



4-18-2017

## Low Acuity Pediatric Patients Presenting Uncomplicated Colds and Nonspecific Upper Respiratory Symptoms in U.S. Emergency Departments

Margaret Berry  
Western Michigan University, mberry121@gmail.com

Follow this and additional works at: [https://scholarworks.wmich.edu/honors\\_theses](https://scholarworks.wmich.edu/honors_theses)



Part of the Pediatrics Commons

---

### Recommended Citation

Berry, Margaret, "Low Acuity Pediatric Patients Presenting Uncomplicated Colds and Nonspecific Upper Respiratory Symptoms in U.S. Emergency Departments" (2017). *Honors Theses*. 2799.  
[https://scholarworks.wmich.edu/honors\\_theses/2799](https://scholarworks.wmich.edu/honors_theses/2799)

This Honors Thesis-Open Access is brought to you for free and open access by the Lee Honors College at ScholarWorks at WMU. It has been accepted for inclusion in Honors Theses by an authorized administrator of ScholarWorks at WMU. For more information, please contact [wmu-scholarworks@wmich.edu](mailto:wmu-scholarworks@wmich.edu).



Low Acuity Pediatric Patients

Low Acuity Pediatric Patients Presenting Nonspecific Upper Respiratory Infections and  
Uncomplicated Colds in U.S Emergency Departments

Maggie Berry

Western Michigan University

April, 2017

***Abstract***

Emergency departments serve as the nation's hub for patients faced with life-threatening injuries and illnesses. Although the role of emergency departments (EDs) may seem clear by its title, U.S EDs are overcrowded with patients presenting nonurgent symptoms. A significant population of nonurgent ED users are pediatric patients presenting nonspecific upper respiratory symptoms and uncomplicated colds. Findings have uncovered that although pediatric upper respiratory infections (URIs) are one of the most uncommon reasons for hospital admittance from an ED, it is one of the most common reasons pediatric patients are brought into emergency departments. It appears that inappropriate facility usage is associated with patient/guardian difficulty in measuring acuity, low health literacy and misconceptions about the role of emergency facilities. Therefore, the implementation of an infographic depicting available health care facilities, in addition to breaking down URI and colds into their component parts, may assist health care professionals with educating patients about proper facility usage. With a large population of low-literacy patients, implementing comprehensible and simple educational materials in emergency departments may lead to decreased inappropriate facility usage.

### ***Introduction***

Emergency departments are often flooded with low acuity patients causing multiple trickle down consequences for patients, medical professionals and the United States healthcare system. A significant portion of this problem is nonurgent pediatric patients presenting uncomplicated colds and upper respiratory symptoms. In 2005, almost 1.5 million children were brought into U.S emergency departments with cold symptoms and were deemed “treat and release” cases (Merrill, Owens, & Stocks, 2008). This shows that, children were brought into facilities meant for emergent matters because of non-emergent situations. Since pediatric patients often do not make their own medical decisions, this problem is most likely the result of uninformed parents/guardians.

In a survey of parents of children brought into emergency departments for nonurgent illnesses in an urban pediatric emergency department (PED), 38.7% of insured parents did not know what their insurance company considered as an emergency, and 37.7% were not aware that a primary care referral for a nonurgent ED visit was required for coverage (Doobinin et al., 2003). It appears that a significant number of parents are unaware of the expense of a nonurgent pediatric emergency department visit without a referral from their primary care physician. The data also implicates that a population of parents lack the knowledge to differentiate certain low acuity symptoms from high acuity symptoms.

A large portion of low acuity emergency department visits involve patients presenting common cold and upper respiratory symptoms (Merrill et al, 2008). Misconceptions about cold and upper respiratory causes and treatments may be a common reason for inappropriate ED use. One study found that 53% of parents believed that colds required antibiotics (Lee et al., 2003). Inappropriate medical facility utilization is detrimental because it leads to the unnecessary

## Low Acuity Pediatric Patients

exposure of viruses to ED patients and increased antibiotic use. Research has shown that nonurgent ED visits lead to overcrowded emergency departments and longer wait times (Wilson & Hunt, 2003). The inappropriate utilization of emergency medical facilities by pediatric patients and their parents/guardians may harm both the patient and the health care system. There is ample evidence that there is a need for increased patient education in emergency departments.

The purpose of this paper is to describe the current system of patient education in EDs and the factors that influence its success or failure. Much research has uncovered the difficulties associated with describing complex medical directions to a low literacy patient population. Therefore, emphasis on strong communication between ED professionals and low acuity patients about appropriate facility usage and health literacy needs to be addressed.

This paper includes a proposal for an alternative style of education designed for guardians of low acuity pediatric patients presenting common cold and URI symptoms. The proposed educational material is an infographic which presents a visual interpretation of pediatric cold symptoms and gives parents information about what symptoms should be treated in a primary care physician's office, urgent care clinic, and an emergency department. The infographic may be used as a tool primarily for a medical professional to sit down with an under-educated patient about medical facility use, and secondarily as a guide for pediatric patient guardians to use in the future when they are unsure about which medical facility they should take their child to use when the child presents with particular symptoms.

## ***The Role of Emergency Departments***

An emergency department is a region of a hospital responsible for immediate medical care of patients arriving with life-threatening conditions. United States EDs serve as a resource

## Low Acuity Pediatric Patients

for acute diagnostic and treatment with access to outpatient care and rapid hospital admission 24 hours a day, seven days a week (Schuur, 2012). Emergency departments must be prepared with the resources to treat patients with life-threatening conditions. Therefore, pediatric emergency departments are prepared with an increased amount of equipment compared to pediatrician offices and urgent cares, and are staffed more extensively with a spectrum of medical care specialists. The increase in staffing and resources associated with emergency facilities means increased costs for an ED visit compared to a primary care visit (Sturm et al., 2010).

A visit to an emergency department often begins with registration at the entry of the department, followed by a short triage assessment of the patient. Patients can expect to wait in a waiting area for a room in the department to become available, especially if their chief complaint is nonemergent. Once assigned to a room, it can be expected that each patient will interact with multiple health professionals such as, residents, an attending physician, nurses, respiratory therapists, patient care associates and other specialists (Pediatric Emergency Medicine, 2017).

Multiple tests such as x-rays, blood draws, MRIs and CT scans may be expected. Emergency department experiences vary from primary care offices, because unlike the latter, emergency departments do not run on a routine schedule. Due to the expansive amount of diverse illnesses and injuries that can be brought into emergency departments, each day brings a new set of demands for the employees and the facility. On some days, finding the time to attend to a nonurgent patient can be challenging for emergency department employees (Berry et al., 2008).

Emergency departments play a role in the increasing number of hospital admissions, with admissions rising from 34.3 million in 1993 to 39.5 million in 2006 (Schuur, 2012). Hospital admittance means that rather than being discharged from the ED, the patient is assigned

## Low Acuity Pediatric Patients

a room in the hospital to stay in until a physician believes the patient is healthy enough to go home. The length of a patient's stay in a hospital depends on their diagnosis, and increased admission rates create financial consequences for patients as well as hospitals. The cost of inpatient care are twenty-five times that of outpatient care, and some low severity patients admitted into hospitals may face unnecessary hospitalization costs and delayed return to usual activities such as school or work (Dean et al., 2012).

One factor that could be contributing to this growing admittance is the overuse of emergency departments for less urgent conditions. When patients with conditions best suited for a primary care office are brought into an emergency department, research has shown that an ED physician is more likely to admit a patient to the hospital because ED physicians are trained to expect the worst-case-scenario, and have little background about a patient's medical history (Schuur, 2012).

Emergency departments have also faced an increased influx of patients. Between the years 1992 and 2001, ED visits in the United States increased by 17.7 million (Angoulvant, 2013). Therefore, a significant responsibility of emergency departments is to adapt to fluctuating patient loads and overcrowding. Increases in nonurgent ED visits could lead to economic burdens because of expanding ED staffing to compensate for the expanding patient load.

## ***Measuring Acuity***

The term acuity relates to the severity of a patient's condition (Gravel et al., 2012). Triage nurses assess a patient's acuity when a patient first enters an emergency department to prioritize patient wait times based upon the state of each patient's health. Various methods are used to triage pediatric patients, including the Pediatric Assessment Triangle (PAT), which is an

## Low Acuity Pediatric Patients

assessment of the patient's appearance, breathing effort and skin circulation to determine acuity (Horeczko et al., 2011). Medical professionals are trained to evaluate symptoms presented by a patient and detect any abnormalities from the normal state (Stockley, 2013). Frequently, acuity is rated on a 5-level scale and based upon the Canadian Triage and Acuity scale, levels of severity are level 1, resuscitation; level 2, emergency; level 3, urgent; level 4, less urgent; level 5, nonurgent (Gravel et. al, 2012). Therefore, acuity is a quantitative measure of the urgency of patient's medical care (Figure 1).

Post-evaluation hospitalization may be a good indicator of acuity if higher acuity patient populations have a higher percentage of hospitalizations. In a study conducted on the use of the Canadian triage and acuity scale, 664 pediatric patients were labeled as a triage level 4 and 15% were hospitalized (about 100 patients), compared to 53% of the 640 triage level 3 patients (about 339 patients) (Gravel et al., 2012). According to the HCUP statistical brief #52, 2.6% of pediatric patients with viral infections were hospitalized and 1% of pediatric patients presenting other URI symptoms (other than pneumonia and acute bronchitis) were hospitalized (Merrill, C.T, 2008). This data supports that nose, throat and trachea viral infections presented by pediatric patients in



## Low Acuity Pediatric Patients

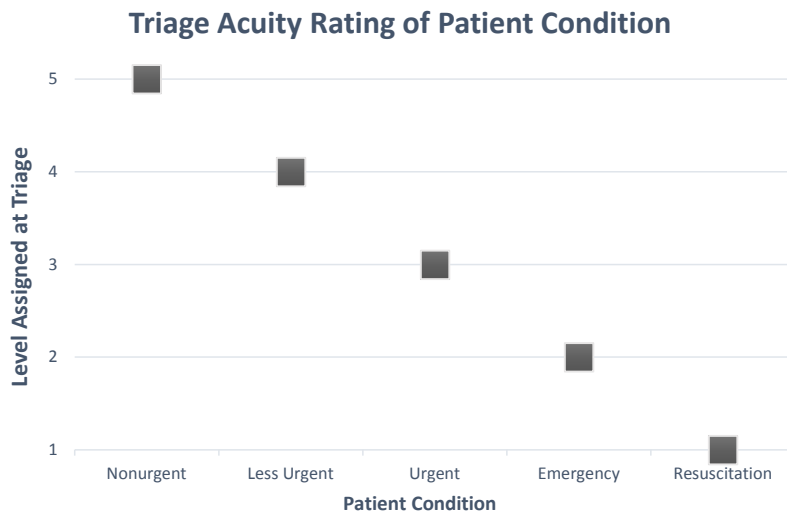


Figure 1. A comparison of triage levels and urgency of a patient condition. A patient of low acuity will be labeled with a higher triage level number because of the correlation between triage levels and urgency. Data based on the American and Canadian Triage and Acuity Scale.

emergency departments are often low acuity. Figures 2 and 3 outline the information found in the HCUP statistical brief #52.

Chest congestion and fever are symptoms of the relatively mild condition of a cold, but may also be symptoms of Pneumonia and upper respiratory infections. Although the symptoms of these conditions have similarities regarding the body parts they affect, the symptoms can differ in severity. Pneumonia and URIs vary from uncommon to common among pediatric patients, respectively. Therefore, more children acquire upper respiratory infections and common colds than Pneumonia, in which about 225,000 children are brought into PEDs for Pneumonia, and 1,500,000 children are brought into PEDs for URIs, annually. The ratio of ED visits to hospital admittance is depicted in Figure 3. Pneumonia is one of the most common reasons for

## Low Acuity Pediatric Patients

pediatric hospital admittance from emergency departments. 21% of pediatric patients diagnosed with pneumonia are admitted, whereas only 1% of pediatric patients diagnosed with an upper respiratory infection are admitted (2008). Hence, upper respiratory infections and Pneumonia differ in regularity and severity.

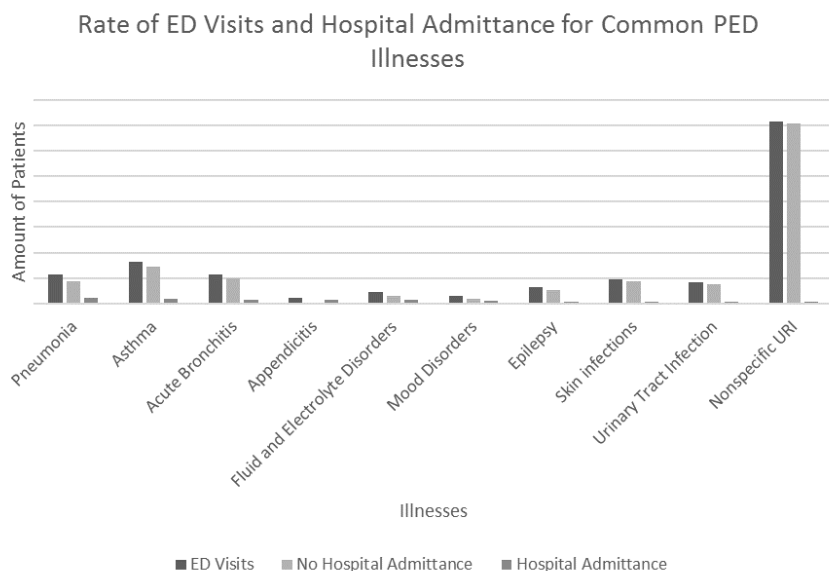


Figure 2. Total emergency department visits, hospital admittances and “treat and releases” for ten most common reasons for pediatric hospital admittance from emergency departments in 2005. Although upper respiratory infections make the top ten, the total amount of ED visits for URIs significantly outnumber the amount of hospital admissions for URIs.

Even though the percentage of hospital admittance and acuity for URIs are low, nonspecific upper respiratory symptoms bring almost 1.5 million children into emergency departments (Merill, 2008). More acute illnesses such as appendicitis appear to account for a smaller percentage of ED visits. Although, every 1.3 ED visits for patients diagnosed with

## Low Acuity Pediatric Patients

appendicitis result in hospital admission, compared with every 101.3 ED visits (for nonspecific URIs) resulting in hospital admittance.

Understanding acuity involves the assessment of the patient's appearance and vitals.

Vitals include the measurement of blood pressure (the tension of the blood in the arteries), oxygen saturation (the amount of oxygen-saturated hemoglobin in the blood), heart rate,

respirations, temperature, and more recently, pain. A fever is a body temperature over 37

°C and

hypothermia is recognized as a temperature of 35.5

°C or lower (Stockley, 2013). Fevers can

increase heart rate, and illness can influence the rate of respirations which are normally 34-40 per minute for infants, 25 for children 1-5 years old, and 16-20 per minute for children older than 5 years (2013).

Parents/guardians must engage in their own form of triage to assess their child's health.

While assessing a child with a possible nonspecific URI, the parent can check the child's temperature for a fever, listen for wheezing, look for colorization of mucus and swelling of glands, look for unusual fatigue, consider past medical history and travel history, and call a primary care pediatrician to better understand the condition of their child (Pennsylvania State University, 2017). Resources such as Penn State's cold assessment can be used to assist parents/guardians while examining their child's condition.

## Low Acuity Pediatric Patients

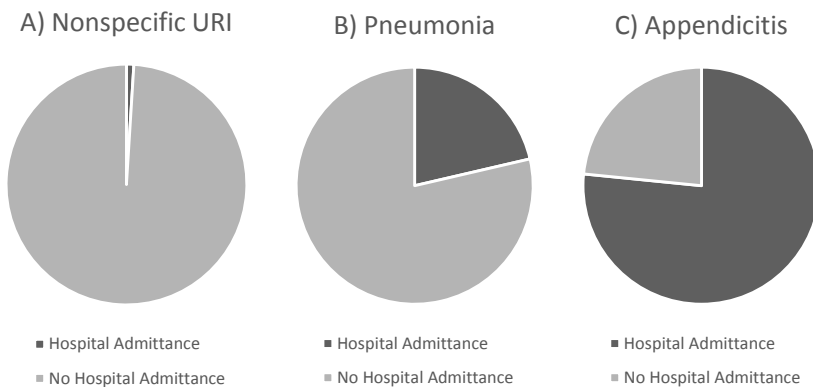


Figure 3. Admittance to hospital from an emergency department. A) percentage for pediatric nonspecific upper respiratory infections, B) Pneumonia, and C) appendicitis.

According to Wong, Claudet, Sorum & Mullet, “63% of parents bringing their children for reasons assessed as nonurgent perceived the visit as ‘very’ or ‘extremely’ urgent; and parents assessed 94% of their visits as urgent, even though 27% of these ‘urgent’ visits were assessed as nonurgent by the physicians” (2015). Therefore, it appears that parents may lack the skills and/or resources to correctly assess the average acuity of their child’s condition. Hence, educating parents about measuring acuity may decrease ED visits.

### ***Nonurgent Emergency Department Use***

Patient explanations for emergency service utilization for nonurgent conditions provide insightful information about the patient population and the current healthcare system. Per Lega and Mengoni (2008), the causes for nonurgent care can be organized into four groups: the need to receive immediate care, preference for an emergency department, difficulty accessing primary care, and wrongful advice by other medical professionals.

## Low Acuity Pediatric Patients

Even though a patient's condition may be labeled as low-acuity, this does not always mean the visit is considered inappropriate. In a study conducted on 422 parents of children 6 months to 18 years who were triaged as lowest acuity, 50% of visits were categorized as appropriate (Stanley et al., 2007). It was concluded that not all nonurgent emergency department visits are ill-judged. This was based upon the facts that, "38% of parents called for advice before coming to the emergency department; of those 60% were told to go to the ED" (2007). Hence, contacting a primary care physician increased the appropriateness for ED utilization. The need for low-acuity immediate care is, "correlated to a misperception of the gravity of the problem, to the need to be reassured, to the need to find immediate relief and discomfort" (Lega & Mengoni, 2008). This increasing pressure for immediate relief of discomfort bestowed upon ED physicians could result in higher hospital admittance and antibiotic prescription rates.

This information implicates that there is a population that lack the ability to self-diagnose, that primary care availability for this population may be insufficient and that increased needs for immediate treatment negatively affects health care. Improving patient reassurance through education and increased available references may decrease pediatric nonurgent ED usage.

### ***Upper Respiratory Infections in Pediatric Emergency Departments***

According to the HCUP Statistical Brief #52, the ten most common reasons pediatric patients are brought into emergency departments include nonspecific upper respiratory infections, superficial injuries, middle ear infections, open wounds of the head, neck and trunk, sprains, fevers, injuries from external causes, viral infections, arm fractures and open wounds of the arms and legs (Merrill, 2008). As shown in Figure 4, 11.6% of pediatric emergency

## Low Acuity Pediatric Patients

department visits were for nonspecific upper respiratory infections and significantly outnumber the other nine reasons for pediatric ED use.

Medical intervention for inappropriate circumstances result in unnecessary costs and resources. Misconceptions of common cold and URI origins and treatments may increase emergency medical facility utilization. A study uncovered that, “although 93% of parents understood that viruses caused colds, 66% of parents also believed that colds were caused by bacteria” (Lee et al., 2003). Thus, it appears that there are misconceptions about common colds amongst a certain population of parents. With the frequency of viral infection transmission among the United States population, URIs and common colds can have large impacts on the U.S health care system. As defined by Mainous, Hueston & Clark:

the common cold is a designation used by both physicians and the general public for a constellation of acute minor upper respiratory tract symptoms. The common cold is a mild, self-limited catarrhal syndrome. It is the leading cause of acute morbidity, visits to a physician, and industrial and school absenteeism (1996).

Their research found that common colds and URIs are often treated with a curative regimen rather than with a symptomatic relief even though a cure for the common cold does not exist (Mainous, Hueston & Clark, 1996). Especially in an emergency department setting, patient discomfort and anxiety may pressure physicians to prescribe curative treatments rather than treatments that only exist to relieve symptoms. This is supported by the statistic that 60% of ambulatory care usage for common colds are treated with antibiotics (1996).

Therefore, even though common colds and URI are often best treated only with symptomatic treatments such as anti-inflammatory medication, hydration and rest, there still

## Low Acuity Pediatric Patients

seems to be a demand for immediate and curative medical care. It's estimated that 25.9 million colds occur per year in the United States. The issue of inappropriate demands for this category of illness is therefore a significant one (1996).

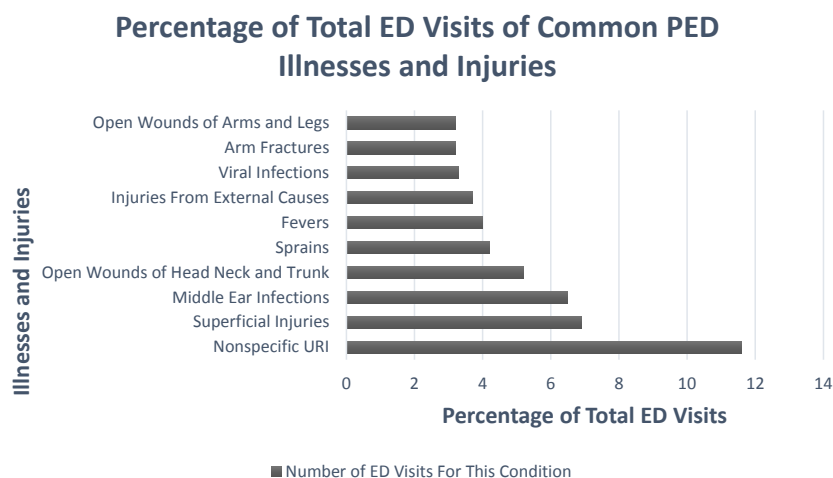


Figure 4. 10 most common reasons for pediatric emergency department use. Reasons diagrammed in figure do not represent all conditions brought into pediatric departments and rate from 3.2% to 11.9% of emergency department use by pediatric patients.

## Demographics of Population

Much research has shown that higher emergency department use rates exist among African American children compared to other racial and ethnic groups, with a similar relationship between children raised in poorer communities than those in affluent ones (Thollaug, 1996). Research conducted by Lega and Mengoni also show that nonurgent ED use is higher among individuals with low-skill jobs, patients who live alone, and foreign nationals

Low Acuity Pediatric Patients

(2008). Medicaid patients who use clinics as a replacement for a primary care physician are more at risk for inappropriate usage of emergency services (Stanley et al., 2007).

When implementing educational material, the literacy of the population using the material is important. Findings on health literacy among ED patients is outlined in Figure 5, in which only 50% of ED users read at the high school level or above (Herndon & Carden, 2011). These statistics indicate that underserved populations consisting of low socioeconomic and low literacy individuals are at risk for improper use of emergency services. ED patients are at high risk for poor reading ability, and misunderstanding of information provided by medical professionals often results in patients with concomitant misunderstanding leading to noncompliance of discharge instructions and unnecessary return visits (2011).

Commented [GC1]: Sources?

Commented [GC2]: with concomitant

Commented [GC3]: misunderstanding leading to noncompliance

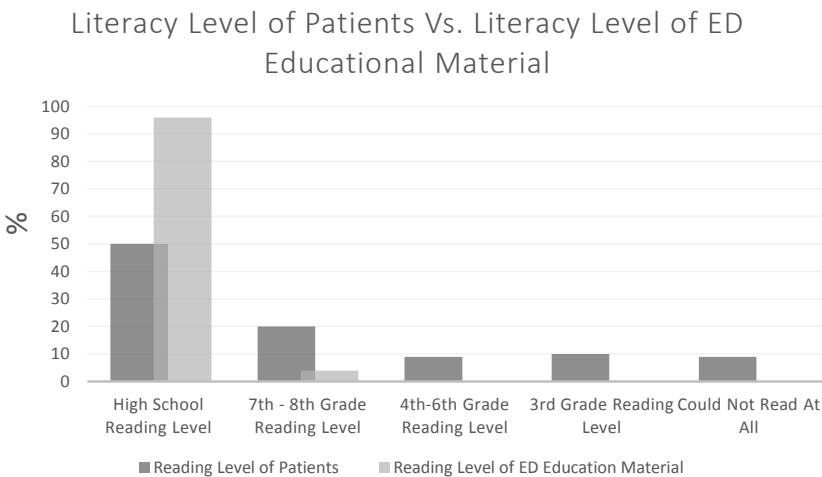


Figure 5. Reading levels of emergency department patients and reading levels of most common emergency department patient-education materials.



***Patient Education in Emergency Department Settings***

A traditional means of educating patients leaving emergency departments is discharge papers. After noticing a significant amount of phone calls by parents of recently discharged pediatric patients from a PED, a study was conducted on the effectiveness of ED and hospital discharge papers. It was found that improved communication between the patients and the healthcare providers, and reduced medical jargon in the discharge instructions improved parent understanding of discharge paper information (Robinson & Miller, 1996).

Poor rapport between physicians and their patients can be the result of insufficient communication and education. Emergency department nurses and physician play a difficult role in patient education due to the challenges of implementing patient education in a setting that is fast-paced and hectic (Gignon et al., 2014). Emergency facility settings are short-term and therefore provide little time for patient-physician relationships. ED professionals have decreased amounts of patient history compared to their healthcare counterparts, and therefore face the unique challenge of educating a patient they barely know. According to Sturm et al:

the use of the PED for nonurgent medical problems are medically undesirable because of the discontinuous and uncoordinated care received. Further, nonurgent visits that could be managed by a PCP are missed opportunities to provide essential childhood preventative care (2010).

An aspect of discharge papers that deserves attention is patient education about facility usage, and teaching patients about symptoms that would return them (or in this case, their child) back to an emergency department. This is termed “health literacy,” and is defined by the ability of an individual to understand basic health information to make accurate health decisions based

#### Low Acuity Pediatric Patients

upon the information they know (Herndon, Chaney & Carden, 2011). Research has found that ED discharge papers are often written between a 9<sup>th</sup> and 11<sup>th</sup> grade reading level, and patient-directed materials such as health education brochures range from the 8<sup>th</sup> grade to college reading level (2011). These findings suggest that ED patient education is often written at higher levels than the literacy levels of a significant portion of the ED patient population. Figure 5 outlines the reading levels of common patient education materials used in emergency departments created by findings from research conducted by Duffy & Snyder.

Another study found that, “although 76% of patients received an explanation of their symptoms, only 34% of patients received instructions about symptoms that should cause them to return to the ED” (Samuels-Kalow, Stack & Porter, 2012). Discharge papers are commonly used to guide patients through follow-up care and recovery, yet it seems that information which guides patients to correct facilities is lacking. Improved educational interventions in ED discharge papers could serve as a solution for patient dissatisfaction, facility appropriateness and physician-patient rapport.

In a randomized controlled trial, parents in a PED received educational intervention regarding antibiotic use with upper respiratory infections; the intervention showed an improvement in patient knowledge of antibiotic use after a period of time compared to patients who did not receive the intervention, and education intervention in the PED was associated with high parent satisfaction (Angoulvant et al., 2013). These findings support the potential success of emergency department patient education.

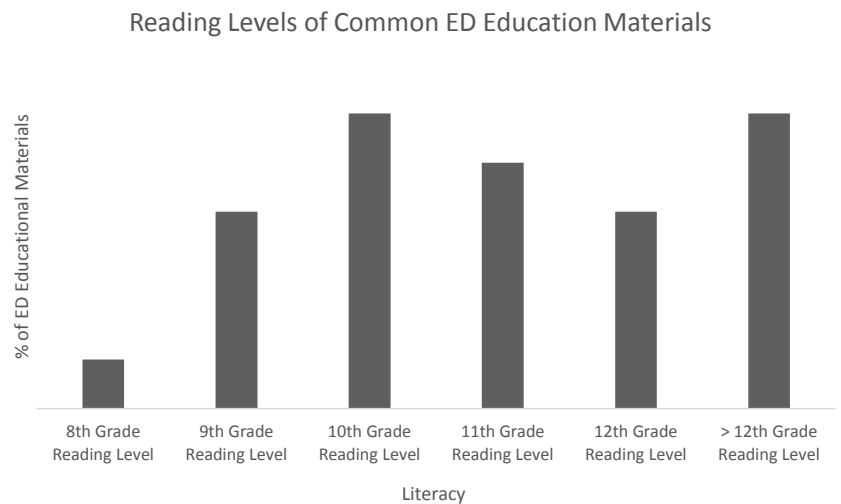


Figure 5. Proportions of reading levels for 26 commonly used patient education materials in a U.S emergency department.

These studies are evidence of emergency department education effectiveness and provide information regarding areas in need of improvement in the current discharge education process. Reducing complicated medical language and improving teaching skills of medical professionals could result in an increase in patient education and correct medical facility usage.

***Defining the Infographic***

According to Kibar & Akkoyunlu, “an infographic is the visual display of any data or information with the aim of presenting the information in a quick and clear way. Design should enable readers to understand the knowledge by revealing patterns and by facilitating reading” (2014). Adding pictures and other visual aids to educational texts can assist the learner with organizing the information in such a way that makes it easier to understand.

## Low Acuity Pediatric Patients

Patient education improvement is a complex issue. Simplifying multiple illnesses is not an easy task, and reducing medical jargon without jeopardizing accuracy of information is problematic (Robinson & Miller, 1996). One possible way to improve patient understanding of a complex topic is to implement visual references along with written information. This style of information presentation is often referred to as an infographic.

Much research has found that visual education increases learning and performance. Findings at the neural and molecular level indicate that visual stimuli activate areas of a brain that would otherwise be dormant while learning from only comprehending written words (Kindler, 2003). Increasing the visual stimuli associated with patient education could therefore increase comprehension of the information. Creating an infographic approach to discharge papers could increase post-ED visit retention rates and increase patient understanding without drastically decreasing the literacy level of educational ED material.

### ***Implementation of an Infographic for Pediatric URIs and Cold Symptoms***

Multiple findings have suggested means of increasing ED patient health literacy, or more so in this case, parent health literacy of pediatric patients. These suggestions include using common words, using brand names rather than generic names of drugs, presenting short sentences with the most important information coming first, using pictures and illustrations to enhance learning, and providing white space on the page to reduce an “overwhelming” appearance of the page (Brooks, D.A., 1998). Consideration of difficult vocabulary and medical jargon usage by medical professionals with low-literacy patients is an important aspect of improving ED patient-education (1998).

Commented [GC4]: I don't understand this sentence

## Low Acuity Pediatric Patients

Therefore, implementation of an infographic for pediatric nonspecific upper respiratory infections and uncomplicated colds will begin with the assessment of an ED nurse or physician, in which the appropriateness of the infographic will be determined for each unique patient and their guardian. Once a patient has been identified as a good candidate for this resource, the infographic may be ordered by the nurse or physician to be an addition to the patient's discharge papers. The infographic will be used as 1) a rationale for a medical professional to sit down with an under-educated patient about medical facility use, and 2) a guide for pediatric patient guardians to use in the future when they are unsure about which medical facility they should take a child to when the child presents particular symptoms.

It is important that the infographic follows the suggestions created by research findings, so that patients with low-literacy may read them without significant difficulty. The use of visually appealing illustrations and white space will be included in the infographic along with simplified terms and descriptions, with the goal of increasing patient and/or patient-guardian comprehension.



Figure 6. An infographic of six common cold symptoms, the ranges of severity and the corresponding medical facility that is recommended to be used.

This infographic is meant to be a guide for parents to reference. Illustrations, white space and simple context make up the infographic to make it visually-appealing and to accommodate

## Low Acuity Pediatric Patients

lower literacy populations. The infographic is one page in length and one-sided. The goal is to make a form of educational material that a parent can magnetize to a refrigerator or pin to a family room cork board.

The infographic is set up in which six common cold and URI symptoms are illustrated and labeled along the x-axis at the top of the paper. Icons representing primary care services, urgent care clinics and emergency departments are at the along the x-axis of at the bottom of the paper, these will be called “facility icons” for simplicity of description. Below the symptom illustrations are more of these facility icons. Therefore, a parent can go along the x-axis of the paper to find the symptom(s) their child is presenting, then follow down the paper vertically to discover the acuity of that symptom and the appropriate facility their child belongs, with the corresponding icon.

Consequently, the infographic will serve like a roadmap because the user of the infographic follows the information like a map, in which different scenarios will take them to different destinations (Figure 6). The material is meant to be multidimensional and adaptive to various conditions so that the infographic can assist parents with a broader range of URI and cold acuities.

## ***Conclusion***

The research findings included in this paper highlight the importance of providing patient comprehensible patient educational material. It appears that low literacy and other characteristics making up the demographics of the population accounting for nonurgent pediatric ED visits must be considered when creating educational material. With upper respiratory infections and common cold symptoms dominating pediatric emergency department visits, it seems apparent

#### Low Acuity Pediatric Patients

that proper facility usage for this category of illnesses is a significant issue that could be solved with improved ED patient education.

Further research needs to be conducted on the effects of infographic educational material in the patient education setting, more specifically, the emergency department setting. It is the hope that implementing visual material in ED education techniques will help connect low-literacy patients with high-literacy ED educational material, and therefore decrease unnecessary pediatric ED visits.



### References

- Angoulvant, F., et al. (2013). Randomized Controlled Trial of Parent Therapeutic Education on Antibiotics to Improve Parent Satisfaction and Attitudes in a Pediatric Emergency Department. *PLOS ONE*. 8(9): e75590.
- Berry, A., Brousseau, D., Brotanek, J.M., Tomany-Korman, S., & Flores, G. (2008). Why Do Parents Bring Children to the Emergency Department for Nonurgent Conditions? A Qualitative Study. *Ambulatory Pediatrics*, 8: 360-367.
- Brooks, D.A. (1998) Techniques for Teaching ED Patients With Low Literacy Skills. *Journal of Emergency Nursing*. 24(6): 601-603.
- Dean, N.C., Jones, J.P., Aronsky, D., Brown, S., Vines, C. G., Jones, B.E., & Allen, T. (2012). Hospital Admission Decision for Patients with Community-Acquired Pneumonia: Variability Among Physicians in an Emergency Department. *Annals of Emergency Medicine*, 59, 1: 35-41.
- Doobinin, K. A., Heidt-Davis, P. E., Gross, T. K., & Isaacman D.J. (2003). Nonurgent Pediatric Emergency Department Visits: Care-Seeking Behavior and Parental Knowledge of Insurance. *PubMed*, 19, 1. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/12592106>
- Gignon, M., Ammirati, C., Mercier, R., & Detave, M. (2014). Compliance with Emergency Department Discharge Instructions. *Elsevier Incorporated*. 40(1): 51-55.
- Gravel, J., Gouin, S., Goldman, R.D., Osmond, M.H., Fitzpatrick, E., Boutis, K., Guimont, C., Joubert, G., Millar, K., Curtis, S., Sinclair, D., and Amre, D. (2012). The Canadian

#### Low Acuity Pediatric Patients

Triage and Acuity Scale for Children: A Prospective Multicenter Evaluation. *Annals of Emergency Medicine*, 60, 1.

Herndon, J.B., Chaney, M. & Carden, D. (2011). Health Literacy and Emergency Department Outcomes: A Systematic Review. *Annals of Emergency Medicine*. 57(4): 334-345.

Horeczko, T., Enriquez, B., McGrath, N.E., Gausche-Hill, M., & Lewis, R.J. (2013). The Pediatric Assessment Triangle: Accuracy of Its Application by Nurses in Triage of Children. *Journal of Emergency Nursing*, 39, 2. Retrieved from <http://www.sciencedirect.com.libproxy.library.wmich.edu/science/article/pii/S0099176712000049>

Kibar, P. N., & Akkoyunlu, B. (2014). A New Approach to Equip Students with Visual Literacy Skills: Use of Infographics in Education. *CCIS*. 492: 456-465. Retrieved at [https://link.springer.com/chapter/10.1007%2F978-3-319-14136-7\\_48](https://link.springer.com/chapter/10.1007%2F978-3-319-14136-7_48)

Kindler, A.M. (2003). Visual Culture, Visual Brain and (Art) Education. *Studies in Art Education*. 44(3): 290-296.

Lee, G.M., Friedman, J.F., Ross-Degnan, D., Hibberd, P.L., & Goldmann, D.A. (2003). Misconceptions About Colds and Predictors of Health Service Utilization. *Pediatrics*, 111, 2. Retrieved from <http://pediatrics.aappublications.org.libproxy.library.wmich.edu/content/111/2/231>

Lega, F. & Mengoni A. (2008). Why Non-Urgent Patients Choose Emergency Over Primary Care Services? Empirical Evidence and Managerial Implications. *Health Policy*, 88: 326-338. Retrieved at

<http://www.sciencedirect.com.libproxy.library.wmich.edu/science/article/pii/S0168851008000985>

- Mainous, A.G., Hueston, W.J., & Clark, J.R. (1996). Antibiotics and Upper Respiratory Infection: Do Some Folks Think There is a Cure for the Common Cold? *Journal of Family Practice*. 42(4): 357.
- Merrill, C.T., Owens, P.L., & Stocks, R. N. (2008). Pediatric Emergency Department Visits in Community Hospitals from Selected States, 2005. *Healthcare Cost and Utilization Project*, 52. Retrieved from [www.hcup-us.ahrq.gov/reports/statbriefs/sb52.jsp](http://www.hcup-us.ahrq.gov/reports/statbriefs/sb52.jsp)
- Pediatric Emergency Medicine. (2017). Information. *Stanford Medicine*. Retrieved from <http://pem.stanford.edu/parents/information.html>
- Pennsylvania State University. (2017). Cold Assessment. *The Behrend College*.
- Robinson, A., & Miller, M. (1996). Making Information Accessible: Developing Plain English Discharge Instructions. *Journal of Advanced Nursing*. 24: 528-535.
- Samuels-Kalow, M. E., Stack, A. M., & Porter, S.C. (2012). Effective Discharge Communication in the Emergency Department. *The Practice of Emergency Medicine*. 60(2): 152-159.
- Schuur, J.D., & Venkatesh, A.K. (2012). The Growing Role of Emergency Departments in Hospital Admissions. *Journal of Medicine*. 367: 391-393. Retrieved at <http://www.nejm.org/doi/full/10.1056/NEJMp1204431>
- Stanley, R., Zimmerman J., Hashikawa, C. & Clark, S.J. (2007). Appropriateness of Children's Nonurgent Visits to Selected Michigan Emergency Departments. *Pediatric Emergency Care*. 23(8): 532-536. Retrieved at <https://www.ncbi.nlm.nih.gov/pubmed/17726411>

## Low Acuity Pediatric Patients

- Stockley, M.A. (2013) Vital Signs in Children. *The Gale Encyclopedia of Nursing and Allied Health* (2<sup>nd</sup> ed.).
- Sturm, J.J., Hirsh, D.A., Lee, E.K, Massey, B., Weselman, B. & Simon, H.K. (2010). Practice Characteristics That Influence Nonurgent Pediatric Emergency Department Utilization. *Academic Pediatrics*, 10: 70-74.
- Thollaug, S. C. (1996). Poverty, race and childhood asthma: Health care service utilization in a health maintenance organization. *ProQuest Dissertations & Theses Global*. 304270612.
- Wilson, A. & Hunt, V. (2003). Overcrowded Emergency Departments Threaten Patient Access to Care; VHA Poll Shows Hospital EDs Serving Communities Despite Capacity Stresses. *PR Newswire*.
- Van Woensel, J.B.M., Van Aalderen, W.M.C., & Kimpen, J.L.L. (2003). Viral Lower Respiratory Tract Infection in Infants and Young Children. *British Medical Journal*. 327 (7405): 36-40. Retrieved at <http://www.jstor.org/stable/25454910> Accessed: 04-04-2017 02:04 UTC
- Wong, A.C., Claudet, I, Sorum, P., & Mullet, E. (2015). Why Do Parents Bring Their Children to the Emergency Department? A Systematic Inventory of Motives. *International Journal of Family Medicine*, 978412. Retrieved at <http://doi.org/10.1155/2015/978412>