Prehospital Evidence-Based Guidelines Strategy

National Association of EMS Physicians

Christian Martin-Gill, MD, MPH, NREMT-P
Assistant Professor of Emergency Medicine
University of Pittsburgh School of Medicine
Project Lead, National Prehospital EBG Strategy
National Association of EMS Physicians
HOW DID WE GET HERE?
Background

- 2001 National EMS Research Agenda
  - Need for national investment in EMS research infrastructure and application of scientific evidence in patient care

- 2006 IOM’s “Emergency Medicine at the Crossroads”
  - Recommended development of evidence-based protocols for EMS patients
Evidence-Based Guidelines for EMS

**What is the issue?**
- Wide variability in EMS care
- Challenge of incorporating evidence into practice
- Lack of uniform measurements to assess the quality of prehospital care

**How do EBGs help?**
- Uniform recommendations leading to consistent prehospital care
- Synthesize available evidence to advance quality of EMS
- Facilitate creation of standards for measuring quality of prehospital care
National Prehospital EBG Model Process

- 2008 -- National Conference of EMS stakeholders and experts sponsored by NHTSA, NEMSAC, and FICEMS
- Developed a Model Process for the development, implementation, and evaluation of prehospital EBG
  - Process provides a comprehensive, multidisciplinary approach for the creation of EBGs for prehospital care
  - An 8 step process for the development, implementation, and evaluation of EBGs for EMS systems
  - Based on the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) system – A standardized method for summarizing and evaluating the quality of evidence and strength of recommendations
National Prehospital Evidence-Based Guideline Model

Approved by the Federal Interagency Committee on EMS and the National EMS Advisory Council

1. External Inputs
- Evidence synthesis processes
- Existing prehospital guidelines and protocols
- Prehospital components of existing multidisciplinary EBGs
- EMS scope of practice and educational standards
- EMS researchers and professionals

2. Guideline Initiation and Evidence Review
- Accept/generate proposals
- Identify existing evidence
- Recommend need for (or conduct) new systematic reviews
- All parties disclose affiliations and conflicts of interest

3. Evidence Appraisal
- Evaluate quality of evidence and guidelines
- Recommend topics for further guideline development
- Archive material not selected for further development

4. Guideline Development
- Prioritize outcomes
- Weigh the risks and benefits of the interventions (GRADE methodology)
- Assign a strength of recommendation for each intervention
- If no recommendation can be made, outline the rationale
- EMS contextualization
- Write or endorse guideline
- Provide feedback to originating source

5. Model EMS Protocol Development
- EMS contextualization
- Describe clinical implications of the strength of recommendations
- Now protocols
- Pre-existing protocols

6. Guideline/Protocol Dissemination
- Link to recommendations from the EMS Education Agenda for the Future and to the National EMS Education Program Accreditation
- Publish in peer-reviewed journals, trade press, textbooks, and government reports
- Produce new educational and quality improvement materials
- Target stakeholder organizations
- Use a multimedia approach

7. Implementation
- Link to national EMS provider certification/recertification
- Link to national EMS agency accreditation
- Develop EBG implementation toolkits, webinars, manuals
- Partner with national organizations to facilitate interpretation, application, and acceptance by medical direction authorities
- Potentially link implementation to funding and reimbursement
- Develop informed and clinical decision support software
- Develop quality improvement measures and tools

8. Evaluation of Effectiveness, Outcomes, Clinical Research, QI Evaluations
- EBG/protocol pilot testing & feasibility studies
- Monitor local quality improvement benchmarks
- Apply EMSIS data in evaluation process
- Systems research (EMSOP II and IV)
- Outcomes research (EMSOR)
- Clinical research on specific questions
- Cost effectiveness, utility, and benefit analyses (EMSCAP)
- Implementation research - analysis of implementations barriers and facilitators
Implementation of EBG Model Process

NHTSA and EMSC funded:

- **2008 Children’s National Medical Center**
  - Beta-tested development portion of the Model Process for an EBG on prehospital management of pediatric seizures

- **2009 Children’s National Medical Center**
  - Creation of guidelines for prehospital pain management and use of air ambulances for transport of trauma patients
  - Pain management guideline adopted in MD
Implementation of EBG Model Process

- Development of initial EBGs was a proof of concept for application of GRADE methodology to the prehospital setting.
- Showed the National EBG Model Process was invaluable for developing a scientific basis for clinical guidelines.
- Identified several challenges to the sustainability of the National EBG Model Process.
Implementation of EBG Model Process

- National EBG Model Process is dependent on:
  - Availability of prehospital care research, & EMS expertise
  - Resources including funding

- Developing EBGs is extremely resource and time-intensive

- Challenging to implement EBGs for use by field providers in a timely manner

- Measurement and assessment of guideline-related outcomes is key

Other Current Projects

- **Statewide Implementation of a Prehospital Care Guideline Project**
  - PI's: Matthew Shol, Peter Taillac (NASEMSO / NHTSA)
  - Aims to use and refine the National EBG Model Process to implement a pain management guideline in 5 states.
  - Focuses on last 3 steps of EBG Model Process: Dissemination, Implementation, and Evaluation

- **Model EMS Clinical Guidelines Project**
  - PI's: Carol Cunningham, Richard Kamin (NASEMSO / NHTSA)
  - Aims to develop a comprehensive set of clinical guidelines that can be adopted by state, regional, and local EMS systems

- **Development of a Standardized, Evidence-Based Pediatric Prehospital Protocol for Respiratory Distress**
  - PI: Manish Shah (Baylor / HRSA)
  - Aims to develop a pediatric guideline for respiratory distress using the GRADE process
NEMSAC Recommendations (2012)

1. Form relationships among stakeholders
2. Incorporate EBGs into EMS education
3. Develop strategies for defining outcomes, training EMS researchers, and creating funding sources
4. Create center(s) of excellence for EMS EBG development
5. Create a registry of current EBG efforts
6. Sustain the National EBG Model Process into Federal grant guidance language
7. Sponsor EBG scientific assemblies and workshops

Where we are today

- “Numerous national EMS organizations and State EMS Offices are currently engaged in a wide variety of activities that promote the delivery of effective prehospital emergency care…”

- “… there is **no coordinated National Prehospital EBG Implementation Strategy** to mobilize these stakeholders to work together and to leverage their resources to promote more widespread adoption of EBGs.”

- “The nationwide adoption and implementation of prehospital EBGs would be greatly enhanced if a single stakeholder organization could be supported to assume leadership of the Strategy development process.”

NHTSA and NAEMSP

- Cooperative agreement

- Purpose:
  To develop a comprehensive written strategy describing a sustainable process to promote the development and implementation of national prehospital evidence-based guidelines
National Prehospital Evidence-Based Guideline Model

Promotion of EBG Development

Implementation of EBGs
What we are NOT doing

- Re-writing the Model Process
- Focusing on methods or mechanisms for developing guidelines
- Developing any individual guidelines
- Making any one organization the gatekeeper for the development of prehospital EBGs
What we ARE aiming to do

- Identify how to promote individuals and stakeholder organizations to develop EBGs
- Identify how to promote research that facilitates EBG development
- Identify how to incorporate EBGs into education and certification standards
- Identify how all stakeholders can work together in a unified mission that synergizes our efforts, including improved communication
- Identify what organizations should be responsible for various components of the final strategy
Program Objectives

1. Identify State, national, tribal, and local EMS stakeholder organizations whose missions include improving prehospital clinical care.

2. Develop mechanisms to build and sustain relationships among the identified EMS stakeholder organizations and encourage their participation in the development of the National Prehospital EBG Strategy.

3. Outline ways to expand existing opportunities to conduct scientific research supporting the development and implementation of EBGs and to develop opportunities to present research findings to diverse EMS stakeholder audiences.

4. Identify ways to promote interest in EBG development among emergency physicians, prehospital care providers, and EMS officials.

5. Identify pathways to promote the incorporation of newly developed EBGs into EMS education standards and continued competency training, and to stimulate the development of educational and training resources for use by EMS educators as well as by State and local EMS agencies.

6. Promote the dissemination and implementation of EBGs through actions such as submitting guidelines to the National Guidelines Clearinghouse.
Sponsoring Organizations

- National Association of EMS Physicians
- National Highway Traffic Safety Administration, Office of EMS
- *Department* of Health and Human Services, Health Resources and Services Administration, EMS for Children Program
Team Composition

- Project Lead: Christian Martin-Gill, MD, MPH, NREMT-P

- Steering Committee / Writing Group
  - Daniel W. Spaite, MD
  - Douglas F. Kupas, MD
  - Joshua B. Gaither, MD
  - Blair Bigham, MSc, ACPf
  - J. Brent Meyers, MD, MPH

- NAEMSP Administrative Team
  - Stephanie Newman (Project Manager)
  - Megan Finnell

- NHTSA Liaison: Cathy Gotschall, ScD
Medical Organizations

- Air Medical Physicians Association
- American Academy of Emergency Medicine
- American Academy of Pediatrics
- American College of Emergency Physicians
- American College of Osteopathic Emergency Physicians
- American College of Surgeons - Committee on Trauma
- American Heart Association
- American Stroke Association
- Brain Trauma Foundation
- Emergency Nurses Association
- National Association of EMS Physicians
- Pediatric Trauma Society
- Society for Academic Emergency Medicine
- Society for Emergency Medicine Physician Assistants
- Society of Trauma Nurses
Emergency Medical Services Organizations

- Air and Surface Transport Nurses Association
- American Ambulance Association
- American Medical Response
- American Red Cross
- Commission on Accreditation of Ambulance Services
- Commission on Accreditation of Medical Transport Services
- Committee on Accreditation of Educational Programs for the Emergency Medical Services Professionals
- Congressional Fire Service Institute
- Continuing Education Coordinating Board for EMS
- EMS World
- International Academies of Emergency Dispatch
- International Association of EMS Chiefs
Emergency Medical Services Organizations

- International Association of EMTs and Paramedics
- International Association of Fire Chiefs
- International Association of Fire Fighters
- International Assoc. of Flight & Critical Care Paramedics
- International Trauma Life Support
- Journal of Emergency Medical Services
- National Association of EMS Educators
- National Association of EMTs
- National Association of State EMS Officials
- National EMS Advisory Council
- National EMS Management Association
- National Registry of EMTs
- National Volunteer Fire Council
- Prehospital Emergency Care
Research Centers

- Baylor College of Medicine
- Children's National Health System
- Dalhousie University
- Grading of Recommendations Assessment, Development, and Evaluation (GRADE) Working Group
- Guidelines International Network
- EMSC National Resource Center
- International Liaison Committee on Resuscitation
- Johns Hopkins University
- National Center for the Study of Trauma and EMS
- Resuscitation Outcomes Consortium
- University of North Carolina
- University of Pittsburgh
Federal Agencies

- Centers for Disease Control and Prevention, National Center for Injury Prevention and Control
- Department of Defense, Uniformed Services University of the Health Sciences
- Department of Health and Human Services, Agency for Healthcare Research and Quality, Center for Outcomes and Evidence
- Department of Health and Human Services, Centers for Medicare & Medicaid Services, Emergency Preparedness and Response Operations
- Department of Health and Human Services, Health Resources and Services Administration, EMS for Children Program
Federal Agencies

- Department of Health and Human Services, Health Resources and Services Administration, Office of Rural Health Policy
- Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response
- Department of Homeland Security, Office of Health Affairs
- Deputy Assistant Secretary of Defense, Force Health Protection and Readiness Division
- Federal Interagency Committee on EMS
- Indian Health Service
- National Highway Traffic Safety Administration, Office of EMS
- National Institutes of Health, Office of Emergency Care Research
Participating organizations

Anyone else?

Let us know at:

martingillc2@upmc.edu
PROGRESS TO DATE
Stakeholder Meeting

January 18, 2014 – Tucson, AZ

- 1-day meeting
  - Coordinated with the NAEMSP annual meeting

- Attendance:
  - 48 individuals participated
  - 40 stakeholder organizations represented
Stakeholder Meeting
January 18, 2014 – Tucson, AZ

Achieving National Consensus and Successful Implementation of Prehospital Evidence-Based Guidelines
Saturday, January 18, 2014
JW Marriott Starr Pass Resort, Tucson, AZ

08:00 – 08:30
Continental Breakfast

08:30 – 09:00
Introduction and Project Overview
Christian Martin-Gil, MD

09:00 – 09:30
Critical Concepts in Evidence-Based Guidelines Development
Eddy Long, MD

09:30 – 10:15
Recent Prehospital EBG Efforts: Where Are We Now? (See Supplement)

10:15 – 10:30
Break

10:30 – 11:00
Challenges to Development and Implementation of Prehospital EBGs
Daniel W. Spalit, MD

11:00 – 11:30
A Strategy Moving Forward
Christian Martin-Gil, MD

11:30 – 12:15
Next Steps for EBG Development and Implementation
Moderated Discussion

12:15 – 13:00
Break

13:00 – 13:50
Breakout Session #1 –
Moderator: Blair Bigham, MS, ACPI
- Promotion of research supporting EBG development and implementation – Arizona 3
- Promotion of EBG development among emergency physicians, prehospital care providers, and EMS officials – Arizona 4
- Incorporation of newly developed EBGs into EMS education standards and continued competency training – Arizona 5

14:00 – 14:50
Breakout Session #2 –
Moderator: Douglas F. Kupas, MD
- Best practices for EBG implementation in states with statewide protocols – Arizona 3
- Best practices for EBG implementation in states with regional or locally developed protocols – Arizona 4
- Use of evidence-based guidelines by individual providers – Arizona 5

15:00 – 16:00
Breakout Session Synthesis – Arizona 8-10
Moderated Discussion

16:00 – 16:10
Wrap-Up
Christian Martin-Gil, MD

Funding for this project is provided by the National Highway Traffic Safety Administration and the EMS for Children Program at the Health Resources and Services Administration

Special Presentations
[3 minute format]

Recent Prehospital EBG Efforts: Where Are We Now?

- Characteristics of Statewide Protocols for Emergency Medical Services in the United States
  Douglas Kupas, MD

- The Development of Evidence-based Prehospital Guidelines Using a GRADE-based Methodology
  Kathleen Brown, MD

- Statewide Implementation of a Prehospital Care Guideline Project
  Matthew Sholl, MD & Peter Taillac, MD

- Integrating Evidence-Based Pediatric Prehospital Protocols Into Practice
  Manish Shah, MD

- Pediatric Evidence-Based Guidelines: Assessment of EMS System Utilization in States (PEGASUS)
  Manish Shah, MD

- An Evidence-based Guideline for External Hemorrhage Control in the Prehospital Setting
  Eileen Bulger, MD

- Evaluation of the Statewide Implementation of the EMS TIB Guidelines in Arizona
  Daniel Spaite, MD

- Evaluation of OHCA/AHA EBGs for CPR Quality and for Dispatcher-Assisted CPR in Arizona
  Bentley Bobrow, MD

- National Association of State EMS Officials Model EMS Clinical Guidelines
  Carol Cunningham, MD
NEEDS ASSESSMENT
Needs Assessment Summary

- Improved communication among organizations and individuals working on prehospital evidence-based guidelines
- Promotion of research related to EBGs
- Incorporation of EBGs into EMS education
- Increased efficiency of EBG development
- Vetting of EBGs by stakeholders and end-users
- Improved access to guidelines and literature reviews
- Promoting and developing funding mechanisms for EBG development and implementation
Centers of Excellence vs. Individual Projects

Centers of Excellence
- One-stop shop for guideline development
- Content and methods experts
- Established infrastructure
- Relationships with stakeholders
- Steady financial support ($$$$

Individual Projects
- Led by individual/teams from associations or research groups
- Content and methods experts
- Re-create infrastructure for individual projects
- Re-create relationships with stakeholders
- Individual grants fund projects ($$
ACTION ITEMS

...developed thus far based on project objectives and stakeholder recommendations
Action Item #1

CREATE A CONSORTIUM ON PREHOSPITAL EVIDENCE-BASED GUIDELINES
Prehospital Guidelines Consortium

• Structure:
  ◦ **Representative organization** with members from stakeholder organizations
  ◦ **Executive committee** of representatives from organizations most involved in prehospital EBG development and implementation
  ◦ **Committees** and **Project Teams**
  ◦ Annual/biannual meeting(s) + quarterly conference calls

• Examples of similar organizations:
  ◦ International Liaison Committee on Resuscitation (ILCOR)
  ◦ Resuscitation Outcomes Consortium (ROC)
Prehospital Guidelines Consortium

- **Activities:**
  - Consultation and endorsement of research projects related to prehospital EBGs
  - Consultation and endorsement of EBG development projects
    - Ensure appropriate methodology
    - Ensure key organizations involved
    - Link project groups to existing resources
  - Facilitate vetting of EBGs by key stakeholder groups
Prehospital Guidelines Consortium

Activities (cont.):

- Identify and prioritize efforts needed to advance prehospital EBGs
  - Needed research projects
  - Suggested evidence-based guidelines to develop

- Facilitate implementation of EBGs
  - Facilitate communication & dissemination
  - Provide toolkits for implementation & evaluation
  - Facilitate incorporation into national education standards, continuing education, and certification
Prehospital Guidelines Consortium

- Activities (cont.):
  - Sponsor EBG scientific assemblies and workshops
  - Funding:
    - Facilitate connecting project teams to potential funding sources
    - Support individual grant applications by endorsement
    - Identify new sources of funding for research, development, and education efforts
Prehospital Guidelines Consortium

The consortium would not aim to: [vs. actual goals]

- Develop individual guidelines
  - [Led by individual associations, research institutions, and individuals]

- Control funding sources
  - [Instead, facilitate linking groups and supporting efforts]

- Create roadblocks for individuals and organizations aiming to develop or implement prehospital EBGs
  - [Not a “clearing house”; instead – facilitate uniform processes and vetting of EBGs by a greater group of stakeholders]

- Perform implementation or education
  - [Provide tools and facilitate work of individual projects]
Action Item #2

PROMOTE RESEARCH RELATED TO PREHOSPITAL EBG’S
Research Related to EBGs

3 types of research:

1. Clinical research that leads to creation of guidelines
   ◦ Generally lacking in EMS; needed for robust guidelines

2. Research on effectiveness of guidelines
   ◦ Can help fuel further guideline development (assess impact on outcomes)
   ◦ Can help support funding for additional projects (benefits +/- cost reduction)

3. Research on what works for implementation of guidelines
   ◦ Incorporate this knowledge into “toolkits” for implementation
   ◦ Includes assessing what changes EMS provider behavior
Action Item #3

PROMOTE AND STREAMLINE PROCESS FOR GUIDELINE DEVELOPMENT
Development of EBGs

- Ensure use of the Model Process
  - ...while learning and modifying from prior efforts
- Guideline development led by associations
  - “A guideline of the Association of ...”
- Support use of rigorous methods
  - E.g. systematic reviews of literature, GRADE methodology
  - Open to other scientifically sound methods
- Outsourcing of literature reviews, etc.
  - Hybrid model vs. Centers of Excellence
- Transparency in development process
  - Facilitated through improved communication
  - Aids in vetting of guidelines once developed
Action Item #4

INCORPORATE EBG CONCEPTS INTO EDUCATION
Incorporating EBGs into Education

- Need education about research and EBG methodology to all levels of providers
  - Initial education & certification for EMS providers
  - Focus on EMS educators
  - Also education of EMS medical directors, EM physicians, nurses, physicians assistants, etc.

- Need mechanisms for groups that will develop guidelines to get education on guideline development
  - E.g. “GRADE workshops”

- Education about individual guidelines
  - When guidelines come out; part of implementation
  - Continuing education/certification for EMS providers
Action Item #4

PROMOTE & FACILITATE IMPLEMENTATION OF PREHOSPITAL EBG’S
Implementation of Guidelines

- Distribution through multiple mechanisms
  - Traditional lectures, websites, apps, social media

- Repository of guidelines
  - ‘Guidelines.gov’ vs. individual repository (e.g. of a consortium)

- Structured timeline
  - Under development
  - Early online
  - Written publication
  - “Implementation date” – when most EMS systems should have incorporated
Implementation of Guidelines

- Use of state EMS offices and associations for distribution

- Creation of toolkits
  - Building on state implementation toolkit

- Shovel-ready tools with guideline publication
  - Education methods
  - Ready-to implement protocols
Action Item #5

ADOPT STANDARD EVALUATION METHODS FOR GUIDELINE IMPLEMENTATION
Evaluation of Guidelines

- Need QI and research on use of guidelines
  - How do they impact outcomes?

- Need standard process to review existing guidelines and make them current
  - Continual process facilitates buy-in and implementation
  - Can facilitate filling in knowledge gaps through additional research and incorporating new science into practice

- Individual guidelines should be published with a set of quality measures
  - Use of nationally-collected data points (e.g. NEMSIS) whenever possible
Action Item #6

IDENTIFY FUNDING MECHANISMS FOR GUIDELINE DEVELOPMENT EFFORTS
Funding for Guideline Effort

- Funding for the consortium
  - Association sponsorship of representatives to attend annual/biannual meetings and conference calls
  - Administrative support

- Funding to create and implement guidelines
  - Funding of Centers of Excellence an ideal
  - Continued sources of funding for individual projects the realistic short-term goal
  - Facilitate prioritization of guidelines efforts
THE DISCUSSION CONTINUES...

All feedback is welcomed