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" VIEW FROM THE DOOR "

Make Quick Pediatric Transport Decisions

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Abstract Information
Introduction: The primary goal of the Pediatric Assessment Triangle (PAT) is to objectify the "view from the door." Although the PAT is widely taught to prehospital providers and health-care professionals, the tool has not yet been validated. Before one can study the validity of the PAT, one needs to fully describe the practicality and functionality of the tool by exploring whether it's being used, and if so, how it's being used. The primary objective of this study was to determine if experienced providers can use the information gathered from the "view from the door" to make transport decisions on pediatric patients, and if that information fits in with the PAT.

Methods: This is a study using ethnographic analysis strategies for development of themes. A convenience group of 12 EMTs was recruited to observe two videos of pediatric patients and make a transport decision based on their observations.

Results: The mean time to transport decision was 12.25 seconds with a standard deviation of 8.8 seconds. Medics chose to "load and go" in 71% of the cases, and there was no correlation between CUPS status and transport decision as measured by chi square analysis. The information used most frequently to make transport decisions by medics in this study included: a simultaneous airway/breathing assessment, a level of consciousness assessment, a circulatory status assessment, a treatment plan and an anticipation of negative outcomes.

Conclusions: The data from this study support that there are several features of the "view from the door" that experienced prehospital providers are using to make transport decisions on pediatric patients, and they fit in with the PAT. The data also support that the tool is a time-efficient method of triaging patients.

During its annual meeting in October 1998, the American Academy of Pediatrics announced a new method of assessing pediatric patients in the prehospital environment: the Pediatric Assessment Triangle (PAT).

The primary goal of the PAT was to provide an objective outline for the "view from the door" impression that an experienced prehospital provider (EPP) obtains the second they walk into a patient encounter. Many thought the PAT could serve as a new tool for EMS crews to use in making pediatric transport decisions.

The second objective of the PAT, especially useful in pediatrics, is to gain as much information as possible about the patient before disturbing them and their environment. The PAT was designed to guide the clinician through the most important parts of the remote assessment. It allows providers to visually and audibly assess a pediatric patient in three areas: airway/appearance, work of breathing and circulation to the patient's skin.

1. Prehospital providers are taught to perform this remote assessment by doing the following:
2. Gathering information about the patient's airway and overall appearance, including the child's interaction with the environment;
3. Using visual and auditory clues to gather information about the patient's breathing; and
4. Assessing circulatory status of the skin and noting any potential causes of blood volume loss.

The number of variables measured by the provider isn't outlined by the tool. Instead, the PAT serves as a basic framework for use by providers as they start their assessment of the patient. As with other skills, with frequent use and experience, the provider's ability to assess patients using the PAT should continue to mature and become more accurate.

Although the PAT is widely taught to prehospital providers and health-care professionals, the tool had not been validated before this study. Of note, the state of New York was teaching and advocating the use of the PAT in its Emergency Medical Services for Children (EMSC) program (see Figure 1, p. 71, *JEMS* July 2010.), even though there were

no data determining the effectiveness, accuracy or implementation rate of the tool.

The lack of data on the topic presented policy-makers and course instructors with questions that needed to be answered. Before studying the validity of the PAT, many felt it was important to determine and describe the practicality and functionality of the tool by exploring whether it was being used, and if so, how. The primary objective of this study was to determine if EPPs could use the information gathered from the "view from the door" to make transport decisions for pediatric patients, and if that information was consistent with the PAT.

Study Design & Implementation

This study used ethnographic analysis strategies to develop themes. Recorded decision-making processes were also compared to standard triage criteria. A convenience group of 12 EMS providers (six EMTs and six paramedics) was recruited from the community and refresher training courses. Each participant was briefed and asked to observe two videos involving pediatric patients. The definition of "pediatric patient" was any infant discharged from labor and delivery up to and including 18 years of age. There were no exclusion criteria for the participating EMTs.

Eighteen cases were chosen from a library of pediatric patient video cases as defined by New York's Department of Health "CUPS" criteria: four critical, five unstable, five potentially unstable, four stable.1,2 All patient identifiers were removed prior to the receipt of the videos and records to protect patient identities. Internal Review Board approval was obtained prior to the collection of data from human subjects.

The EPPs watched two case videos, selected at random, of two different pediatric patients. Participants were videotaped with audio recording during the interview process to allow for analysis after the encounter. Prior to their involvement in the assessment phase of the study, each EPP was instructed that they would be viewing a videotape of a pediatric case and were to stop the video once they had enough information to determine whether to "load and go," or "stay and play."

"Load and go" meant that the EPP decided their patient should be moved from the scene quickly (with little delay) and transport begun as early as possible. "Stay and play" meant that the EPP would've conducted a more extensive assessment and care on scene and eventually transported the patient.

After each case, the participating EPP was interviewed to determine why they made their decision. While the video they had initially watched was being replayed, the EPP was asked to explain their thought process at the time they were making their decisions. This recall process was facilitated by a ladder survey, in which a semi-structured interview was conducted by a facilitator using the participants' responses as a guide to the use of additional probing questions.

This study design allowed for the collection and analysis of the time it took each EPP to make their decision, and the thought processes behind those decisions. After the interview, the EPPs were given an exit interview questionnaire requiring them to support their decisions in writing.

Interviews were then transcribed and analyzed separately by three research project staff members who extracted themes verbalized by the subjects during the interview. For a

theme to be included in the study results, it had to have appeared in two of the three extractions performed by the individual research staff.

Extracted themes were then analyzed to determine if the criteria the participant used to categorize the patient fit any currently known and used assessments or triage tools. Each EPP's level of training, transport decisions and decision times were then entered into a data format and analyzed for trending using a GraphPad Prism 5 statistical software package.

Results
The theme extraction yielded the following results:

Theme 1: In 22 of the 24 interviews (92%), the EPP verbalized a clear, simultaneous airway/breathing assessment. The methods by which they assessed the patient's airway and breathing included observation of the following: anatomical deformity, chest rise, cry (or lack of), splinting, coughing, belly breathing, head bobbing, respiratory rate, accessory muscle use, retractions, head shaking, audible respiration, visible congestion, respiratory effort, head position, ability to speak and paradoxical breathing. One EPP was an outlier and verbalized that their decision to either "load and go" or "stay and play" was based on the patient's level of consciousness.

Theme 2: In 18 of the 24 interviews (75%), the EPP verbalized an assessment of the patient's level of consciousness. The methods by which level of consciousness was assessed included the following: general interaction with surroundings, playing with a toy, body position, posture, crying, following commands, answering questions, moving all limbs and showing a lack of fear.

Theme 3: In 14 of the 24 interviews (58%), the EPP verbalized an assessment of the patient's circulatory status. The methods by which they assessed circulatory status included the following: skin color, blood loss, contusions to the abdomen, palmar pallor, cheek pallor and peri-oral cyanosis.

Theme 4: In 12 of the 24 interviews (50%), the EPP verbalized a treatment plan. This often included a justification of their decision to either "load and go" or "stay and play." These treatment plans included en-route treatment strategies, such as supplemental oxygen and IV fluids.

Theme 5: In five of the 24 interviews (21%), the EPP verbalized anticipation of a poor outcome. In most cases, the provider was specifically concerned about the patient going into shock.

Other Findings
The mean decision-making time was 12.25 seconds with a standard deviation of 8.8 seconds. It was determined after review of the participant t-tests that the level of EPP training didn't influence the average time to transport decision [t(18)=1.10, p.05].

In the four interviews in which the participants didn't instruct the interviewer to stop the video (n=4), they were able to make a decision at the end of the video, with two being transported early and two staying on scene in the "stay and play" category.

EPPs chose to "load and go" in 71% of the cases, (measured by chi square analysis) with no correlation between the provider-assigned CUPS status and the transport decision.

Discussion
The information used by the EPPs most frequently to make transport decisions was:

- A simultaneous airway/breathing assessment;
- A level of consciousness assessment;
- A circulatory status assessment;
- A treatment plan; or
- Anticipation of a negative outcome.

The top three extracted themes echoed the PAT, with the minor difference being that the EPP appeared to verbalize a simultaneous airway/breathing assessment and a distinctive level of consciousness assessment. This is only slightly different from the PAT taught by the New York state EMS for Children Program (see Figure 1). The data, therefore, support that the PAT is alive and in use by practicing EPPs whether or not they're aware of it.

Interestingly, none of the providers directly referenced the PAT during the interview, an observation which could lend credence to the practicality and ease of using the PAT.

It's important to note that the EPP's assessment of the patient's CUPS status didn't correlate with their decision. In several of the interviews, the EPPs justified their transport decisions by discussing treatment plans and anticipations of negative outcomes, two theme areas that fall outside the PAT.

The fact that these two themes were incorporated into transport decision-making, but the CUPS status was not of interest, might offer some insight into the prioritization of information collected by the remote assessment. For example, if the provider thought a patient might benefit from an intervention, they may have been apt to "stay and play," regardless of the patient's CUPS status.

Use During Triage
Effective triage is the basis for the provision of optimal medical care when called on to sort, manage and transport multiple patients. The use of general, nonspecific triage guidelines would be easier for the prehospital provider to retain and implement. An example of rigid, specific triage guidelines are those underlined by the frequently taught Simple Triage and Rapid Assessment Tool (START) (see Figure 2, pg. 77, *JEMS* July 2010).

START has no way to assign priority to patients within each specific triage category. In reality, injured and ill patients are on a continuum of acuity. Rigid guidelines have the potential to result in inefficient prioritization of patients along the continuum of acuity. In addition, this may affect the likelihood of patients requiring specific treatment to be transported to facilities lacking those services.

Data is available to support the belief that START isn't the ideal tool for EPPs. Risavi and colleagues showed that the mean score of EPPs on a written exam of the START triage method was only 55%. In a stressful mass casualty incident, the accuracy would only decrease.3

One study of the START method showed that triage accuracy within "immediate" and "urgent" groups was even worse.4 The same study also revealed that the triage category selected had no significant affect on incident-to-transport time.

Another study showed that START resulted in frequent overtriage and poor correlation of triage levels and actual outcomes.5 In addition to these concerns about the ability of crews to triage, no guideline assigns pediatric patients to pediatric EDs or specialty centers.

One possible solution is the implementation of the PAT in conjunction with the well-established CUPS assessment. Although the EMS providers in our study didn't use CUPS in their transport decision-making, we believe its use in conjunction with the PAT may be promising in the MCI setting.

The amount of time a provider needs to spend on initial triage has not yet been determined, thus there's a paucity of evidence-based recommendations on how long the triage should take. Therefore, it was valuable to learn in our study how quickly field providers were able to make accurate transport decisions based on the remote PAT assessment of a pediatric patient.

The average decision time of 12.25 seconds was faster than those estimates that have been previously published.6 The fastest decision time was three seconds, and all EPPs were able to confidently make a decision by the end of the video clip, the longest of which was 109 seconds.

A visual assessment takes only a few seconds and is also remote. This means that the provider doesn't need to touch the patient. The ability of providers to make treatment and transport decisions from a distance could prove to be particularly useful in dangerous and uncontrolled environments.

Conclusions

Our results are limited by a small sample size. Therefore a follow-up study with larger numbers would be required to strengthen the conclusions drawn from this data and determine the sensitivity and specificity of the PAT. But it can be concluded from these data that providers can extract information from a remote location about pediatric patients that could be organized into a tool similar to the PAT. It was also shown that, during this early assessment phase,
providers were formulating treatment plans and anticipating potential negative outcomes.

This remotely obtained information directly contributes to transport decisions, a concept this study was designed to elucidate. In most cases, the EPPs extracted and analyzed this information to arrive at a transport decision in less than 20 seconds.

Given that a sensitive and specific prehospital triage tool hasn't yet been developed, we believe the EPP's "view from the door" is just as good as any tool currently being used. The data from this study support that the features of the "view from the door" that experienced prehospital providers are using to make transport decisions on pediatric patients are consistent with the PAT.

The data also support that the tool is a time-efficient method of triaging patients. The PAT

could be taught with more confidence and greater emphasis, and ultimately, applied more broadly to prehospital medicine. Because there hasn't been a triage tool developed for MCI or trauma patients that's sensitive, specific, easily retained and practical, we believe that implementation of the PAT should be considered to offer increased triage accuracy and decrease incident-to-treatment time for the most critical patients. **JEMS**

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