North Carolina College of Emergency Physicians' Guidance Document on Emergency Medical Services

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The North Carolina College of Emergency Physicians (NCCEP) Emergency Medical Services (EMS) Committee uses an evidence-based approach in writing its protocols and procedures. The most recent revision of the NCCEP document, which was started in late 2010, lasted for more than 1 year and utilized committee members from across the state. Four meetings were held at locations across North Carolina. In addition, 2 surveys were sent to get input from EMS providers. Since 2010, the document has been updated on an ongoing basis, aligning it with the latest evidence-based medicine.

Emergency medical services (EMS) providers in North Carolina provided health care for over 1.4 million patient encounters in 2014 [1]. These EMS providers—including emergency medical technician (EMT)-paramedics, EMT-intermediates, EMT-basics, medical responders, and flight paramedics—use specific written protocols and procedures to guide patient care in the prehospital and inter-facility setting. The North Carolina College of Emergency Physicians (NCCEP) is responsible for the document that provides all the protocols and procedures used by EMS providers in the state. The first version of this document was released by NCCEP in 1984, and it has been continually updated and revised since then. The entire NCCEP document can be found online at www.ncems.org/nccepstandards.html.

The EMS Committee of the NCCEP is directly responsible for the creation and maintenance of this document. This committee is comprised of medical directors and assistant medical directors from around the state. The committee also includes nonvoting members, most of whom are paramedics. Members represent counties and regions throughout the state and include physicians from both academic and nonacademic practice settings.

The NCCEP document is an evidence-based document that refers to established guidelines and evidence, where available. These established guidelines are then adjusted to better meet state needs. In the absence of evidence, the document relies on the consensus of the NCCEP EMS Committee.

Process

The most recent revision process began with a statewide survey in October 2010. The link to the online survey was emailed to every EMS provider in the state. In an effort to ensure maximum feedback from EMS providers, 4 meetings were also held throughout the state, in Greenville, Raleigh, Charlotte, and Asheville. Meetings were well attended, and many constructive comments and suggestions were collected. The NCCEP EMS Committee was then broken into 8 subcommittees, each of which was responsible for a section of the document. Subsections of the document included: Qualifications for Medical Directors, Equipment, Skills and Medications, Standards for Emergency Medical Dispatch, EMS Protocols, EMS Policies, EMS Procedures, and Drug Lists. Each section of the document determines EMS practice of medicine throughout North Carolina. While individual EMS agencies are allowed to modify this document to better tailor it to local conditions, only minimal changes can be made, and all changes must be reviewed and approved by the state medical director of the North Carolina Office of EMS.

In July 2011, the NCCEP document was released for final comments, and a survey was circulated among all EMS providers in the state to maximize comments on the new revision. All feedback was reviewed and final changes were made by early 2012. Since the 2010 update, the NCCEP EMS Committee has updated the entire document on an ongoing basis as requested, or when new evidence or research became available. Updates are determined by comments and suggestions from EMS providers and medical directors, as well as by the latest published evidence-based medicine.

Standardization of Care

There are over 35,000 certified EMS personnel in North Carolina. They function in 100 counties plus the Eastern Band

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Pearson sidebar

of Cherokee Indians. In the past, each EMS medical director in each county was responsible for either adopting the NCCEP protocols and procedures or developing their own. Every 2–3 years these local protocols and procedures would require a review and update based on the latest evidence. This review and update process was very time-intensive for both local and state entities, and it resulted in variability in patient care from one county to another.

In 2010, the decision was made to develop a set of unified, mandatory statewide protocols and procedures. The entire NCCEP 2011 revision process took over 1.5 years, with more than 12 physicians and paramedics devoting their time. As a result, a well-vetted document was produced. Requiring all EMS providers in North Carolina to follow the protocols, procedures, policies, and other relevant sections in the NCCEP document ensures a minimum baseline level of care and helps standardize prehospital care throughout the state. It has been shown that standardizing patient care reduces variation in clinical practice [2-4]. This is particularly important in North Carolina because many providers work in multiple EMS agencies throughout the state [5]. The goal is to reduce the opportunity for errors.

Using a generally accepted document that has been vetted and approved by a statewide organization also has a significant risk-reduction effect, since it is easier to check that all of the protocols are current. In addition, having multiple public meetings, 2 surveys, and a lengthy public review period of the draft document helped reduce the number of

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errors in the document. The NCCEP revision process also made it easier for medical specialty groups in the state to give their input into areas such as stroke, cardiac care, trauma, and pediatrics. It would be very difficult for a single medical director to devote the time needed for such a process. It would also be impractical for a single agency to gather the amount of feedback that the statewide NCCEP revision was able to garner.

As stated above, the NCCEP document is divided into 8 sections. The specific sections are described below.

Qualifications for Medical Directors

This section is based on a position statement from the National Association of EMS Physicians [6] and gives the minimum requirements to be a medical director for an EMS agency and for specialty care transport services. This document also gives the minimum qualifications to be an assistant medical director or associate medical director for an agency. In addition, it gives requirements to be a medical advisor for an educational institution. The qualifications are broken down into areas such as licensure, board certification requirements, and completion of a medical director's course. There are also areas where medical directors are required to show ongoing involvement, such as chairing peer-review meetings, yearly EMS field time, and yearly medical director updates.

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Equipment

The equipment section contains a list of equipment that all ambulances in North Carolina must carry. The National Association of EMS Physicians' Policy Statement for Equipment for Ground Ambulances was reviewed when determining which items to include on the equipment list [7], and some changes were made to reflect specific North Carolina requirements. The standardized equipment list helps ensure that all EMS patients in North Carolina have access to the same resources, and it means that EMS personnel working in more than one agency will be familiar with the equipment in each ambulance. Employees of the North Carolina Office of EMS, part of the North Carolina Department of Health and Human Services, use this equipment list during ambulance inspections to verify that all ambulances are appropriately equipped.

Skills and Medications

This document describes the scope of practice for medications and skills for each level of EMS provider in the state. The different levels of providers include medical responder, EMT, EMT-intermediate, and EMT-paramedic. This document was originally based on the National Highway Transportation Safety Administration's National EMS Scope of Practice Model [8]. Adjustments were made to fit the specific needs of North Carolina.

Standards for Emergency Medical Dispatch

Emergency medical dispatch (EMD) is an important first step in the care continuum. Emergency medical dispatchers can give pre-arrival instructions to patients and bystanders. These instructions can include basic first aid, as well as instructions on how to perform bystander chest compres-

TABLE 1.
Evidence-Based Protocols

Protocol	Reference document
ACLS-related protocols	Part 1: Executive summary: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation [12]
Pediatric resuscitation protocols	Part 13: Pediatric basic life support: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation [13]
Team-focused CPR protocol	CPR Quality: Improving Cardiac Resuscitation Outcomes Both Inside and Outside the Hospital [14]
Drowning protocol	Drowning. N Engl J Med. [15]
Adult thermal burn protocol	Advanced Burn Life Support Provider Manual. 2007, American Burn Association [16]
Induced hypothermia protocol	National Association of EMS Physicians. Induced therapeutic hypothermia in resuscitated cardiac arrest patients. Prehosp Emerg Care. [17]
Selective spinal immobilization protocol	Indications for prehospital spinal immobilization. National Association of EMS Physicians Standards and Clinical Practice Committee. Prehosp Emerg Care. [18]
	EMS spinal precautions and the use of the long backboard - resource document to the position statement of the National Association of EMS Physicians and the American College of Surgeons Committee on Trauma. Prehosp Emerg Care. [19]
Chest pain: Cardiac and STEMI protocol	2009 focused updates: ACC/AHA guidelines for the management of patients with ST-elevation myocardial infarction and ACC/AHA/SCAI guidelines on percutaneous coronary intervention a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. Catheter Cardiovasc Interv. [20]
Airway, rapid sequence intubation protocol	National Association of EMS Physicians. Drug-assisted intubation in the prehospital setting position statement of the National Association of Emergency Physicians. Prehosp Emerg Care. [21]
Ebola protocols (suspected Ebola, unit decontamination, safe transport of human remains)	Guidance on personal protective equipment to be used by healthcare workers during management of patients with Ebola virus disease in U.S. hospitals, including procedures for putting on (donning) and removing (doffing). [22]
Suspected stroke protocol	EMS management of acute stroke—prehospital triage (resource document to National Association of EMS Physicians position statement). Prehosp Emerg Care. [23]

sions. The National Association of EMS Physicians has a guidance document which serves as the basis for this section [9]. Counties that have an EMD program must have a medical director and an accepted set of EMD protocols.

EMS Protocols

Protocolized patient care has been shown to lead to better patient outcomes [3, 4, 10, 11]. As such, the EMS Protocols section of the NCCEP document is perhaps the most important part of the document, and it contains 102 protocols. EMS personnel must adhere to these protocols when treating patients, and they must have the assessment skills to be able to choose the appropriate protocols. Types of protocols include airway management, behavioral management, pain control, arrhythmias, resuscitation, medical, trauma, and pediatrics. There are also protocols that do not fit neatly into any specific category, such as Ebola protocols, disaster-related protocols, and how to care for patients in police custody. Each protocol has areas where local adjustments can be made to medications and medication dosages.

Many of these protocols are based on previously established guidelines. When no guidelines were available, the committee used the best available evidence. In the absence of significant scientific evidence, the protocols were based on consensus of the committee. Advanced Cardiovascular Life Support (ACLS) guidelines inform most of the content in the arrhythmia and resuscitation protocols [12]. The North Carolina EMS for Children Committee contributed significantly to the pediatric protocols, and many of the pediatric protocols for arrhythmia and resuscitation are based on current Pediatric Advanced Life Support (PALS) guidelines [13]. The North Carolina Committee on Trauma contributed significantly to the protocols addressing the care of trauma patients.

The NCCEP EMS Committee members review the latest literature on a continual basis. As the evidence and practice change, adjustments are made to each protocol. A small symbol in the electronic document alerts EMS providers and agencies to changes, and the date of the latest revision is also listed next to each protocol. Table 1 highlights some of the evidence on which some protocols are based.

EMS Policies

The policy section gives sample policies for EMS agencies to utilize. There are 21 policies included in this section. For example, policies address safe transport of pediatric patients, situations in which a physician is on scene, infant abandonment, and air transport. If an agency does not choose to use the policies as written in the NCCEP document, then it is suggested that they develop their own policy. The policies included in this section are meant to serve as examples and can be adjusted as local conditions dictate. This is unlike the protocol section, where more standardization is needed for the reasons described above.

EMS Procedures

All procedures performed by EMS providers are defined and described in this section of the NCCEP document. The

procedures section of the document is extensive, describing how every procedure should be carried out. If the North Carolina Medical Board lists a procedure that is within the scope of practice of an EMS provider, then the EMS Procedure section of the document must describe how to perform the procedure. Some procedures describe how and when a helicopter should be requested or how to recognize and report possible child abuse. Other procedures describe how to perform an endotracheal or gastric tube placement. These procedures, like the protocols, are continually updated by the NCCEP EMS Committee.

Drug Lists

The North Carolina Medical Board defines which specific medications or classes of medication can be used by EMS providers. The NCCEP Drug List only describes the drugs listed in the NCCEP document. The NCCEP Drug List specifies the patient care protocol in which a certain medication can be used. Furthermore, the NCCEP Drug List includes each medication's indications, contraindications, adult dosing, and pediatric dosing. Local systems can adjust this section as they see fit in order to better address local protocols, which is especially important in the modern era of drug shortages.

Conclusion

The NCCEP document guides all aspects of patient care by EMS providers in North Carolina. The document helps improve patient care by providing all patients in the state with high-quality standardized treatment protocols. The standardization of these treatment protocols also helps to reduce variability and thus reduce medical errors. The NCCEP EMS Committee structure and revision process guarantees input from EMS providers at all levels and ensures that all treatment protocols are up to date with the latest evidence-based medicine. NCMJ

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