



Emergency Medicine and Trauma Care Journal

Review Article

Franjić S. Emerg Med Trauma Care J: EMT CJ-100008.

Bronchiolitis Emergency

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Citation: Franjić S (2019) Bronchiolitis Emergency. Emerg Med Trauma Care J: EMT CJ-100008.

Received date: 20 August, 2019; Accepted date: 16 September, 2019; Published date: 26 September, 2019

Abstract

The respiratory syncytial virus (RSV) often causes respiratory infections that are most commonly manifested by the symptoms of upper respiratory tract infections such as colds. This virus, however, can also cause infections of the lower parts of the respiratory system such as bronchiolitis and pneumonia. In infants, RSV is the most common cause of bronchiolitis, inflammation of the small airways in the lungs. Almost all children up to the age of two are infected with RSV. In infants and young children infected with RSV, the symptoms of the disease occur 4-6 days after the infection, and most children recover within 7-14 days.

Keywords: Bronchiolitis; Child; Emergency

Introduction

An emergency is commonly defined as any condition perceived by the prudent layperson-someone on his or her behalf-as requiring immediate medical or surgical evaluation and treatment [1]. On the basis of this definition, the American College of Emergency Physicians states that the practice of emergency medicine has the primary mission of evaluating, managing, and providing treatment to these patients with unexpected injury and illness.

So what does an emergency physician (EP) do? He or she routinely provides care and makes medical treatment decisions based on real-time evaluation of a patient's history; physical findings; and many diagnostic studies, including multiple imaging modalities, laboratory tests, and electrocardiograms. The EP needs an amalgam of skills to treat a wide variety of injuries and illnesses, ranging from the diagnosis of an upper respiratory infection or dermatologic condition to resuscitation and stabilization of the multiple trauma patient. Furthermore, these physicians must be able to practice emergency medicine on patients of all ages. It has been said that EPs are masters and mistresses of negotiation, creativity, and disposition. Clinical emergency medicine may be practiced in emergency departments (EDs), both rural and urban; urgent care clinics; and other settings such as at mass gathering incidents, through emergency medical services (EMS), and in hazardous material and bioterrorism situations.

In healthcare delivery, we attempt to meet the health and medical needs of the community by providing a place for individuals to seek preventative medicine, care for chronic medical conditions, emergency medical treatment, and rehabilitation from injury or illness [2]. While a healthcare institution serves the community, this responsibility occurs at the level of the individual. Each individual expects a thorough assessment and treatment if needed, regardless of the needs of others. This approach is different than that practiced by emergency managers, whose goal is to assist the largest number of people with the limited resources that are available. As such, emergency management principles are focused on the needs of the population rather than the individual. When either planning for a disaster or operating in a disaster response mode, the hospital should be prepared at some point to change its focus from the individual to the community it serves and to begin weighing the needs of any individual patient versus the best for the most patients with scarce resources. Moving from the notion of doing the most for each individual to doing the best for the many is a critical shift in thinking for healthcare institutions considering a program of comprehensive emergency management. While the initial planning for emergencies by hospitals is focused on maintaining operations and handling the care needs of actual or potential increased numbers of patients and/or different presentations of illness or injury than is traditionally seen, there is also the need to recognize that at some point during a disaster, act of terrorism, or public health emergency there may be an imbalance of need versus available resources. At this point the approach to delivering healthcare will need to switch from a focus on the individual to

a focus on the population. This paradigm shift is one of the core unique aspects of hospital emergency management that allows the hospital to prepare to maximize resources in disasters and then to know when to switch to a pure disaster mode of utilizing its limited and often scant resources to help the most people with the greatest chance of survival.

The healthcare delivery system is vast and comprised of multiple entry points at primary care providers, clinics, urgent care centers, hospitals, rehabilitation facilities, and long-term care facilities. The point of entry for many individuals into the acute healthcare system is through the emergency department (ED). Since the late 1970s, the emergency medical services (EMS) system has allowed victims of acute illness and injury to receive initial stabilization of life-threatening medical conditions on the way to the emergency department. Among the many strengths of the ED is the ability to integrate two major components of the healthcare system: prehospital and definitive care. The emergency department maintains constant communications with the EMS system and serves as the direct point of entry for prehospital providers into the hospital or trauma center. Emergency physicians represent a critical link in this process by anticipating the resources that ill and injured patients will need upon arrival at the ED, and initiating appropriate life-saving medical care until specialty resources become available. In this context, the healthcare system is an emergency response entity.

Patient Conditions

In most emergencies there is no time to disclose the necessary information for an informed consent [3]. Here the providers simply act according to what they think will be in the best interests of the patient. These situations frequently happen in hospital emergency rooms and when emergency medical personnel arrive on the scene of an accident or sudden illness.

The emergency exception to informed consent is often quite obvious, but this is not always so. It does not apply, for example, when personnel taking care of somebody in an emergency happen to know what the patient wants. In such a situation they would not do what they think is best for the patient but what they know the patient wants.

It is important to note that the emergency exception that allows physicians to do what they think is best for the patient without obtaining informed consent from the patient or proxy has one major restriction; namely, they cannot do what they think is best if it is otherwise than what they know the patient or proxy wants. Sometimes, for example, emergency department personnel might know from previous admissions that a particular patient from a local nursing home desires only palliative care. If that patient arrives by ambulance at the same emergency department, it is hard to see how it would be morally reasonable for physicians to take aggressive measures to keep the patient alive when, even though there is no time to obtain consent for orders not to attempt resuscitation or not to intubate, they know he or she or a proxy has decided not to have aggressive life-sustaining measures performed.

Patients accessing emergency care services can present with complaints that are extremely diverse, and the way doctors, nurses and paramedics elicit information from patients predominantly

focusses on obtaining biomedical details [4]. In some cases, this approach is warranted, as the urgent need to identify signs and symptoms of life-threatening illness or injury is paramount. Yet, 90% of patients accessing emergency services are not critically ill or injured but seek help and advice. In addition to seeking advice, patients may also be anxious, frightened, intoxicated, misusing drugs or have unhealthy lifestyles. They may have psychosocial reaction to physical disease or vice versa-physical illness such as irritable bowel syndrome, asthma, tension headache can be triggered by psychosocial factors. The effects and interpretation of illness will trigger a different response to the individual depending on their view and experiences. All these factors will have different needs and concerns and it is important to elicit these concerns within a consultation. However, it has been found that nurses working in emergency care disregard the potential for anxiety and the need for support and reassurance in patients who are not severely ill or injured. In addition, where communication skills of junior doctors working in emergency departments have been researched, they are found to use approaches considered to be more physician/illness orientated than patient-centred. By way of similarities of patient presentations in the pre-hospital setting, this could equally be assumed for paramedic practice.

Bronchiolitis

Bronchiolitis is a clinical syndrome that comprises a group of presumed viral lung infections in children [5]. Although many cases are thought to be due to RSV, a substantial percentage of clinically indistinguishable cases test negative. As bronchiolitis is not a uniform disease, treatment responses are variable and the literature is varied with regard to treatment recommendations. Options include steroids, beta-agonists, and nebulized epinephrine. The effectiveness of steroids is thought to be highest in cases where the child has underlying reactive airway disease (usually bronchopulmonary dysplasia or asthma). For a child with allergies and eczema, steroids may be effective therapy if he or she has bronchiolitis. The dosing of the steroids is the same as for asthma: 2mg/kg/day once daily (or divided into two equal doses) for 5 days. Betaagonists seem to work for some children and not for others. A trial of two or three nebulized albuterol treatments may be undertaken in the ED. If effective, treatment may be continued as an outpatient using an inhaler with a spacer and mask or as an inpatient with a nebulizer. If ineffective, further treatments are not usually helpful. The use of nebulized epinephrine is currently controversial. Clinical experience suggests that some children respond well to nebulized epinephrine (at least transiently) while others do not. However, recently performed, well-designed studies have failed to show a significant benefit. Antiviral treatment (e.g., with ribavirin) has no role in the ED.

Infants and young children have relatively narrow airways, with high resistance [5]. If the diameter of these small airways is decreased, the work of breathing can increase dramatically. The airways can narrow due to inflammation (e.g., asthma, chemical pneumonitis, bacterial tracheitis, croup), bronchospasm (e.g., asthma, bronchiolitis), extrinsic compression (e.g., esophageal foreign body, retropharyngeal abscess), excessive mucus and secretions with airway plugging (e.g., bronchiolitis, bacterial tracheitis, pneumonia) or mechanical obstruction (e.g., aspirated foreign body). Infants have a pliable chest wall and immature

diaphragm which also contribute to respiratory fatigue and failure. Increased work of breathing may cause a child to be unable to feed with resultant dehydration or respiratory muscle fatigue leading to respiratory failure and mechanical ventilation.

Symptoms: Bronchiolitis occurs in children under 2 years of age and most commonly presents in infants aged 3 to 6 months [6]. It most frequently occurs in association with viral infections such as respiratory syncytial virus (RSV) in around 75% of cases and is most prevalent in the winter and spring months.

Children most at risk of severe bronchiolitis include those with chronic lung disease, congenital heart disease, premature birth (particularly under 32 weeks), neuromuscular disorders, immunodeficiency and those aged less than 3 months at presentation.

Symptoms of bronchiolitis in children include breathing difficulties, cough, poor feeding, irritability and, in the very young, apnoea. Signs may include wheezing and/or crepitations on auscultation and mild pyrexia. Symptoms usually peak between days 3 and 5 of the illness.

RSV: Respiratory syncytial virus (RSV) is the principal etiologic agent of bronchiolitis and viral pneumonia in infants and young children worldwide [7]. Influenza viruses also contribute to significant number of hospitalizations among children. While the clinical manifestations are similar, there are remarkable differences in terms of their immune responses. In a simplified comparison, RSV does not induce protective immunity, there is no available vaccine, and it is associated with recurrent wheezing. In contrast, influenza does induce a more effective protective immune response, vaccines are quite effective, and it is not associated with long-term wheezing. This provides an ideal setting for a comparative analysis of the immune responses of children with these two viral infections. Dendritic cells (DCs) constitute a complex system of cells with a unique ability to induce primary immune responses. In addition, emerging evidence indicates that DCs control cytokine production by T cells and regulate the Th1/Th2 balance of the immune responses.

Disease

The diagnosis of bronchiolitis is a clinical one based on presenting symptoms and severity [8]. Complete blood count (CBC) is usually not necessary unless the infant or child has high fever or toxic appearance and more serious bacterial illness is suspected. Testing for RSV can be useful because it causes most cases of bronchiolitis. Nasal wash or aspirate is preferable to nasal swab for RSV antigen or immunofluorescence. It has a sensitivity of 90% and specificity of 95%, and results usually are available within hours. Viral culture and serology have little clinical utility because of the length of time needed to get results. Chest x-ray is not needed unless there are clinical signs and symptoms of pneumonia. Children with severe respiratory disease or cyanosis should have pulse oximetry. The differential diagnosis includes asthma, pneumonia, foreign body aspiration, and chronic conditions such as bronchopulmonary dysplasia.

Bronchiolitis is a disease of the lower respiratory tract most prevalent in children less than two years of age [9]. Respiratory syncytial virus is a common cause, although other viruses such

as human metapneumovirus and human rhinovirus have also been implicated. The clinical respiratory effects stem from damage of epithelial cells in the terminal bronchi leading to edema, inflammation, excessive mucous production, and epithelial cell sloughing. This cascade causes widespread obstruction of bronchioles from mucous plugging and causes atelectasis resulting in varying levels of respiratory distress. Symptoms may range from mild nasal congestion, to copious secretions, wheezing, and/or rales (crackles). Ventilation-perfusion mismatch due to obstruction causes hypoxia, rather than the smooth-muscle contraction of airways seen in reactive airway disease.

Responsibility of the Physicians: The aim is to provide excellence in emergency department (ED) care by cultivating the following desirable habits [10]:

- Listen to the patient.
- Exclude the differential diagnoses ('rule out') and refine the possible diagnosis ('rule in') when assessing any patient, starting with potentially the most life-or limb-threatening conditions, and never trivializing.
- Seek advice and avoid getting out of depth by asking for help.
- Treat all patients with dignity and compassion.
- Make sure the patient and relatives know at all times what is happening and why, and what any apparent waits are for.
- Maintain a collective sense of teamwork, by considering all ED colleagues as equals whether medical, nursing, allied health, administrative or support services.
- Consistently make exemplary ED medical records.
- Communicate whenever possible with the general practitioner (GP).
- Know how to break bad news with empathy.
- Adopt effective risk management techniques.

The duty of care is a physician's obligation to provide treatment according to an accepted standard of care [11]. This obligation usually exists in the context of a physician-patient relationship but can extend beyond it in some circumstances. The physician-patient relationship clearly arises when a patient requests treatment and the physician agrees to provide it. However, creation of this relationship does not necessarily require mutual assent. An unconscious patient presenting to the ED is presumed to request care and the physician assessing such a patient is bound by a duty of care. The Emergency Medical Treatment and Active Labor Act (EMTALA) requires ED physicians to assess and stabilize patients coming to the ED before transferring or discharging them. Such an assessment presumably creates the requisite physician-patient relationship.

When caring for a patient, a physician is obligated to provide treatment with the knowledge, skill, and care ordinarily used by reasonably well-qualified physicians practicing in similar circumstances. In some jurisdictions, these similar circumstances include the peculiarities of the locality in which the physician practices. This locality rule was developed to protect the rural

practitioner who was sometimes deemed to have less access to the amenities of urban practices or education centers. However, the locality rule is being replaced by a national standard of care in recognition of improved information exchange, ease of transportation, and the more widespread use of sophisticated equipment and technology.

Establishing the standard of care in a given case requires the testimony of medical experts in most circumstances, unless the breach alleged is sufficiently egregious to be self-evident to the lay jury member for example, amputating the wrong limb or leaving surgical implements in the operative field. A physician specializing in a given field will be held to the standard of other specialists in the same field, rather than to the standard of nonspecialists.

To be eligible to receive federal funds such as Medicare and Medicaid, hospitals with an emergency department must offer emergency and stabilizing treatment services to the public without bias or discrimination [12]. The Emergency Medical Treatment and Active Labor Act is a comprehensive federal law that obligates hospitals offering emergency services to do so without consideration of a patient's ability to pay. It's important to note that this obligation does not apply to inpatients or non-emergent conditions. The absence of bias in the delivery of care should not be misunderstood to suggest all hospitals must provide all medical services, but rather the services they choose to offer must be delivered without bias to the individual patient.

A hospital and its entire staff owe a duty of care to patients admitted for treatment [13]. Following an emergency call, the ambulance service has a duty to respond and provide care. Accident & Emergency (A&E) departments have a duty of care to treat anyone who present themselves and are liable for negligence if they send them away untreated. Hospitals without an A&E facility will display signs stating the location of the nearest A&E department. This ensures that the hospital could not be held negligent if a patient presented and required emergency treatment as the hospital or its staff had never assumed a duty of care. Once a patient is handed over, a duty of care is created between the patient and the practitioner and this cannot be terminated unless the patient no longer requires the care or the carer is replaced by another equally qualified, competent person. It is therefore extremely important that practitioners are aware of their local policies, professional standards and their scope of practice to avoid becoming liable for litigation by putting a patient at risk, delivering ineffective care or breaching their duty of care.

Conclusion

Because after RSV infection there is no permanent protection, people can be infected with this virus later in life, but these new

infections have a milder clinical picture. On the other hand, in some risk groups such as premature babies, children younger than 2 years with severe heart defects or chronic lung diseases and children and older people with impaired (compromised) immune system, RSV infections may be special difficult and life-threatening.

References

1. Jones TR (2011) Approach to the Emergency Department Patient" in Stone, Current Diagnosis And Treatment Emergency Medicine, 7th ed", The McGraw-Hill Companies, New York, USA, Pp: 1.
2. Reilly MJ and Markenson DS (2011) Healthcare Emergency Management, Health Care Emergency Management - Principles and Practice", Jones & Bartlett Learning, Sudbury, USA, Pp: 5-6.
3. Devettere RJ (2010) Practical Decision Making in Health Care Ethics-Cases and Concepts, 3rded, Georgetown University Press, Washington, USA, Pp: 83-84.
4. Gubbins K and Nixon V (2013) Professional Practice in Paramedic, Emergency and Urgent Care. John Wiley & Sons, Ltd, Chichester, UK, Pp: 23.
5. Brown L and Green SM (2005) An Introduction to Clinical Emergency Medicine. Cambridge University Press, Cambridge, UK, Pp: 503-513.
6. Shamil E, Ravi P, Mistry D (2018) 100 Cases in Emergency Medicine and Critical Care. CRC Press, Taylor & Francis Group, Boca Raton, USA, Pp: 270.
7. Parker JN and Parker PM (2004) Bronchiolitis-A Medical Dictionary, Bibliography, and Annotated Research Guide to Internet References. ICON Group International, Inc, Sann Diego, USA, Pp: 10.
8. Prins VW and Wadland W (2012) Essentials of Family Medicine, 6thed. Lippincott Williams & Wilkins, Wolters Kluwer, Philadelphia, USA, Pp: 644.
9. Kou M, Hwang V, Ramkellawan N (2018) Pediatric Emergency Medicine. Elsevier, Inc., Philadelphia, USA, Pp: 2.
10. Brown AFT and Cadogan MD (2013) Emergency Medicine - Diagnosis and Management, 7th ed. Hodder Arnold, London, UK, Pp: 446.
11. Eckerline jr CHA and Brantley JC (2011) Current Diagnosis and Treatment Emergency Medicine, 7th ed. The McGraw-Hill Companies, New York, USA, Pp: 45.
12. Solheim Jeff (2016) Emergency Nursing-The Profession, The Pathway, The Practice", Sigma Theta Tau International, Indianapolis, USA, Pp: 162.
13. Latcham K (2013) Professional Practice in Paramedic, Emergency and Urgent Care. John Wiley & Sons, Ltd, Chichester, UK, Pp: 135.