians and nurses, was observed for the 3 major indications (respiratory, circulation, neurologic), and the groups received a similar number and type of interventions. After adjustment for numerous potentially confounding variables (shown in Table 2), including recent surgery and most responsible service, nurse activation remained significantly associated with reduced odds of PICU admission (OR 0.58; CI 0.40–0.84). Table 3 shows the frequency of specific interventions for nursing- and physician-requested activations. Only sedative use was determined to be statistically different, with the higher rate occurring among nurse-requested MET activations (5.9% vs 2.7%, P = .04). We further explored the observation by guest on October 16, 2017http://hosppeds.aappublications.org/Downloaded from
that surgical patients were overrepresented within the nursing subgroup through an evaluation of variable interactions. As shown in Table 4, for both medical and surgical patients, nurse-initiated activations were statistically less likely to be admitted to the PICU. Further, the odds of PICU admission were much lower when nurses activated on patients admitted under a surgical service compared with a medical service (OR 0.19 vs 0.67; \( P = 0.03 \)). Despite this difference, surgical patients with nursing-led activations were just as likely to receive a MET intervention (78% vs 78%), and had an identical median number of interventions and IQR (median 2; IQR 1–4) when compared with medical patients.

### Patient Disposition and Characteristics by Activator Number

PICU admission rates were higher for patients identified as having multiple HCS activate the team (Fig 1). Despite the small sample size, the difference in proportion who were admitted to the PICU after MET activation achieved statistical significance (34.0% vs 20.6%; \( P = 0.03 \)). Patients who had multiple HCS agree to activate the MET were statistically more likely to have a respiratory indication (66.0% vs 48.8%; \( P = 0.02 \)) and to have the activation occur in the context of a recent MET activation (19.2% vs 7.5%; \( P = 0.01 \)). Although differences in age and rates of daytime activations were suggested, neither quite achieved statistical significance.

### DISCUSSION

This study focused on the RRS afferent limb and the HCS responsible for initiating a MET assessment. Our results show that patient disposition differed by activating HCS, with patients who had activations initiated by physicians significantly more likely to be admitted to the PICU despite similar types and number of interventions provided during the MET activation. Furthermore, our results demonstrate that when multiple HCS activate the MET together, patients are more likely to require PICU admission.

Our results show an almost equal distribution of MET activations from nurses and physicians. Our results also suggest that HCS sometimes collaborate and discuss a MET activation together (6%). This study demonstrates that nurses were significantly more likely to activate during the day and on surgical patients. We suspect that compared with general pediatric medical staff, surgeons may be less available for patient assessments during the day because of operating room commitments. Our finding of similar frequency of nurse- and physician-initiated activations, while on potentially different patient populations, highlights the important contribution of all HCS types in the identification of at-risk patients.

This study evaluated for differences in patient characteristics, MET interventions, and patient disposition depending on the HCS activating the MET. No significant differences were found between nurse- and physician-initiated activation in indication, proportion of patients with multiple diseased organs, or number of interventions received during the MET activation. Evaluation of intervention type further showed that nurse- or physician-initiated activation equally required significant MET interventions, including ventilator support, vascular access, and fluid boluses. With the exception of slightly higher sedative use for patients after nurse-initiated activation, there were no significant differences for any intervention. These

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Adjusted OR</th>
<th>95% CI</th>
<th>( P ) Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCS: Nurse activator</td>
<td>0.58</td>
<td>0.40–0.844</td>
<td>0.04</td>
</tr>
<tr>
<td>Age, per y</td>
<td>0.95</td>
<td>0.93–0.98</td>
<td>0.03</td>
</tr>
<tr>
<td>No surgery, last 7 d</td>
<td>2.52</td>
<td>1.17–5.41</td>
<td>0.02</td>
</tr>
<tr>
<td>Insignificant variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCS: Non-MD/Nurse</td>
<td>0.97</td>
<td>0.42–2.27</td>
<td>0.95</td>
</tr>
<tr>
<td>Indication, other*</td>
<td>1.37</td>
<td>0.94–1.99</td>
<td>0.10</td>
</tr>
<tr>
<td>Weekday</td>
<td>0.79</td>
<td>0.44–1.42</td>
<td>0.43</td>
</tr>
<tr>
<td>Nightshift</td>
<td>0.94</td>
<td>0.66–1.35</td>
<td>0.97</td>
</tr>
<tr>
<td>Season*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring</td>
<td>1.57</td>
<td>0.96–2.58</td>
<td>0.07</td>
</tr>
<tr>
<td>Summer</td>
<td>1.06</td>
<td>0.63–1.80</td>
<td>0.82</td>
</tr>
<tr>
<td>Fall</td>
<td>1.01</td>
<td>0.64–1.58</td>
<td>0.97</td>
</tr>
<tr>
<td>Medical patient</td>
<td>1.09</td>
<td>0.58–2.06</td>
<td>0.78</td>
</tr>
<tr>
<td>Assessment type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unplanned PICU discharge follow-up</td>
<td>0.84</td>
<td>0.40–1.74</td>
<td>0.63</td>
</tr>
<tr>
<td>Unplanned MET follow-up</td>
<td>1.04</td>
<td>0.54–1.98</td>
<td>0.91</td>
</tr>
<tr>
<td>Multiple diseased organs</td>
<td>0.88</td>
<td>0.61–1.26</td>
<td>0.47</td>
</tr>
</tbody>
</table>

Variables with \( P < .2 \) in bivariate analysis from Table 1 were evaluated with backward multivariate logistic regression analysis. Patients identified as having multiple activators were excluded from the analysis. Variables were removed from the model one at a time until only those with \( P < .05 \) remained. \( P \) values for insignificant variables represent those calculated when placed individually in multivariate regression with activator type, patient age, and surgical variable in post hoc sensitivity analysis. MD, medical doctor.

*Other indication represents concern by activating health care provider outside of airway, breathing, circulation, or neurologic.

*Winter represents the comparison group.
results show that nurses call the MET appropriately for changes in a patient’s clinical condition given that the MET provides an equal number of interventions as when physicians call the MET. Although this analysis demonstrated that both nursing- and physician-initiated activations frequently result in PICU admission, our results showed that a significantly higher proportion of patients require PICU admission when a physician requests the MET activation. Our results also showed that the odds of PICU admission were much lower when nurses activated the MET for patients admitted under a surgical service compared with a medical service.

Research supports the need for ongoing education initiatives to inform all HCS of their important role in using the RRS.1,5,6 Our study demonstrates an effective afferent RRS arm requires support and activation from multiple HCS. We showed that patients are just as likely to receive the same number and type of interventions regardless of which HCS activate the MET, which may help address concerns regarding nursing comfort and confidence in activating the MET for their patients. Jones et al5 suggested that the number of activations by the bedside nurse could be increased by collaborative communication regarding patient outcomes after MET activation.

This study has a number of limitations. First, this is a single-center study using an administrative database that may include absent confounders and missing data. We did address the limitation of missing data through a review of hospital RRS paper charts. Most importantly, with the exception of diseased organs and evaluating the number and type of MET interventions, it was not possible to further report on, or better control for patient complexity or illness severity by using a validated score (eg, Pediatric Early Warning Score). Further, the database did not collect detailed reasons for or against timing of MET activations. Second, as all PICU consultations have been replaced by MET activations in our hospital (and the province of Ontario), it is possible that

### Table 3: Comparison of Intervention Type by Nurse and Physician Activators

<table>
<thead>
<tr>
<th>Intervention Type</th>
<th>Physician</th>
<th>Nurse</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intubation</td>
<td>0.3 (1)</td>
<td>0.6 (2)</td>
<td>.60</td>
</tr>
<tr>
<td>Artificial airway</td>
<td>1.1 (4)</td>
<td>2.5 (8)</td>
<td>.24</td>
</tr>
<tr>
<td>Invasive ventilation</td>
<td>0.5 (2)</td>
<td>0.6 (2)</td>
<td>1.00</td>
</tr>
<tr>
<td>Noninvasive ventilation</td>
<td>6.5 (24)</td>
<td>75 (24)</td>
<td>.65</td>
</tr>
<tr>
<td>Nebulized medication</td>
<td>16.8 (62)</td>
<td>13.1 (42)</td>
<td>.20</td>
</tr>
<tr>
<td>Physiotherapy</td>
<td>9.5 (35)</td>
<td>78 (25)</td>
<td>.50</td>
</tr>
<tr>
<td>Suctioning</td>
<td>18.7 (69)</td>
<td>23.8 (76)</td>
<td>.11</td>
</tr>
<tr>
<td>Pleural drain</td>
<td>0.3 (1)</td>
<td>0.3 (1)</td>
<td>1.00</td>
</tr>
<tr>
<td>Magnesium sulfate</td>
<td>3.8 (14)</td>
<td>2.2 (7)</td>
<td>.27</td>
</tr>
<tr>
<td>Oxygen administration</td>
<td>15.7 (58)</td>
<td>20.0 (64)</td>
<td>.16</td>
</tr>
<tr>
<td>Chest radiograph</td>
<td>26.3 (97)</td>
<td>25.9 (83)</td>
<td>.93</td>
</tr>
<tr>
<td>Circulation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vasopressors</td>
<td>1.1 (4)</td>
<td>0.9 (3)</td>
<td>1.00</td>
</tr>
<tr>
<td>Vascular access</td>
<td>23.6 (87)</td>
<td>21.9 (70)</td>
<td>.59</td>
</tr>
<tr>
<td>Antiarrhythmics</td>
<td>0.8 (3)</td>
<td>0.9 (3)</td>
<td>.86</td>
</tr>
<tr>
<td>Fluid bolus</td>
<td>17.9 (66)</td>
<td>19.4 (62)</td>
<td>.62</td>
</tr>
<tr>
<td>Blood product</td>
<td>3.8 (14)</td>
<td>3.4 (11)</td>
<td>.80</td>
</tr>
<tr>
<td>IVF change</td>
<td>3.5 (13)</td>
<td>5.6 (18)</td>
<td>.18</td>
</tr>
<tr>
<td>Diuretics</td>
<td>3.8 (14)</td>
<td>3.1 (10)</td>
<td>.84</td>
</tr>
<tr>
<td>Antihypertensives</td>
<td>0.3 (1)</td>
<td>0 (0)</td>
<td>1.00</td>
</tr>
<tr>
<td>Neurologic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mannitol</td>
<td>0.8 (3)</td>
<td>1.2 (4)</td>
<td>.71</td>
</tr>
<tr>
<td>Antiseizure</td>
<td>4.1 (15)</td>
<td>2.5 (8)</td>
<td>.25</td>
</tr>
<tr>
<td>Head imaging</td>
<td>1.6 (6)</td>
<td>2.8 (9)</td>
<td>.29</td>
</tr>
<tr>
<td>Sedation/Analgesia</td>
<td>2.7 (10)</td>
<td>5.9 (19)</td>
<td>.04</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laboratory testing</td>
<td>31.2 (115)</td>
<td>32.2 (103)</td>
<td>.77</td>
</tr>
<tr>
<td>Other imaging</td>
<td>7.1 (26)</td>
<td>8.4 (27)</td>
<td>.49</td>
</tr>
<tr>
<td>Consultation</td>
<td>5.2 (19)</td>
<td>8.1 (26)</td>
<td>.11</td>
</tr>
<tr>
<td>Antibiotics</td>
<td>5.7 (21)</td>
<td>5.0 (16)</td>
<td>.69</td>
</tr>
<tr>
<td>Steroids</td>
<td>1.1 (4)</td>
<td>1.9 (6)</td>
<td>.53</td>
</tr>
</tbody>
</table>

Interventions represent those received at the initial assessment and do not include cases in which there were multiple HCS activators identified. Values represent percentages (with counts). P values calculated using χ² or Fisher’s exact tests. IVF, intravenous fluids.

* Other imaging does not include chest radiograph or head imaging.

### Table 4: PICU Admission After MET Activation by Patient Type and HCS Activator

<table>
<thead>
<tr>
<th>Patient Type</th>
<th>Nurse</th>
<th>Physician</th>
<th>OR (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRP, medicine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PICU admission, no</td>
<td>78.7 (177)</td>
<td>71.3 (228)</td>
<td>0.67 (0.45, 1.00)</td>
<td></td>
</tr>
<tr>
<td>PICU admission, yes</td>
<td>21.3 (48)</td>
<td>28.7 (92)</td>
<td>0.67 (0.45, 1.00)</td>
<td></td>
</tr>
<tr>
<td>MRP, surgery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PICU admission, no</td>
<td>90.9 (70)</td>
<td>65.5 (19)</td>
<td>0.19 (0.06, 0.57)</td>
<td>.03*</td>
</tr>
<tr>
<td>PICU admission, yes</td>
<td>9.1 (7)</td>
<td>34.5 (10)</td>
<td>0.19 (0.06, 0.57)</td>
<td>.03*</td>
</tr>
</tbody>
</table>

MRP, most responsible physician.

Data are expressed as percentages (counts). ORs represent risk associated with PICU admission for nursing-initiated MET activations compared with physicians within each of the most responsible service groups. The ORs provided (with 95% CI) represent the odds of admission for nurses relative to physicians for both medical and surgical patients.

* The P value shown tests whether the difference in OR for the 2 groups was statistically significant. This was calculated from the change in likelihood ratio statistic after inclusion of an interaction term into logistic regression model.
the total number of MET activations is falsely elevated, as the activation rate includes physicians who would have previously asked for a direct consultation with a PICU physician. This occurrence, and other unmeasured disparity in case-mix complexity or severity, could contribute to some of the significant difference in PICU admission rates between nurses and physicians. Finally, numerous post hoc analyses were required to properly evaluate differences in patient type and MET activation outcomes by HCS type and number; as an exploratory analysis, we did not adjust for multiple comparisons.

CONCLUSIONS
This study evaluated for differences in patient characteristics and disposition depending on the HCS who activate the MET. Our results show that when physicians activate the MET, the patients are more likely to require PICU admission despite receiving the same type and number of interventions as when nurses activate the MET. The results of our study may help RRS administrators provide targeted education initiatives aimed at specific HCS to improve their use of the MET.

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REFERENCES
Patient Characteristics and Disposition After Pediatric Medical Emergency Team (MET) Activation: Disposition Depends on Who Activates the Team
Anna-Theresa Lobos, Rachel Fernandes, Tim Ramsay and James Dayre McNally
Hospital Pediatrics 2014;4;99
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