EMS System Models – 2
Domestic and International Models: Best Practices

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Board of Accreditation
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To the Future

The Past Twenty Years
The Focus
“Quality” Patient Care
“Quick” Response Time
Patient and Citizens
“Expectations” Met
Increasingly . . .
The Global Dilemma

Kuala Lumpur, Malaysia
Increase – 10 -12%

Suzhou, China
Increase – 10%
London, England

Increase – 30% to 40%

But
Life Threatening . . . ????
“EMS” to “Out of Hospital Care” – The Shift

- Cardiac Arrest – 2% to 3%
- Other First Hour Quintet Emergencies – 12% to 20%
- Out of Hospital Care – 60% to 70%
- Increasing as percentage of total responses

The Evidence

The Results
“Taking Healthcare to the Patient”

However, only 10% of patients ringing 999 have a lifethreatening emergency. Many patients have an urgent primary (or social) care need. This includes large numbers of older people who have fallen in their homes (around 10% of incidents attended), some with no injury; patients with social care needs and mental health problems.

THE Why . . .

EMS, Care, and Growing Demand

The Challenges
- Increasing Unscheduled Care
- Lack of Primary Care Centers
- Lack of Access
- Lack of Preventive Health Care
The Aging Population

Aged 65 years or older
• 38% of EMS Responses
• Four times Average Utilization
• Highest Clinical Need
• Fastest Growing Subset - 15% in 2020

Growing Demand

• The Homeless
  • More time in ED (7.5 to 4.4 hrs.)
  • Less likely to be admitted (19% vs. 8%)
  • More likely to use EMS (51% vs. 29%)

Shah et al. (May 2007) Acad Emer Med

Growing Demand - Obesity

• “Epidemic”
• Approximately 300,000 premature deaths annually
• Lack of Community Based Programs

Why Obesity???

• Illnesses can be more prevalent
  • 61% of Type 2 diabetes direct cause
  • 25% of hypertension
  • 30% Gall Bladder Disease
  • 25-40% of Asthma
  • 95% of Sleep Apnea
Disease burden (DALYs lost) for the 10 leading causes

1. Lower respiratory infections
2. HIV/AIDS
3. Perinatal conditions
4. Diarrhoeal conditions
5. Unipolar major depression
6. Ischaemic Heart Disease
7. Cerebrovascular Disease
8. Malaria
9. Road Traffic Injuries
10. COPD

DALY: Disability-adjusted life year

Source: WHO Evidence, Information and Policy 2000

THE Impact
Challenges and the Impacts

EMS
- Resource Depletion
- Response Times
- ROSC

The Impact

Pressures and the Impacts
Hospital A & E Departments
- Hospital Diversions
- EMS Wait Times
- Patient Wait Times
Challenges in Personnel

• Recruitment
• Retention
• Salaries
• Skill Levels
International System Models

Paramedic (West) Vs. Physician (East)

Anglo American

- Paramedic/EMT

Anglo - American The Systems

- United States
- Canada
- England
- Australia
- Denmark
- Ireland
Franco German
• Physician

Franco - German
• Eastern Europe

Physician - Pro
• Increased Knowledge and Skills
• Autonomous
• Diagnosis
• Treat and Release
Physician - Con

- Need
- More Likely to “Stay and Play”
- Cost
- Number of Calls Few

European Emergency Data (EED) Project
Clinical Bench Marking

Jerry Overton, Thomas Krafft, Luis Garcia-Castrillo Riesgo
On behalf of the Steering Committee of the EED project
Ludwig-Maximilians-Universität München, Arbeitsgruppe GEOMED, D

European Emergency Data (EED) Project
Results Chest pain Clinical Evaluation

<table>
<thead>
<tr>
<th></th>
<th>MEES1</th>
<th>Δ MEES</th>
<th>% Better</th>
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<tbody>
<tr>
<td>Coventry</td>
<td>23.6</td>
<td>1.20**</td>
<td>56.5</td>
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<tr>
<td>Richmond</td>
<td>23.7</td>
<td>0.93</td>
<td>57.9</td>
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<tr>
<td>Bonn</td>
<td>24.1</td>
<td>1.80**</td>
<td>78.8</td>
</tr>
<tr>
<td>Cantabria</td>
<td>24.4</td>
<td>1.13</td>
<td>55.8</td>
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<tr>
<td>Mean</td>
<td>23.89</td>
<td>1.36</td>
<td>66.7%</td>
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** statistical significance P<0.05
The Evidence

There is considerable variation across Europe in the structure and process of EMS systems. Some countries have adopted almost exclusively paramedic/EMT-based systems, whereas others incorporate physicians into prehospital care. Studies comparing EMS systems are difficult to interpret because of the large differences between systems, independent of physician-staffing. Given the inconsistent evidence, the inclusion or exclusion of physicians among prehospital personnel responding to cardiac arrests will depend largely on existing local policy.

Asian

- Fire
  - Japan
  - Singapore
- Hospital Based
  - China
  - Malaysia
U. S. EMS System Models . . .
As Seen from Abroad

But . . .

U. S. . . . As Seen from Abroad

- “Economically Driven” – South Africa
- “Complacent” – Germany
- “Without Strategic Direction” – England
- “Fragmented” – France
Systemic Change—The Need

“. . . Greatest challenge over the next four years will be to improve efficiency in their resource bases while managing demand in a different way”

Output vs. Outcome

National Ambulance Clinical Quality Outcome Indicators
Quality Pyramid

• Outcome - stroke (ambulance contribution by timely arrival of patients at acute stroke centres)
• Outcome from acute myocardial infarction timely arrival at a specialist centre
• Quality of care by proportion of calls closed with telephone advice or managed without transport to A&E (where clinically appropriate)
• Quality of care by re-contact rate following discharge of care i.e. closure with telephone advice or following non-conveyance (within 24hrs)

“If you’ve seen one EMS System, you’ve seen one EMS system.”
The Result

- **NO** Equality of Access
- **NO** Equality of Care
- **NO** Standardized Care Protocols
- **NO** Reciprocity of Trained Providers
- **NO** Emphasis on PATIENT Outcomes

The Result

- **NO** National Lead Agency
- **NO** National Research Agenda
- **NO** National Advocacy
- **NO** National Funding

The Mandate...
The Concept of Integration

WHERE WE WANT TO BE

For its patients and the community as a whole, EMS provides care and service that is integrated with other health care providers and community health resources. Thus, EMS patients are assured that their care is considered part of a complete health care program, connected to sources for continuous and/or follow-up care, and linked to other potentially beneficial health resources.

“Ideal” EMS System Model – The IOM

THE TROUBLED STATE OF EMS

EMS appears to be a cornerstone of health care, public health, and public safety, and functioning has wondrous public and economic benefits (p. 11). Yet local EMS systems are not well integrated with any of these groups, therefore they require pooling and support from each of them. As such, EMS has a role in many areas but no clear home.
Integration with Health Care

- Continuum of Care
- Health Care System
- Provision of Clinical Care
- Integrating with the Community

EMS System Models and Moving Forward

Framework for change

<table>
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<tr>
<th>Demand-side changes</th>
<th>Supply-side changes</th>
<th>Wider societal changes</th>
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<tr>
<td>Demographics</td>
<td>Technology and clinical knowledge</td>
<td>Financial pressures</td>
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<td>Patterns of disease</td>
<td>Healthcare workforce</td>
<td>Internationalization of health care systems</td>
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<td>Public expectations</td>
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The rapidly shifting balance between acute and chronic health problems is placing new and different demands on the health care workforce.

- The skills of health professionals must be expanded to meet these new complexities.

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The “EMS” System Model

The Synopsis

The Past
- Call Center
- Response Times
- Resuscitation Strategies

The Future
- Call Center
- Care Delivery
- Care Integration
- Systemic Change

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The EMS System Model is Out of Hospital Care Model
To The Future . . .

“In the future, it is essential to differentiate between emergency and unscheduled care, and to differentiate between the treatment and the transport role. Survival from acute life-threatening medical emergencies and acute trauma involves a chain of care.”

“Plain question and plain answer make the shortest road out of most perplexities”

Mark Twain

Questions . . .

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