

Challenges facing paramedics in providing emergency services to children and infants and strategies to address them

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ABSTRACT

Paramedics are the first line of defense in emergency situations. They are trained individuals who provide primary medical care in various critical circumstances. This profession requires a wide range of skills and knowledge aimed at saving lives and alleviating the suffering of the injured. Among the personal skills that distinguish a paramedic are the ability to work under pressure, maintain calm in difficult situations, and make quick and correct decisions in uncertain conditions. Additionally, they must be able to function as part of a cohesive team and exhibit cooperative work skills, with respect and humanity being paramount in their interactions with patients. The needs of children and infants in emergencies differ from those of adults due to their vulnerable immune systems and fragile bodies. Therefore, emergency services tailored for children and infants are designed to meet these specific needs. Among the most important types of emergency services for children and infants are the emergency rooms in hospitals, which are equipped with medical devices and equipment specifically designed for children. These facilities include pediatricians and nurses trained to handle pediatric emergencies, providing a comfortable and safe environment for the child to alleviate their fears. Ambulances are equipped with essential care devices and other medical equipment necessary for emergencies, transporting injured or ill children to the nearest hospital. A skilled team is present to manage pediatric emergencies, including cardiopulmonary resuscitation and trauma management. Additionally, there are pediatric emergency clinics that provide urgent medical care for non-life-threatening conditions such as high fever, diarrhea, and ear infections, where the child's condition can be monitored after receiving initial medical care. Specialized medical care is also available for children suffering from serious illnesses or those requiring continuous monitoring.

Keywords: Challenges, emergency services, children, infants, strategies

INTRODUCTION

The concept of emergency medical services is broad and encompasses a range of procedures and medical services aimed at providing primary medical care for emergencies and injuries swiftly. The goal is to preserve the lives of the injured and mitigate the negative effects resulting from accidents and sudden illnesses until specialized medical care is reached. The emergency medical system is an integrated system designed to provide urgent medical care for injured patients or those in need of immediate medical attention. This system comprises several essential components, including ambulances equipped with the latest medical devices, a highly trained emergency response team, a communications center for receiving emergency medical calls, and hospitals equipped to handle emergency cases. Emergency services involve a set of interrelated concepts.^{1,2}

There are several skills that must be possessed by emergency responders, the most important of which is the rapid and detailed assessment of the patient's condition. This is one of the crucial skills that an emergency responder must have, as it aids in accurately and quickly determining the patient's status and prioritizing treatment options. This contributes to making appropriate decisions to save lives and alleviate suffering. The importance of rapid and detailed assessment lies in its ability to identify serious injuries that require immediate treatment. Based on the assessment, the responder can choose the appropriate therapeutic interventions for each case. Additionally, rapid assessment saves precious time that could be a critical moment between life and death, helping to avoid complications and prevent the deterioration of the patient's health. It also facilitates the accurate and comprehensive transfer of information to the medical team at the hospital to provide the necessary care.^{3,7}

Types of Injuries Requiring First Aid

Injuries that may require first aid vary significantly, and their severity and consequences can differ. Among the most critical types of injuries that necessitate first aid are:

- **Life-threatening injuries:** Life-threatening injuries are among the most dangerous types of emergencies that require immediate intervention through first aid. These injuries can lead to death if not addressed correctly and promptly. They directly affect vital body functions such as respiration and circulation. This category includes cardiac arrest, where the heart stops beating, and the lungs cease to function, resulting in a lack of oxygen to the brain and vital organs. Severe bleeding with substantial blood loss in a short period can lead to hemorrhagic shock and death. Additionally, airway obstruction, whether due to a foreign object or swelling of the throat, can result in choking and death. Severe burns covering large areas of the body or affecting the face and respiratory pathways, as well as complete airway obstruction, prevent oxygen from reaching the lungs, potentially causing choking and death. Poisoning cases, whether through ingestion, inhalation, or skin contact, can lead to vital organ damage and failure. Recognizing these injuries is crucial, as understanding them aids in quickly assessing the victim's condition, prioritizing first aid measures, and taking the correct and appropriate actions. Each injury requires specific first aid procedures, and knowing the type of injury helps in making the right decision.^{8,12}

- **Injuries Requiring Urgent Medical Care:** These are cases that threaten the life of the injured individual or the functions of their vital organs, necessitating immediate medical intervention at the nearest emergency center or hospital. Such injuries require rapid evaluation and diagnosis by a specialized medical team and the provision of appropriate treatment as quickly as possible. The importance of recognizing and diagnosing these injuries lies in preserving the life of the injured, as timely intervention can prevent the deterioration of their health condition and maintain their life. Additionally, providing urgent medical care reduces the risk of serious complications that could lead to permanent disabilities, and prompt and effective treatment increases the chances of complete recovery for the injured. Among the most notable types of injuries requiring urgent medical care are head and neck trauma, which may present with symptoms such as loss of consciousness, nausea, vomiting, severe headache, visual disturbances, and weakness in one of the limbs, potentially leading to internal bleeding in the brain or spinal cord injury. Other critical injuries include bone fractures, particularly complex or open fractures where bones protrude through the skin, dislocations, concussions, and skull fractures that may result in brain damage. Additionally, bites from venomous animals such as snakes and scorpions, as well as severe chest pain that may indicate a heart attack or other cardiac issues, also require urgent attention.^{5,9}

Furthermore, there is a range of other injuries that necessitate first aid, including sports injuries such as sprains and fractures, home injuries like deep cuts and burns, electrical shocks, and automobile accidents, which can result in a variety of injuries .

- Paramedics must also possess a set of additional skills, including driving, as they need to be capable of safely and swiftly operating the ambulance to reach the accident scene as quickly as possible.^{4,12,17}

DISCUSSION

Emergency services are specialized services aimed at providing rapid and effective responses to various emergencies, whether they are accidents, natural disasters, or medical emergencies. These services play a vital and essential role in protecting lives and property, offering urgent assistance to those in need. The types of emergency services are diverse and encompass a wide range of fields, including ambulance services, which specialize in providing primary medical care to the injured and transporting them to hospitals, as well as fire, police, and civil defense services that deal with natural disasters and major incidents such as earthquakes, floods, and landslides^{13,17,19}

- **First Aid:** These are the procedures performed by any individual, whether trained or not, to provide immediate assistance to an injured person before specialized medical services arrive. First aid includes assessing the condition, controlling bleeding, maintaining breathing, managing burns, fractures, and other common injuries. Its aim is to preserve life and prevent the condition from worsening.^{18,2,5}

- **Transporting the Injured:** The injured person is transported from the accident site to the hospital or to the nearest healthcare center using appropriate means of transport, such as ambulances. Ensuring that the injured reach specialized medical care as quickly as possible while avoiding further injury during transport requires specific skills in handling the injured, stabilizing injuries, and providing necessary medical care en route to the medical center.^{4,11}

- **Air Ambulance:** This is a method of transporting the injured by air using airplanes and helicopters, particularly in cases that require rapid transport or in remote areas that are difficult to access by land. Advanced medical care is provided to the injured during transport, minimizing the time needed to reach the hospital. This necessitates that the air ambulance crew possesses high-level skills in emergency medicine and the handling of specialized medical equipment.^{11,13}

Thus, first aid must be administered as quickly as possible to preserve the life of the injured. The rescuer should rapidly assess the condition of the injured to determine the necessary actions. Additionally, the rescuer must

provide the required first aid for the injured person's condition, deliver basic medical care, and ensure safe transport to the nearest medical center as quickly and safely as possible. 15,17

The importance of emergency services lies in their significant contribution to saving lives by providing first aid and urgent medical care to the injured. They also work to minimize the material damage caused by accidents and disasters through rescue and firefighting operations, and they contribute to maintaining community security and stability by effectively addressing emergencies. Additionally, they provide psychological support to the injured and their families during times of crisis.11,13

Emergency services rely on an integrated operational system aimed at delivering rapid and effective responses to emergencies. This process typically includes the following steps: receiving and processing reports from citizens via emergency numbers, then relaying the report to the relevant authority, dispatching emergency teams to the incident location as quickly as possible, assessing the situation, determining needs, implementing necessary rescue and medical procedures, and subsequently transporting the injured to the hospital.2.8.10

To maximize the benefits of emergency services, individuals and the community as a whole must cooperate with these services by familiarizing themselves with and memorizing contact numbers.

The Importance of Ambulance Services for Children and Infants

Ambulance services for children and infants are among the most crucial health services that must be provided due to the sensitivity of this age group and their specific needs. These services play a vital role in protecting the health and safety of children and in preserving their lives during emergencies. The urgency of ambulance services for children and infants is essential and necessary, as quick response times are critical; children and infants are more susceptible to serious illnesses and can deteriorate rapidly. Therefore, the speed of response and the provision of first aid are key and necessary aspects. Additionally, the medical needs of children and infants require specialized skills and expertise, as the symptoms and causes of diseases differ from those in adults. They also necessitate special medical equipment, as ambulances designated for children must be equipped with medical devices suitable for their smaller sizes, such as ventilators and blood glucose monitors. Furthermore, these services provide psychological support to children and their families during these challenging times.10,15,13

Situations That Require Calling an Ambulance for Children and Infants

Emergency situations in children and infants are serious and require immediate medical intervention. It can be difficult for parents to determine whether their child's condition necessitates calling an ambulance. However, there are certain signs that indicate the importance of contacting emergency services. If a child is breathing rapidly or with difficulty, making wheezing sounds while breathing, or turning blue, it is crucial to seek help. In the case of loss of consciousness, if the child is unresponsive or does not open their eyes, or during seizure episodes, if the child is experiencing involuntary convulsions, immediate assistance is required. Severe burns, especially if they cover a large area of the body or are deep, and significant bleeding also warrant an urgent call for an ambulance.19,18

Basic Skills of Paramedics When Dealing with Pediatric and Infant Emergencies

The medical history includes the cause of the incident or illness, the medications being taken by the patient, any known allergies to medications or substances, chronic diseases, and previous surgical procedures. The physical examination of the patient involves assessing the level of consciousness and responsiveness, evaluating respiratory, cardiac, and circulatory functions, as well as examining the head, neck, chest, abdomen, and extremities for any injuries. Blood pressure, pulse rate, and temperature must be measured, and the limbs should be examined to check for fractures, dislocations, or wounds. The neurological assessment includes evaluating the level of consciousness, determining if the patient is aware and responsive, assessing mobility to see if the patient can move their limbs, and evaluating speech to determine if the patient can speak clearly .12,10

Several essential skills for rapid and detailed assessment include careful observation and noting any slight changes in the patient's condition, listening attentively to what the patient or their companions say, as well as effective communication clearly and concisely with the patient, their companions, and the medical team. Quick thinking and making correct decisions promptly under pressure are also crucial.2,3

Thus, rapid and detailed assessment of the condition is an indispensable skill for paramedics, ensuring that appropriate medical care is provided to the patient in a timely manner, contributing to saving lives.4

Communication Skills, Paramedics must be able to communicate clearly and calmly with the patient, whether conscious or unconscious, to provide reassurance and gather necessary information for assessing their condition. They must also be capable of working effectively within a team, communicating with colleagues, other paramedics, as well as doctors and nurses in the hospital.

Challenges in Providing First Aid to Children and Infants

Providing first aid to children and infants presents a unique challenge due to several factors related to the characteristics and specific needs of this age group. Among these main challenges are:

- **Small size and fragility:** It can be difficult to identify internal and external injuries in infants due to their small body size and delicate skin. Some injuries may be obscured by bruising, necessitating thorough examination. Additionally, children and infants are more sensitive to medications and chemicals than adults, requiring precise dosage calculations and the avoidance of certain drugs and substances that may be harmful to them. The condition of an infant can change very rapidly, necessitating continuous monitoring and ongoing assessment of their status. It can also be challenging to secure medical devices, such as intravenous catheters and pulse oximeters, on infants due to their small size and constant movement.12,10

Providing first aid to children and infants requires the use of specialized medical equipment designed specifically for their size and weight, such as intravenous solutions with varying concentrations and small ventilators. These challenges can be addressed through specialized training, as first responders should undergo training in pediatric first aid to learn how to manage the various medical situations they may encounter. Ambulances should be equipped with the necessary medical equipment for the care of children and infants, such as ventilators and cardiac and oxygen monitoring devices. First responders must also communicate effectively with the parents of children and infants to gather information about their medical history and current symptoms. Furthermore, first responders should exhibit calmness and patience when dealing with children and infants, as stress and anxiety can exacerbate their health conditions.10,11

**** -Rapid Change in Health Status:**** This is considered one of the most significant challenges faced by paramedics. Rapid and sudden changes in health status can transform a simple medical condition into a life-threatening emergency in a very short time. This swift change presents a considerable challenge for paramedics for several reasons, including the small body size of children, which makes young patients more susceptible to rapid physiological changes, whether due to illness or injury, and the incompleteness of development. The organs and systems of a child's body may not be fully developed, rendering them less capable of coping with stress and strain. Additionally, children often struggle to express their feelings, making it difficult for paramedics to accurately assess their condition. Furthermore, a child's need for fluids and medications can vary significantly over a short time frame, necessitating continuous monitoring and ongoing evaluation of their status.

**** -Communication Difficulties:**** Infants are unable to clearly express their feelings or pains, complicating the diagnosis of their conditions. Fear and crying can hinder medical examinations and the provision of first aid.17,12

**** -Lack of Experience and Knowledge Among Paramedics:**** Some individuals may lack the necessary experience and knowledge to provide first aid to children, especially in emergency situations. Some may hesitate to administer aid for fear of making mistakes, potentially leading to a deterioration in the child's condition.10,12

**** -Tools and Equipment:**** The small size of medical tools is crucial, as first aid for children requires instruments and equipment specifically designed for them, such as small thermometers and appropriate medical devices. These tools may not always be available in every location, increasing the difficulty of providing first aid.11,15

****Psychological Factors:**** Paramedics may experience significant psychological pressure, which can affect their ability to make sound decisions

CONCLUSION

Therefore, paramedics must take certain measures and actions, including continuous assessment, which requires them to conduct ongoing evaluations of the child's condition and monitor vital signs periodically, such as heart rate, respiratory rate, temperature, and others. Additionally, paramedics should be prepared to respond to sudden changes in the child's condition and possess the ability to make quick and effective decisions. There should be regular communication with the medical team, as continuous interaction between paramedics and the hospital medical team is essential to update them on the child's condition and provide any additional information that may be useful. Supportive care must be provided to the child and their family during this difficult time. To overcome these challenges, paramedics should undergo continuous training in pediatric first aid, focusing on the importance of ongoing monitoring and precise evaluation of the child's condition. Ambulances should be equipped with the necessary medical equipment to monitor the child's condition, such as oxygen saturation monitors and cardiac monitors, and collaborate with the parents of the children to obtain information about their medical history and current symptoms.14,15,10

The rapid changes in health status among children and infants pose significant challenges in providing first aid; however, there are many strategies that can be implemented to overcome these challenges, contributing to ensuring the best possible care for this age group, which can be outlined as follows:

- **Continuous and specialized training:** Paramedics should undergo intensive and specialized training programs in pediatric first aid, which include simulating various medical cases and practical training on necessary skills.

Their knowledge and skills should be updated regularly through workshops, seminars, and specialized medical conferences.12,10,1

-Equipping ambulances with necessary equipment: Ambulances should be equipped with pediatric-specific vital sign monitoring devices, such as oxygen saturation monitors and heart rate monitors, which can provide accurate and rapid readings. Additionally, ambulances must be stocked with the medications and medical supplies necessary to treat various medical conditions that children may face, considering appropriate dosages for their ages and weights.10,1,2

-Continuous communication and collaboration with the medical team: There should be ongoing communication between paramedics and the medical team in the hospital to update them on the child's condition and provide any additional information that may be useful. There must also be seamless coordination between paramedics and the medical team to ensure comprehensive care for the child.2,10,8

Thus, providing emergency services for children and infants is an aspect that requires significant effort and collaboration among various stakeholders. By providing appropriate training and necessary equipment, we can deliver the best possible care to this sensitive age group.

Furthermore, it is essential to raise community awareness about the importance of emergency services for children within local communities. Training programs should be developed for healthcare and social service providers to equip them with the skills needed to handle pediatric emergency situations. Notably, there are international organizations like UNICEF that work to support emergency services for children worldwide.10

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