Physician Oversight of EMS Dispatch

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Conflict of Interest Disclosures

• Certified by National Academies of Emergency Dispatch since 2004
• No financial interest in NAED or any dispatch system
• Received a small ($3500) research grant from NAED in 2005 (will mention this study later)
• MPDS, PowerPhone, and APCO systems are all in use in my region

Objectives

• When I’m done, you should be able to:

  1. Describe the role of the physician in providing medical oversight for emergency medical dispatch programs.

  2. List key clinical and operational aspects of emergency medical dispatch that should receive physician oversight.
Acknowledgments

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  – Communications Officer, Geauga County (OH) Sheriff’s Office ’93–’04
  – EMS Fellow, Yale University, ’11–’12
• Jeff Clawson, MD
• John G. Gustafson
  – Emergency Telecommunications Manager, CT Dept of Emergency Services & Public Protection
• Key sources:

Why dispatch?

• “For years, medical oversight physicians were blissfully unaware of the prearrival phase of EMS...Resistance to medical oversight has been encountered when the medical community first examines the practices of a medical dispatch center...”
  – Clawson JJ, chapter 49

• Recent survey of EM residency programs:
  – Dispatch was the second most common answer to the “least meaningful component of the EMS rotation” question

And yet:

• Dispatchers are the first point of contact for the vast majority of EMS patients
• Dispatchers determine what types of resources to send to the scene, and how quickly
• Dispatchers provide sophisticated medical interrogation and instructions

• These functions all require medical oversight!

- www.naemsp.org
- Click on “Position Papers” on top left of home page
- “EMD medical directors should participate in the design, operation, and data analysis of medical dispatch”

Medical Oversight

- Three major things you need to know to provide medical oversight for emergency medical dispatch:
  1. How does EMD work?
  2. How does EMD work where I work?
  3. How does EMS work best?

How does EMD work?

- Take the full course, and become EMD-certified
- It is difficult to provide medical oversight and quality management for a system that you are not extremely familiar with.
- Knowledge of EMS (even a field provider background) does NOT prepare you to provide medical oversight of dispatch
  - I learned this the hard way...
How does EMD work where I work?

- What are your state’s regulations regarding EMD (if any)?

CT General Statutes Sec. 28-23b(3)

“Not later than July 1, 2001, the office shall provide an emergency medical dispatch training course and an emergency medical dispatch continuing education course, or approve any emergency medical dispatch training course and emergency medical continuing education course offered by other providers, that meets the requirements of the [NHTSA] Emergency Medical Dispatch National Standard Curriculum.”

“Not later than July 1, 2004, each public safety answering point shall provide emergency medical dispatch... in connection with all 9-1-1 calls received by such public safety answering point for which emergency medical services required.”

CT: Required EMD Program Elements

- (A) Medical interrogation, dispatch prioritization and prearrival instructions in connection with 9-1-1 calls requiring emergency medical services shall be provided only by personnel who have been trained in emergency medical dispatch through satisfactory completion of a training course provided or approved by the office

- (B) a medically approved emergency medical dispatch priority reference system shall be utilized by such personnel

- (C) emergency medical dispatch continuing education shall be provided for such personnel

- (D) a mechanism shall be employed to detect and correct discrepancies between established emergency medical dispatch protocols and actual emergency medical dispatch practice

CT: Required EMD Program Elements (contd)

- (E) a quality assurance component shall be implemented to monitor, at a minimum, (i) emergency medical dispatch time intervals, (ii) the appropriateness of emergency medical dispatch protocols. The quality assurance component shall be prepared with the assistance of a physician licensed in this state who is trained in emergency medicine and shall provide for an ongoing review of the effectiveness of the emergency medical dispatch program.

- We still don’t know whether this means that the quality assurance program shall provide for an ongoing review, or the physician shall provide for an ongoing review...
  - It should be both...
EMD: If you’ve seen one system, you’ve seen one system

- CT: 125 PSAPs (most of the 169 towns/cities have one)
- New South Wales, Australia:
  - 4 PSAPs for the entire state (7 million pop, larger than TX or France)
  - Sydney Ambulance Control Centre
    - Covers 35% of the EMS calls in NSW
    - 1200–1500 emergency and 400–600 non-emergency calls per day
    - 22 on duty at peak hours (10:00–14:00); 11 or 12 overnight
    - Total staff of 246
    - Two full-time quality management staff
- Western PA: one PSAP covers a county
  - All police, fire, and EMS functions
  - All dispatchers are EMD-certified

How does EMS work best?

- Quality management is an important part of dispatch operations.
- The physician medical director needs to be involved, particularly where clinical issues are raised.
- Be sure that you have liability coverage for this activity...

EMD Quality Management

- Selection
- Orientation
- Initial training
- Certification
- Continuing dispatch education
- Medical oversight
- Data generation
- Performance evaluation / case review and feedback
- Recertification
- Risk management
- Decertification, suspension, termination

Continuing Dispatch Education

- Evolving standard of 1 hour per month
- Required in many states
- Physician involvement is important, particularly when the dispatcher has a medical question
  - “I had this case a couple of weeks ago...”

Case Review

- Directly analogous to patient care report review
- Assess protocol compliance
- Must carefully listen to audio recordings of the call
  - Remember that you can (and probably will) listen to the recording over and over – the dispatcher could only listen once!
- Scoring templates and case review software are very helpful in standardizing and simplifying this process
- Comprehensive quality management and regular feedback help maintain high levels of protocol compliance
  - 2 months with no feedback, 2 months with regular feedback
  - Mean 76.4% (±10.2%) before vs 96.2% (±4.0%) after (p<0.001)

QM structure: NAED model

- Quality Improvement Unit
  - Ongoing day-to-day case review by trained reviewers
  - Reviews a set percentage of cases (typically 3%)
- Medical Dispatch Review Committee
  - “middle management”
  - Reviews output and recommendations of QIU
- Dispatch Steering Committee
  - “upper management” including CAO, medical director, QM leader
  - Reviews and acts on MDRC recommendations
  - Handles difficult cases (e.g., substantial public exposure)
Let’s review a call:

Medical Priority Dispatch System™

- International Academies of Emergency Dispatch, Salt Lake City UT
- Currently on Version 12.1
  - New Stroke Diagnostic Tool
  - New Protocol 37 for interfacility transfer with medically trained caller
- Likely the most commonly used dispatch system in the US
- Used in many other nations as well
  - UK, Canada, Australia, New Zealand

PowerPhone™
Connecticut EMD Programs

- As of 2 November 2011:
  - MPDS: 75 PSAPs
  - PowerPhone: 34 PSAPs
  - APCO: 5 PSAPs

- Remainder contract with another center to provide EMD
- Some PSAPs are so small that they are not comfortable providing EMD

EMD Research

- There is fairly limited research regarding emergency medical dispatch programs

- Most papers fit into one of four broad categories
  - 1. Sensitivity of protocols for specific chief complaints
  - 2. Ability to detect high-acuity (or low-acuity) patients
  - 3. Use and effectiveness of pre-arrival instructions
  - 4. Use and effectiveness of dispatch diagnostic tools (stroke, agonal breathing, etc)
Chief Complaint Studies


High- vs Low-Acuity Patients

- Hinchey P. Low acuity EMS dispatch criteria can reliably identify patients without high-acuity illness or injury. Prehosp Emerg Care 2007;11:42.

Pre-arrival Instructions Studies

- Bohm K et al. In patients with out-of-hospital cardiac arrest, does the provision of dispatch CPR instructions as opposed to no instructions improve outcome: a systematic review of the literature. Resuscitation 2011 Sept 16 (epub ahead of print)
- Five studies not inclusion criteria – none randomized, adult only
- Brown TB et al. Instructions to “put the phone down” do not improve the quality of bystander initiated dispatcher-assisted CPR. Resuscitation 2008;79:249.
Diagnostic tools studies


EMD Research:
Relatively easy to do

- IRB process easy since only looking at records
- “Structure” and “process” studies are fairly simple
- Data are usually readily available from CAD systems
  - How many calls last year fell into each MPDS determinant?
- “Outcomes” studies are harder
- Need data linkage to allow a CAD entry to be matched to the ED and hospital records that will allow you to assess outcomes
  - Of the patients who were coded as “Echo” (maximal response), how many received ALS interventions, and how many survived?

The Australian Prehospital Outcomes of Longitudinal Epidemiology (APOSTLE) Project

- 2.67 million EMS transports from mid-2006 through mid-2009
- Six databases linked:
  - ASNSW dispatch (MPDS CAD)
  - ASNSW patient care reports
  - Emergency Department Data Collection (EDDC)
    - Maintained by the Performance Analysis and Reporting Branch of the NSW Health Department
    - Provides information about presentations to the EDs of 87 of the 189 public hospitals in NSW, covering 87% of ED cases
  - Admitted Patient Data Collection (APDC)
  - Death registries (2)
    - NSW Registry of Births, Deaths and Marriages (RRDM)
    - Australian Bureau of Statistics (ABS)
- Can follow each of the EMS patients through their entire medical journal, including ED discharge, admission, death
Research can drive change!

- New Haven Fire Department
  - Sent first-responder engine to every EMS call, lights-and-siren, regardless of nature or severity
  - Concerned about “missing” a serious call
  - Concerned about public perception of service
    - “When they call 9-1-1, they expect the big white [sic] truck to arrive very quickly with lights and sirens!”

- American Medical Response – New Haven
  - Sent ambulance according to MPDS determinant
    - Hot vs cold
    - ALS vs BLS

- Multi-phase study to demonstrate to the city that we can do better
  - Funding from NAED

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Phase I: Medical Facility with 24/7 Physician Staffing

- Convinced FD of lack of utility of sending first responders to a physician-staffed HMO facility
- Implemented protocol for sending FD only to cardiac or respiratory arrest (C3Ds) on 1 January 2005
- Before: Sept-Dec 2004
- After: Feb-May 2005
- Excluded one-month wash-in period
- Examined ALS transports to determine whether FR presence would have been beneficial

<table>
<thead>
<tr>
<th>Criteria for “Need” for Advanced Life Support</th>
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<tr>
<td>1. Potentially new-onset complete cardiac, respiratory, hypotensive patient (hypotensive, bradycardic or arrhythmic)</td>
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<td>2. Absent vital signs: pulse &lt;60 or &gt;100</td>
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<td>3. Altered mental status: GCS &lt;8</td>
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<td>4. Significant physical exam findings: GI/GU bleeding, abnormal abdomen, digital examination</td>
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Phase I: Results

- 242 calls in the “Before” phase
  - BLS FR: responded to 159 (66%), provided care in 2
  - ALS FR: responded to 173 (48%), provided care in 17
    - O2, IV start, N/S, ASA, blood glucose
- 227 calls in the “After” phase
  - BLS FR: responded to 104 (45%), provided care in 0
  - ALS FR: responded to 40 (4%), provided care in 3
    - All but one were protocol violations (only one cardiac arrest)
- 93 cases requiring ALS transport in “after” phases
  - None would have benefitted from FR presence at scene

Phase II: Other medical facilities with RN staffing

- Ten other medical facilities in city
  - Skilled nursing facilities
  - HIV SNF/hospice
  - Federally qualified clinics (physician-staffed at all times)
  - Rehab facilities

- First responders dispatched to 33D and 33C, not 33A
  - 33C: not alert (acute change), abnl breathing, significant hemorrhage or shock, acute heart problem/MI, acute severe pain, special request
- Just did it
- Didn’t study it

Phase III: Full implementation of MPDS

- Prospective before/after trial
- 120 days before vs 120 days after implementation of MPDS
  - Excluded one-month “wash-in”
- Before: FR went to 8278 of 9820 EMS calls (84.3%)
- After: FR went to 3804 of 9943 EMS calls (39.1%)
- Median 5.65 runs/day before, 3.17 runs/day after
  - Companies experienced reductions in call volume by 41.2% to 74.9%
  - Mean decrease in call volume of 54.6%
- Decreases: 1/Abdominal Pain, 4/Assault, 17/Falls, 26/Sick Person


Phase III: Full implementation of MPDS

- Safety: Are we missing serious cases?
- Hand-reviewed all PCRs of patients brought to host ED during “after” phase (n=1816)
  - 100% by me, 250 by each of the other two authors
- Found ten (0.55%) that MIGHT have benefitted from FR:
  - 3 respiratory distress (FR could provide oxygen)
  - 3 chest pain (FR could give oxygen and provide CPR/AED if needed)
  - 3 opiate intoxication (FR could support respiration if needed)
  - 1 AED fired
  - EMS records showed no interventions actually needed
  - ED records for all ten showed no adverse outcomes

**Summary: Medical Director Roles & Responsibilities**

- **Prospective:**
  - Protocol selection, review, approval
  - Response unit assignments for each dispatch code
  - L&S need for each dispatch code

- **Retrospective:**
  - Participation in Medical Dispatch Review Committee or Dispatch Steering Committee (or equivalent)
  - Case review output evaluation
  - Verification of high compliance with protocols
  - Continuing dispatch education

**Take-Home Points**

- Physician oversight of emergency medical dispatch is important, and is frequently not done adequately (or at all)

- Completion of a formal dispatch course is very helpful to the physician in understanding how dispatch works, and what the dispatcher does every time the phone rings

- More research is needed regarding many aspects of emergency medical research