



Case Studies in Online Medical Control

You're the base hospital physician and you've been called to the radio to speak with a prehospital provider about a patient in the field. What should your advice be? Through the use of specific case examples, the audience will gain insight into how to handle various radio calls. (Participants can submit cases in advance for consideration.)

- Describe the goal of on-line medical control.
- Understand the importance of protocols.
- Identify potential pitfalls in medical direction.

TH-211
Thursday, October 14, 1999
10:00 AM - 10:55 AM
Room # N241
Las Vegas Convention Center

FACULTY

Gary W Tamkin, MD

Assistant Clinical Professor,
Department of Emergency Medicine,
UCSF/Highland General Hospital,
Oakland, California; Assistant
Medical Director, Emergency
Services, NorthBay Medical Center,
Fairfield, California

You're the Base Station Physician...What do You Do Next?

Case Studies in On-line Medical Control

Gary W. **Tamkin**, MD
Asst. Medical Director / EMS **Med.Dir.**
NorthBay Medical Center
Assistant Clinical Professor of Medicine
University of California San Francisco

Doctrine of Borrowed Servant

- A person permitted to perform services for another may become the servant of such other in performing the services
- Servant as to some acts and not as to others
- Respondeat superior
Borrower of the servant is ultimately liable for the acts and omissions of the surrogate as long **as** the surrogate is under the borrower's supervision

Legal Authority for Medical Oversight

- Local EMS Agency
 - Physician Medical Director
 - Provide medical control
 - Ensure medical accountability
 - Medical advisory board

Medical Oversight

- Legal, moral, and medical authority responsible for the provision of prehospital medicine
 - **Indirect** Medical Control
 - "Off-line"
 - **Direct** Medical Control
 - "On-line"

Indirect/Off-line Medical Control

- System design
- Protocol development
- Education
- Quality Improvement

Direct / On-line Medical Control

- Contemporaneous physician direction of a field **provider**
 - Physician involvement at scene
 - "Eyes and ears" of the physician

Advantages of Direct medical Control

- Acceptance of responsibility by MD
- Close supervision/Prompt feedback
- Uniform transmission of information
- Ability to **deviate** from protocols

Evolution of On-line Medical Control

- “Eyes and Ears” to “assess & treat”
- EMS in response to acute cardiac events
- Physician role from direct care to supervisory role
 - Wider range of disease
 - 1990: 12% pts. Chest pain **likely** cardiac
 - Increased standardized training

The Base Hospital **Concept**(Boyd 1979)

- Centralized Model / Single Hospital
 - Smaller group of committed professionals
 - Increased experience and consistency
 - Ease of communication & data collection
- Satellite Model/ Multiple Hospitals
 - Greater community / hospital involvement
 - Potential for less consistency and expertise

The future of the Base Station Hospital

- Protocol
- ☼ □ ♦
- Managed care
- Peer Review
- Destination Issues
- Education / Mentoring

Use of Standing Orders:

- The **age** old **question**
“Mother May I?” Vs. “Run free

“Does direct medical control confer additional benefit to the use of well designed and conscientiously implemented protocols?”

Hunt R, et al: Standing order Vs. Voice Control, JEMS, 1982.

- 100 cardiac arrests: DMC: Retrospective
- 100 cardiac arrests: **Protocol:Prospective**
 - No difference in hospital Adm. rate
 - I-4 minute delay in Therapy in DMC group

Thompson S, et al: A Survey of prehospital care paramedic-physician communication for **Multnomah** County, **J Emerg Med**, 1984

- 6 month trial of DMC (2072 calls)
- 83% simple contact
- 16% medical consultation
 - 1% MD advice

What’s the answer?

- No randomized double blinded studies looking at **outcomes**
- Large study needed to detect change in outcome
- Must carefully examine nature of calls
 - Cardiac arrest
 - Trauma

- Must carefully examine **training** of MD

- Uses of Direct Medical Control
- Large and varied differential dx
- Critical medical cases
- Destination consultation
- Medicolegal assistance
- Maximization of resources

When all is said and done...

- Well-designed and implemented standing orders serve both paramedics and patients better than physicians inadequately trained to provide voice control,

Acute SOB: A difficult diagnosis

- Paramedic history skills
 - Pt's history and home medications
 - 80 year **olds** don't just develop asthma
 - "How long has she been taking **albuterol**!?"
 - Home O2 tells you something!
- Paramedic assessment skills
 - Wheezes, crackles, **JVD**, pedal edema

Acute Shortness of Breath

- Differential diagnosis
 - Often limited to Bronchospasm Vs. CHF
 - All that wheezes *is* not asthma
 - Lack of wheezing does not **R/O** asthma

Non-traumatic etiologies of Dyspnea

- Bronchospasm: Asthma, COPD, **anaphylaxis**
- CHF
- Upper airway obstruction
- ARDS
- Pneumothorax, Pleural Effusion
 - Pulmonary Embolism
 - Physiologic hyperventilation (acidosis)

Advantages of Direct Medical Control

- No protocol is perfect
 - Important symptoms may be overlooked
- Taped documentation as medic&gal record
- Tape review as teaching method
- CQI tool

Advantages of Protocol System

- Physician control is inconsistent
- Prolonged pre-hospital phase
 - Trauma Vs. Medical

Macleod BA, et. al.: The accuracy of prehospital diagnosis in patients with dyspnea, *Ann Emerg Med*, 1990.

- 118 Pts SOB, On- Line Medical Control
- ED dx: **Bronchospasm**:
 - PH dx Correct **86%**
- ED dx: **CHF**:
 - PH dx correct **82%**
- Other ED dx:
 - PH dx Correct **33%**
 - Acceptable treatment in 79% of cases

Acute SOB: Objective measures

- Pulse **Oximetry**
- Capnography
- “Prehospital portable Chest X-Ray”
- Peak **Expiratory** Flow Rates (PEFR)

Peak **Expiratory** Flow Rates (PEFR)

- Standard of care in ED
- Not shown to be useful in field
 - **Heller**, MB, et al.: Data collection by paramedics for prehospital **research**(abstract), *Ann Emerg Med*, 1988.
 - Kelly **JM**,et al: Assessment of usefulness of peak **expiratory** flow rate to differentiate out-of-hospital CHF and COPD patients, *Prehosp Dis Med*, 1994.

Prisoners in Custody

- 42 YO M, arrested, **resisted**
- **Suturable Lac.** over OD, no LOC
- “Denies” ETOH, +ETOH,
- Violent, uncooperative, no P.E.
- “Clear coherent sentences, vulgar..”

Prisoners in Custody

- PD requests to fill out AMA for this patient and transport by PD vehicle
- “He is refusing our care/treatment”
- “Keep him in cuffs and put him back of police car...”
- “Go ahead and AMA with PD...”
- “No trouble with orientation, just belligerent, lacks some social skills...”

Criteria for A.M.A

- Adult
- Not on 5150 /suicidal
- Alert and oriented
- Not impaired by ETOH or drugs
- Not mentally retarded
- No severely abnormal vital signs
- **Understands** nature and consequence of refusing care

Prisoners in Custody

- Police often state they have legal authority to consent for prisoner
 - true
 - can **not** compel EMS personnel to act
- Incompetent: Same guidelines as any pt.
- Competent: Prisoner has not lost right to make medical decisions
- Prisoners have tiled successful suits against health care providers (No known EMS cases)

Chest Pain: AMA

- 42 yo Male with Chest pain
- **Substernal, 8/10**, with exertion
- “Top of GCS”, NI vitals
- NIDDM, MI 10 years ago
- Wants to AMA, go home and “relax”
- Relief of pain with Ntg

“Against Medical Advice”

- Stark G, Hedges J: Patients who initially refuse prehospital evaluation **and/or** therapy, Am J Emerg Med, 1990.
 - 1.5% of system’s calls
 - 10.2% of DMC calls
 - 33% of Pts with DMC agreed to transport

“Against Medical Advice”

Burstein JL, et al: Refusal of Out-of-Hospital Care: Effect of Medical-Control Physician Assertiveness on Transport Rate, **Acad Emerg Med**, 1998.

- 130 AMAs
- 47% transported s/p DMC
- MD more “assertive” when perceived as ill
 - 81% Vs. 19% transport rate
- AMAs: High rate ED visit, Admit, Death

ALOC secondary to Hypoglycemia

• “AMA”

- 64 yo IDDM
- ALOC, hit head, No LOC
- FSG= 24, AMP D50, FSG=134
- Benign exam, good level of consciousness
- AMA home with friend for dinner

Scoransky SJ, et.al.: Out-of-hospital Treatment of Hypoglycemia: **Refusal** of Transport and Patient Outcome, **Acad Emerg Med**, 1998.

- 571 calls / 374 patients
- Symptoms of hypoglycemia/ FSG<80
- 28% transported
 - 4.4% relapse
 - 40% admitted
- 72% refused transport
 - 6.1% relapse

- 14 repeat refusal, 11 transports, 5 admissions, no death

Physician on Scene: Case #1

- Code Blue outside clinic, Pulseless VFIB
- Code initiated by clinic MD
- Defibrillation, IV by **medic**, Lido. by MD
- Looking for **Laryngoscope** handle...
- “They should have a crash cart!”
- “Its been 9 minutes since last contact...”

Physician on Scene: Case #1 (cont.)

- “Either the doctor up there is going to run this code or we’re going to run it through the radio...”
- “We need to do something with this patient!....”
- “You make sure the doctor knows that he is coming to the hospital with this patient..”
- “I think you should talk to the doctor...”

Physician on Scene: Case #1 (cont.)

- “You guys are doing some of code, supposedly I am doing some of code...”
- By the **way...Patient** is resuscitated!!!
- “I am not supposed to leave clinic and go with her.. ”
- **Pulses,spont.** respiration’s, BP **88/palp**
- Patient biting on ET tube!

Guidelines for on-scene physician

- ID as state licensed physician
- Base must be satisfied with qualifications and authorize EMS to act
- Physician must be willing to sign run sheet accepting control of the patient
- Physician must be willing to accompany patient to hospital

Guidelines for on-scene physician

- EMS provider may then follow orders which are in scope of practice and local protocol
- Maintain independent professional judgment about care of patient
 - Raise concerns with medical control

Pre-Hospital DNR

- Code 3 with full arrest
- Verbal wishes from wife & brother for DNR
- **77yo** male found in bed, **agonal rythm**, respirations . ..Now asystole/apnea
- Pt’s family has durable power of attorney, but no pre-hospital DNR form
- BLS in progress, until “O.K. given”

Pre-Hospital DNR

- Extensive cardiac history, several **M.I.’s**
- Asystole for **10** minutes
- “By county protocol, need two rounds of drugs, epi and atropine...”
- No pre-hospital DNR
- “I can’t just listen to the **wife...who** knows the situation?”
- “Do you want to give medications and have us standby to call **code**?”

Pre-Hospital Advanced Directives

- Role of EMT is **not** to make judgments about validity of documents, or appropriateness of resuscitation
- DNR can **not** be a spontaneous decision by family
- Protocols for advanced directives
- Directive **must be** in writing
- Standard forms by EMS system is most recognizable (alert bracelets)

Pre-Hospital Advanced Directives

- Documents other than pre-hospital DNR form are difficult to interpret
- “Living Wills” and “Durable powers of attorney” *do not* always have a “DNR” provision
 - Not designed for pre-hospital setting
 - Might address limits of long term care
 - Statute might restrict to “terminal illness”

Interfacility **transport...Not!**

- **Valley Memorial** (Clinic)
- **Valley Care** (Basic ED)
- **Eden Medical Center** (Trauma center)

Medics called to clinic for ALOC / **head** trauma patient. Patient accepted in transfer by basic ED
Medics are uncomfortable with destination. Desire trauma center destination. Physician at scene not changing his orders.

Interfacility **transport...Not!**

- Meets criteria for trauma center
- Called in for transfer
- ALOC /assaulted **1hr ago**/ GCS =12
- + IVDA / no Narcan given
- Blood from left ear/abdominal pain
- “Has a receiving Dr. at Valley Care”
- On-line control directs Pt. to trauma center based upon medic assessment

Pre-hospital medical control: Interfacility transports

- Alameda County Policy **#8100/8110**
 - Ultimate responsibility for determining patient destination will rest with the Base Hospital Physician.
 - Base contact must be made and approval from Base Hospital **Physician** obtained, prior to leaving the facility.
 - **Base** contact is to be maintained throughout the **transfer**.

Pre-hospital medical control: **Interfacility** transports

- **Solano County** Policy # 7200

If the patient is assessed as immediate, the EMS transfer will roll over to the status of an **emergent** EMS call, thus allowing the paramedic to assume care and initiate appropriate treatment and transport of the patient.

Hanging: Trauma center or closest emergency department?

- “I have a destination question for you..”
- 47yo male hung himself
- Got tube, got IV, in PEA
- Trauma activation or closest medical facility?
- Only judicial hangings involve cervical spine

Most of these are **asphyxiation** and laryngeal injuries

You're the Base Station Physician...What do you do next?
Case Studies in On-line Medical Control

Gary W. Tamkin, MD
Assistant medical Director / EMS Medical Director
NorthBay Medical Center
Assistant Clinical Professor of Medicine
University of California San Francisco

References

Medical Control

1. Kuehl AE, ed. National **Association** of EMS Physicians: **Prehospital** systems and medical oversight. 2nd ed. St Louis: Mosby Lifeline; 1994.
2. **Erder** MH, **davidson** SJ, and Cheny RA: On-line medical command in theory and practice. *Ann Emerg Med* **18:261-268**, 1989.
- 3.. Diamond N, **Schofferman** J, and Elliott J: Factors in successful resuscitation by paramedics, *JACEP* **6(2):42-46**, 1977.
4. **Neely** Kw et al: The effect of base station contact on ambulance destination, *Ann Emerg Med* **19:906-909**, 1990.
5. Thompson **S** and Schriver J: A survey of prehospital care paramedic/physician communication for Multnomah **County(portland)**, Oregon, *J Emerg Med* **1:421-428**, 1984.

Standing Orders/Protocol

6. Pointer JE et al: The impact on standing orders on medication and skill selection. paramedic assessment, and hospital outcome: a follow **up** report, *Prehospital and Disaster Medicine* **6(3):303-308**, 1991.
7. Hoffman JR et al: Does Paramedic-base hospital contact result in beneficial deviation from standard prehospital protocols, *West J Med* **153:283-287**, 1990.
8. Hunt R et al: Standing order versus voice control, *JEMS* 26-3 I, Nov 1982
9. Pointer JE and Osur MA: Effect of standing orders on field times, *Ann Emerg Med* **18:1119-1121**, 1989.
10. Wasserberger J et al: Base station prehospital care: judgment errors and deviations from protocol, *Ann Emerg Med* **16(8):867-871**, 1987.

Legal Issues

- 1 I. Cohn BM, **Azzara** AJ: Legal Aspects of Emergency Medical Services. 1 st ed. Philadelphia: W. B. Saunders Company; 1998.

12. Few SA: Emergency medical services legal issues for the emergency physician, **Emerg Med Cli North Am** 8 (1), Feb 1990.

Against Medical Advice

13. Stark G and hedges J: Patients who initially refuse prehospital evaluation and/or therapy, **Am J Emerg Med** 8:509-511, 1990.

14. Burstein JL, **Hollander** JE, Delagi R, et al: Refusal of Out-of-Hospital Medical Care: Effect of Medical-Control Physician Assertiveness on Transport Rate, **Acad Emerg Med** 5:4-8, 1998.

On-Scene Physician

15. **Mellick** LB et al: Paramedic Perceptions of the on-scene physician, **Prehosp Dis Med** 6:331, 1991.

Advanced Directives

16. Adams **JG**, Arnold R, Siminoff L, et al. Ethical conflicts in the prehospital setting, **Ann Emerg Med** 21:1259-1265, 1992.

17. Miles SH, Crimmins TJ: Orders to limit emergency treatment for an ambulance service in a large metropolitan area, **JAMA** 254:525-527, 1985.

18. Weir RF, Gostin L: Decisions to abate life-sustaining treatment for **non-autonomous** patients, **JAMA** 264: 1846-1 853, 1990.

19. Delbridge TR, Fosnocht DE, Garrison HG, et al.: Field termination of unsuccessful out of hospital cardiac arrest resuscitation: acceptance by family members, **Ann Emerg Med** 27(5):649-654, 1996.

20. Crimmins TJ: The need for a prehospital DNR **system**, **prehospital and disaster medicine** 5:47-48, 1990.

21. Marshall L: Resuscitating the terminally ill, **JEMS** 24-28, 1985

22. Sachs GA, Miles SH, and **Levin** RA: Limiting resuscitation: emerging policy in the emergency medical service, **Ann Intern Med** 114:151-154, 1991.

Shortness of Breath in prehospital setting

23.. Mcguire TJ, Pointer JE: Evaluation of a pulse oximeter in the prehospital setting, **Ann Emerg Med** 17:1058-1062, 1989.

24. Sughey K, Hess D, Eitel D, et. al.: An evaluation of pulse oximetry in prehospital care, **Ann Emerg Med** 20:887-891, 1991

25. Kelly JM, Delbridge TR, Sullivan MP, et. al.: Assessment of **the** usefulness of peak **expiratory** flow rate to differentiate out-of-hospital CHF and COPD patients, *Prehosp Dis Med* 9(supp3):S56, 1994.
26. Heller MB, Melton JB, **paris** PM, et. al.: Data collection by paramedics for prehospital research (abstract), *Ann Emerg Med* 17:414, 1988.
27. Macleod BA, et al.: The accuracy of prehospital diagnosis in patients with dyspnea (abstract), *Ann Emerg Med* 19:459, 1990.
28. Hawkins J, et al.: **Metered-dose aerosolized** bronchodilators in prehospital care: a feasibility study, *J Emerg Med* 4:273-277, 1986.
29. **Wuerz** RC, **Meador** SA: Side effect of prehospital medications on mortality and length of stay in congestive heart failure, *Ann Emerg Med* 21:669-674, 1992.
30. Hoffman JR, Reynolds S: Comparison of nitroglycerin, morphine, **furosemide** **in** treatment of presumed pre-hospital pulmonary edema, *Chest* 92:586-593, 1987.
31. **Wasserberger**J, **Balasubramanian** S: Complications in prehospital **use** of nitroglycerin, *Ann Emerg Med* 11:116, 1982.
32. **Wuerz** R, **Swope** G, **Meador** S, et al.: Safety of prehospital nitroglycerin, *Ann Emerg Med* 23:31-36, 1994.
33. Sullivan MP, Kisdaddon RT, **Menegazzi** J, et. al.: The use of continuous positive airway pressure (CPAP) for the treatment of acute cardiogenic **pulmonar** edema in the **prehospital** setting. City of Pgh Division of EMS.

Out-of-hospital treatment of hypoglycemia

34. **Socransky** SJ, **Pirrallo** RG, **Rubin** JM: Out-of-hospital Treatment of Hypoglycemia: Refusal of Transport and Patient Outcome, *Acad Emerg Med* 5: 1080-1085, 1998.
35. Thompson RH, **Wolford** RW. development and evaluation of criteria allowing paramedics to treat and release patients presenting with hypoglycemia: a retrospective study. *Prehosp Disaster Med.* 1991; 6:309-13.
36. **Wolford** RW, **Tisol** W, **Vasilenko** P, et. al.: Prospective evaluation of criteria allowing paramedics to treat and release patients presenting with hypoglycemia (abstract). *Prehosp Disaster Med.* 1996;11:S36