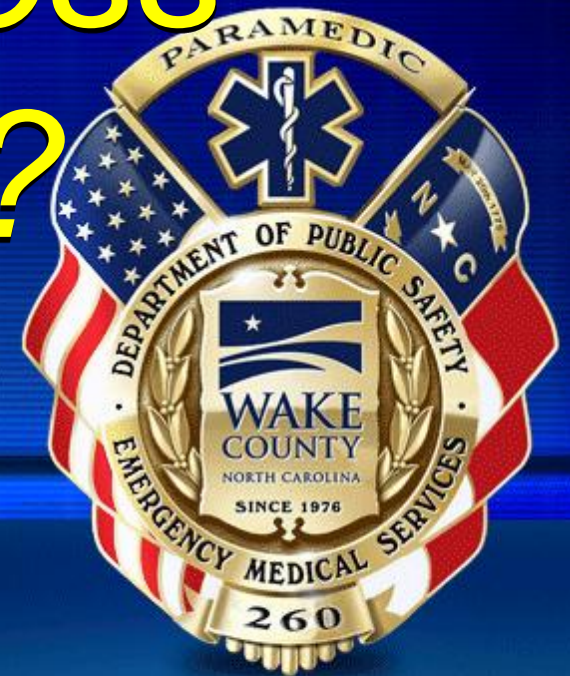


The Paramedic Paradox: Is Less Really More?

J. Brent Myers, MD MPH
Medical Director
Wake County EMS System
Raleigh, NC



**Now Faith is the
assurance
Of things hoped for
The belief in
Things unseen.**

-- Hebrews 11:1



Faith-Based EMS Staffing

- ✦ Every patient can benefit from a paramedic assessment, ALS is time critical, so more paramedics are better
- ✦ Very few patients actually benefit from ALS and those that do require a very experienced provider, ALS time is less critical than BLS time, fewer paramedics are better

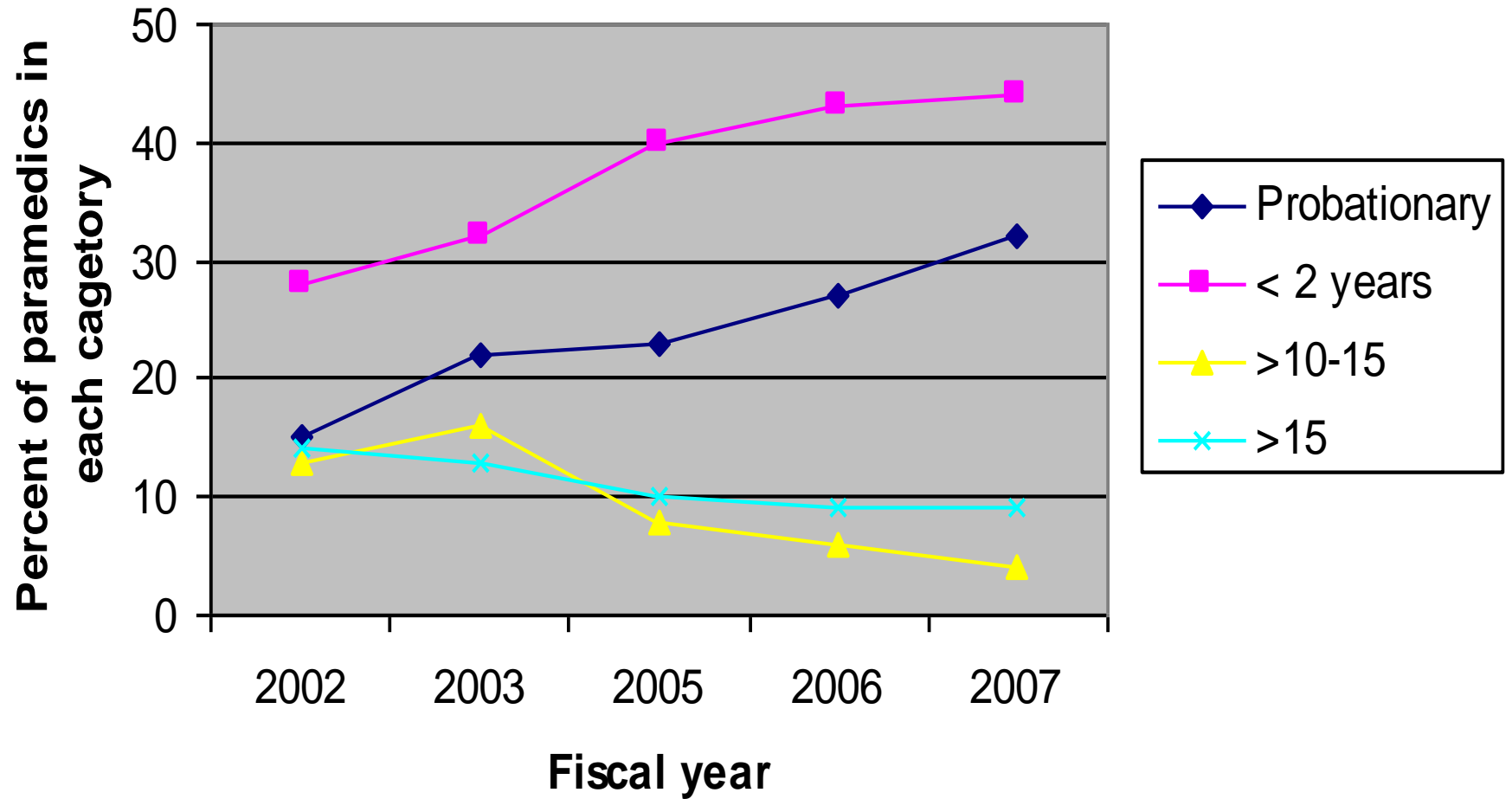


EMS Today – NC and USA

- ✦ **Paramedic shortage**
 - ✦ **450 paramedic openings in NC**
 - ✦ **330 new paramedics graduated last year**
- ✦ **Level of paramedic experience is critical for certain emergencies**
- ✦ **More experience is better than less**



Changes in Experience of WorkForce



What We Have Learned

- ✦ **Not all EMS requests for service are the same**
 - ✦ **Some could be prevented**
 - ✦ **Some do not need an emergency department**
 - ✦ **Some require a “maximum response” for good outcome**
- ✦ **Different clinical and physical resources are needed for different patient conditions**
- ✦ **Achieving a balance between speed and experience is the challenge – “the paramedic paradox”**



Risk-Frequency of EMS Interventions

HIGH RISK LOW FREQUENCY

Requires very experienced paramedic;
Often requires more than one paramedic

MODERATE RISK - TIME CRITICAL HIGH FREQUENCY

May be safely handled by a paramedic
with limited experience.

LOW RISK HIGH FREQUENCY

May not need to go to the hospital at all.
Some risk due to lack of transport.

Three Types of Interventions

- ✦ **Low frequency, high risk:** These encounters require a well-experienced paramedic for optimal outcomes.
- ✦ **Examples include**
 - ✦ **Advanced airway management**
 - ✦ Intubation
 - ✦ surgical
 - ✦ **Cardiac arrest not responsive to defibrillation**
 - ✦ Complex differential diagnosis
 - ✦ Additional drugs
 - ✦ Advanced airway maintenance

Three Types of Interventions

- ✦ **Moderate risk, time critical:** These can be safely and effectively performed by paramedics with limited experience.
- ✦ **Examples:**
 - ✦ **Use of CPAP for congestive heart failure**
 - ✦ **Defibrillation for patients in cardiac arrest**
 - ✦ **Controlling seizures**
 - ✦ **Serious diabetic situations**

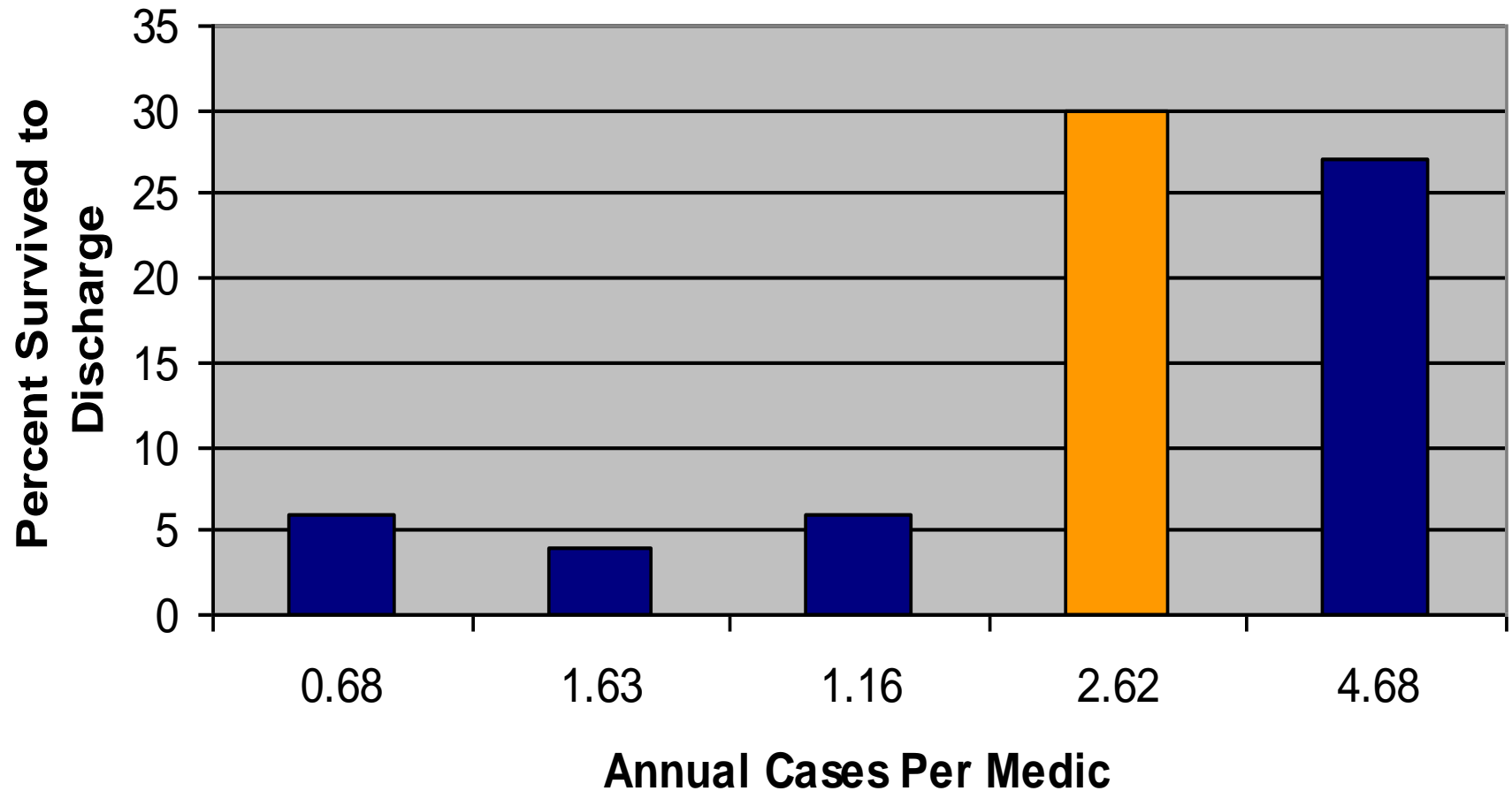
Three Types of Interventions

- ✦ **Low risk, high frequency - patients who may not require emergency department transport**
 - ✦ **“Frequent fliers”**
 - ✦ **Minor injuries/illnesses**
 - ✦ **Multi-patient events with large numbers of uninjured**
 - ✦ **Vaccinations, medication refills**
- ✦ **These patients represent some risk just by the lack of transport**

**How do you
*maintain paramedic response
performance
without
overburdening the system
with paramedics?***

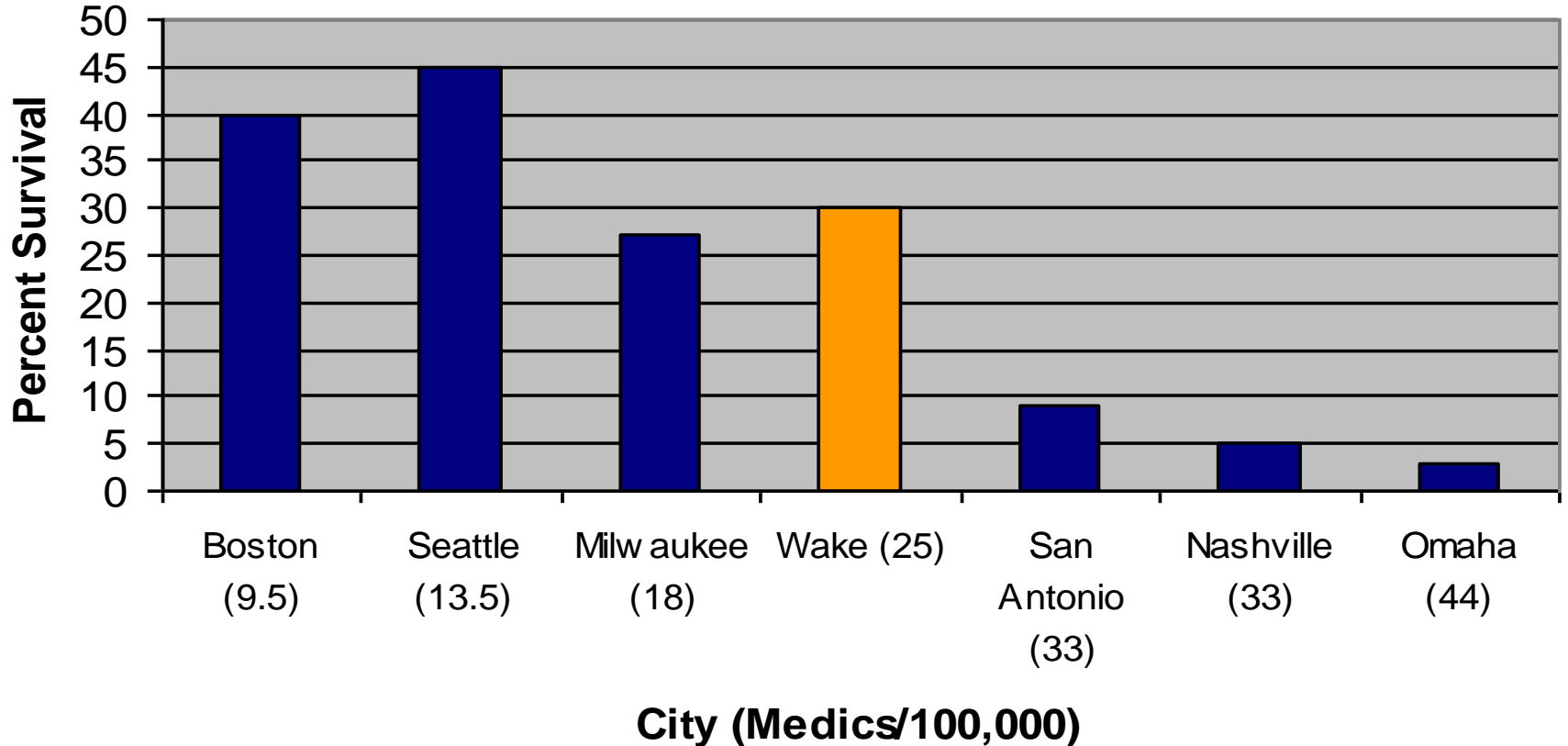


Percent Survival Cardiac Arrest



Sayre MR et al. Cardiac Arrest Survival Rates Depend on Paramedic Experience. Academic Emergency Medicine May 2006;13(5) Suppl 1: S55-56

Paramedics per 100,000 vs. Cardiac Arrest Survival



Houston Experience

Table 4
Survival by deployment type

	Uniform response	Targeted response	<i>P</i> -value
No. resuscitation attempts	24	181	
Return of spontaneous circulation	8 (33.3%)	101 (55.8%)	0.049
Survival to hospital admission	7 (29.2%)	92 (51.1%)*	0.05
Survival to hospital discharge	1 (4.2%)	43 (23.9%)*	0.03
Alive at 1 year	0	27 (15.0%)*	0.05

Houston Experience

Table 2
Critical intervention rates by deployment type

	Uniform response	Targeted response	<i>P</i> -value
First shocks delivered by first responder	10 (41.7%)	51 (28.2%*)	0.23
First shocks delivered by paramedic	14 (58.3%)	123 (67.9%*)	0.36
Successful intubation	22 (91.7%)	174 (99.4%**)	0.04
Successful i.v.	20 (83.3%)	178 (98.3%)	0.004

Paramedic Paradox

- ✦ If we have too many paramedics, the experience level of each paramedic declines
- ✦ If we have too few paramedics, they may not reach the patient in a timely manner
- ✦ ***The challenge is to match response with need***



Proposal: Maintain and Support First Responders

- ✦ **Basic Life Support First Response (AED + CPR first response):**
 - ✦ **Goal: First response (fire or law enforcement) in < 5 minutes @ 90th percentile for high acuity calls**
 - ✦ **Utilization of first response in order to reduce trauma scene times (e.g., RFD backboards)**



Proposal: Single-Paramedic Transport Ambulances

- ✦ One paramedic/one EMT ambulances with current response time goal--11:59 at 90th percentile of calls
- ✦ Perform time-critical but moderate- risk interventions



Proposal: Advanced Practice Paramedic

- ✦ An “advanced practice paramedic” provides a significantly better match between patient acuity and paramedic experience
- ✦ Experienced paramedic with additional training
- ✦ Assigned a “district” to cover
 - ✦ Respond to critical calls
 - ✦ Deliver services to reduce the number of calls
 - ✦ Arrange alternative (not ED) health care where appropriate
- ✦ Non-transport utility vehicle



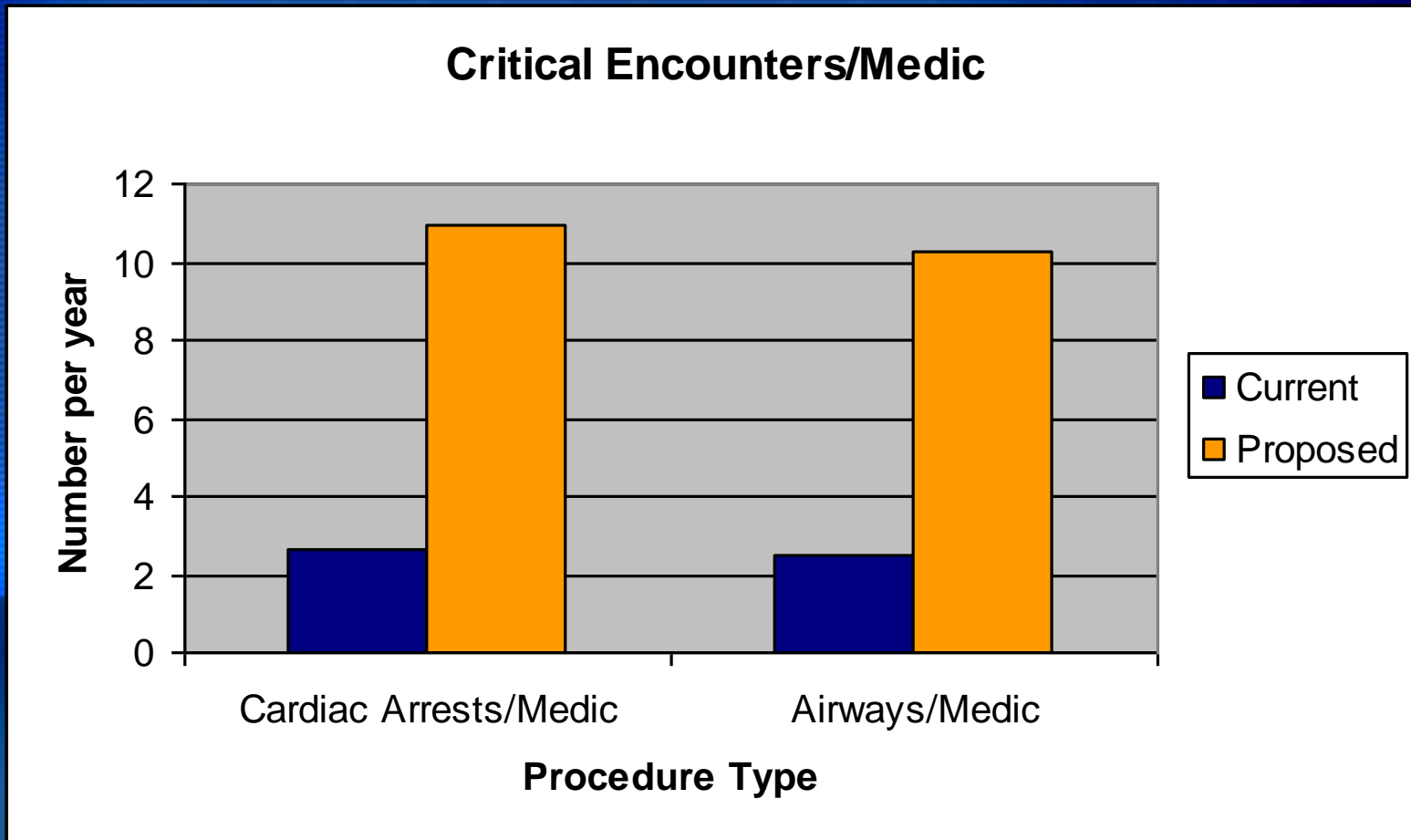
Proposal: Advanced Practice Paramedic

- ✦ **Advanced practice paramedic (APP) – limited number to ensure appropriate annual experience with high-risk patient encounters**
- ✦ **Response goal 14:59 at 90th percentile for critical calls**
- ✦ **Supervises or performs high risk, low frequency procedures**
- ✦ **Expanded role**
 - ✦ **Alternative transport decisions**
 - ✦ **Preventative measures**
 - ✦ **Advanced pharmacology**

JEMS September 2007, p 62-68



How APP Improves Annual Experience/Medic



Summary of Proposed Response

- ✦ **BLS first response in 4:59 at 90th percentile**
 - ✦ Defibrillation
 - ✦ Compression
 - ✦ Trauma preparation
- ✦ **ALS ambulance in 11:59 at 90th percentile**
 - ✦ CPAP
 - ✦ I/O
 - ✦ IV medications
 - ✦ Initial cardiac arrest care
- ✦ **Advanced Practice Paramedic in 14:59 at 90th percentile**
 - ✦ RSI/drug-facilitated intubation
 - ✦ Referrals and alternate destinations
 - ✦ Hypothermia
 - ✦ Complex cases (cardiac arrest and others)



Other Benefits

- ✦ Provides community health assistance (vaccines, well-being checks) in collaboration with Wake County Human Services
- ✦ Provide pre-planned disaster preparedness assistance (ventilator checks, O₂ delivery)
- ✦ Intervene with frequent consumers of EMS (blood glucose checks, alternate destinations)
- ✦ Provide meaningful step on career ladder



Career Ladder

Supervisory/Managerial
positions

**Advanced Practice
Paramedic**

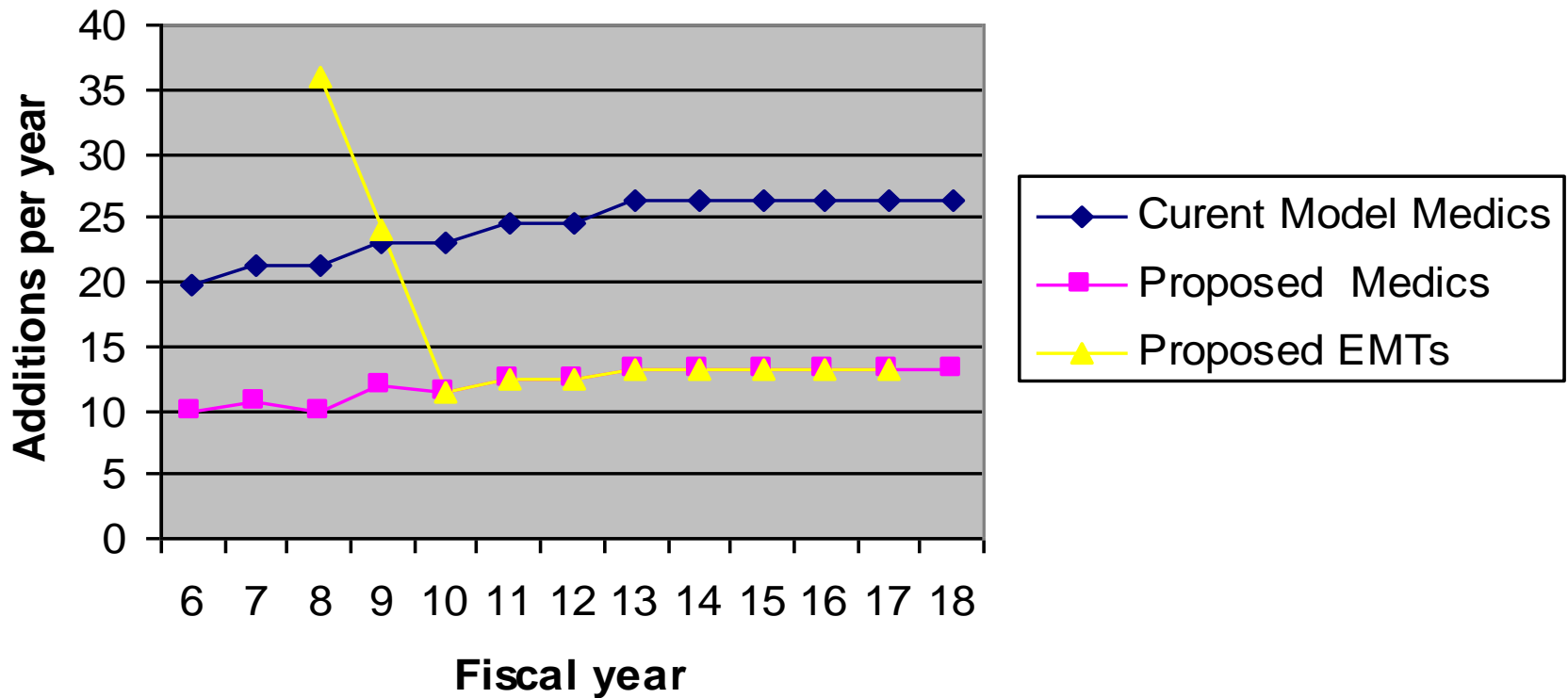
Lead Paramedic

EMT
(EMT, EMT-I, or JrPM)



Staffing Changes Over Time

Staffing Model Comparison



Issues as we roll out....

- ✦ **Some personnel will prefer “the old way” with 2 paramedics on 24 hour shifts**
- ✦ **Delayed rollout due to staffing concerns**
- ✦ **Upfront costs**





WAKE COUNTY
PARAMEDIC

WAKE COUNTY
EMS
PARAMEDIC

WAKE COUNTY
PARAMEDIC

WAKE COUNTY
PARAMEDIC
WAKE COUNTY
EMS
PARAMEDIC

WAKE COUNTY
PARAMEDIC