

NREMT UPDATE

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Acknowledgement

- NREMT staff
- NREMT Board of Directors
- Participated in:
 - Item Writing
 - Committee activities
 - State Director orientation



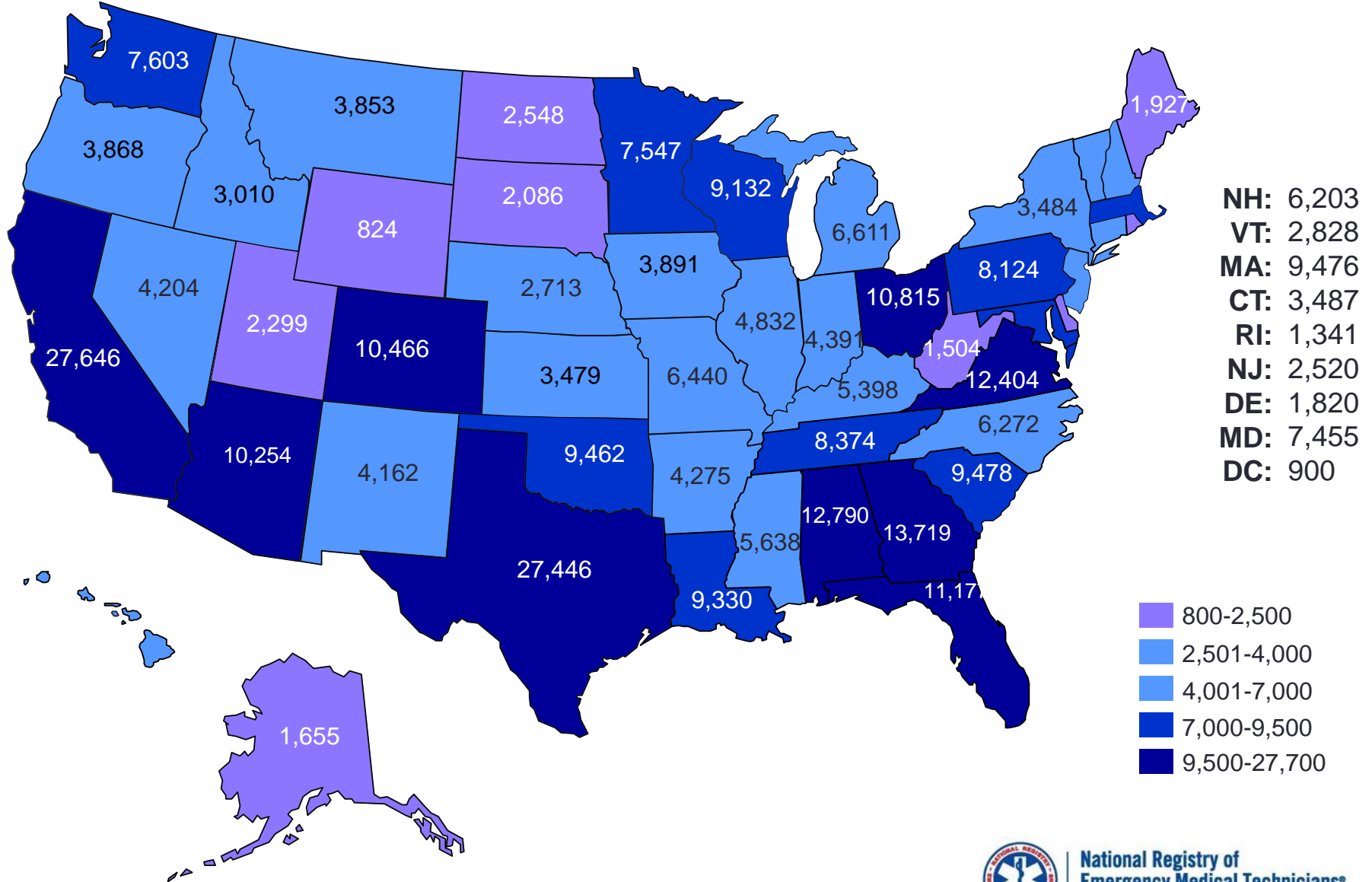
State Director Orientation

- New State Directors
- Overview of NREMT functions
- Interact with staff
- NASEMSO Presence & Participation

- Reach out if we don't contact you!



Total Nationally Certified EMS Providers: 334,059



NREMT

- Serving the Nation for 46 Years: 1970-2016
- 1,000,000 CBT exams (2007-2014)
- 1,000,000 CAT exams (2007-2015)
- 2.5 million exams
- 140,000 examinations (cognitive) annually
 - 85,000 certification
 - 96,000 recertification



REPLICA

Recognition of Emergency Medical Services Personnel
Licensure Interstate Compact



National Registry of
Emergency Medical Technicians®
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National Continued Competency Program

NREMT Continued Competency Requirements

- National: 50% (updated every 4 years)
- Local: 25%
- Individual: 25%

	National	Local	Individual	Total
EMR	8	4	4	16
EMT	20	10	10	40
AEMT	25	12.5	12.5	50
Paramedic	30	15	15	60



Recertification

- National EMS Certification expires every 2 years
 - EMR: September 30
 - EMT, AEMT, I85, I99, Paramedic: March 31
- Two methods
 - Traditional Continuing Education
 - Recertification by Examination
- Shift to electronic submission



Online Recertification

- Electronic verification of skills and education
- Algorithmic assessment of application
 - Decreases probability of incomplete application
- Decreased processing time
 - National average 11 hours and 24 minutes



Recertification by Exam

- Cognitive examination in lieu of continuing education
 - One attempt
 - Last 6 months of recertification
 - Utility for instructor/educator
- 1,467 registrants attempted exam in the 2014-2015 recertification season
- Success rate = 88%



Paramedic Student Portfolio

- Cohorts starting on August 1, 2016.
- Portfolio required for each student.
- Program director attestation.
- Individual Documentation of learning:
 - Emphasis on scenarios (early & often)
 - Team member (CRM)
 - Team leader
 - Real time with progressive length
 - Success & failure of skills



Updated Paramedic Psychomotor Exam

- Starting January 1, 2017

NRP candidates who have not started psychomotor testing on or after January 1, 2017

**NRP Phase 1 psychomotor exam
(up to 2 full attempts)**

**Patient Assessment – Trauma, Dynamic Cardiology,
Static Cardiology, Oral Station – Case A, Oral
Station – Case B, Out-of-hospital Scenario**

***Refresher and re-entry candidates use Pathway 3**



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Transition from 12 to 6

NRP candidates who have started psychomotor testing before January 1, 2017 and are eligible for retest

Can only retest the following skills:

- **Patient Assessment –Trauma**
- **Dynamic Cardiology**
- **Static Cardiology**
- **Oral Station – Case A**
- **Oral Station – Case B**

OR

Choose to complete the NRP Phase 1 psychomotor examination (up to 2 full attempts)

If retesting any of the following skills:

- **Ventilatory Management – Adult**
- **Ventilatory Management – Supraglottic Device**
- **Intervenous Therapy**
- **Intravenous Medication**
- **Pediatric Intraosseous Infusion**
- **Random EMT Skills**

Must complete the NRP Phase 1 psychomotor exam (up to 2 full attempts)



Integrated Out of Hospital Scenario

- New
- Candidate is the team leader
- Direct and provide care to manage complex patient conditions
- Full 20 minutes
- Real world

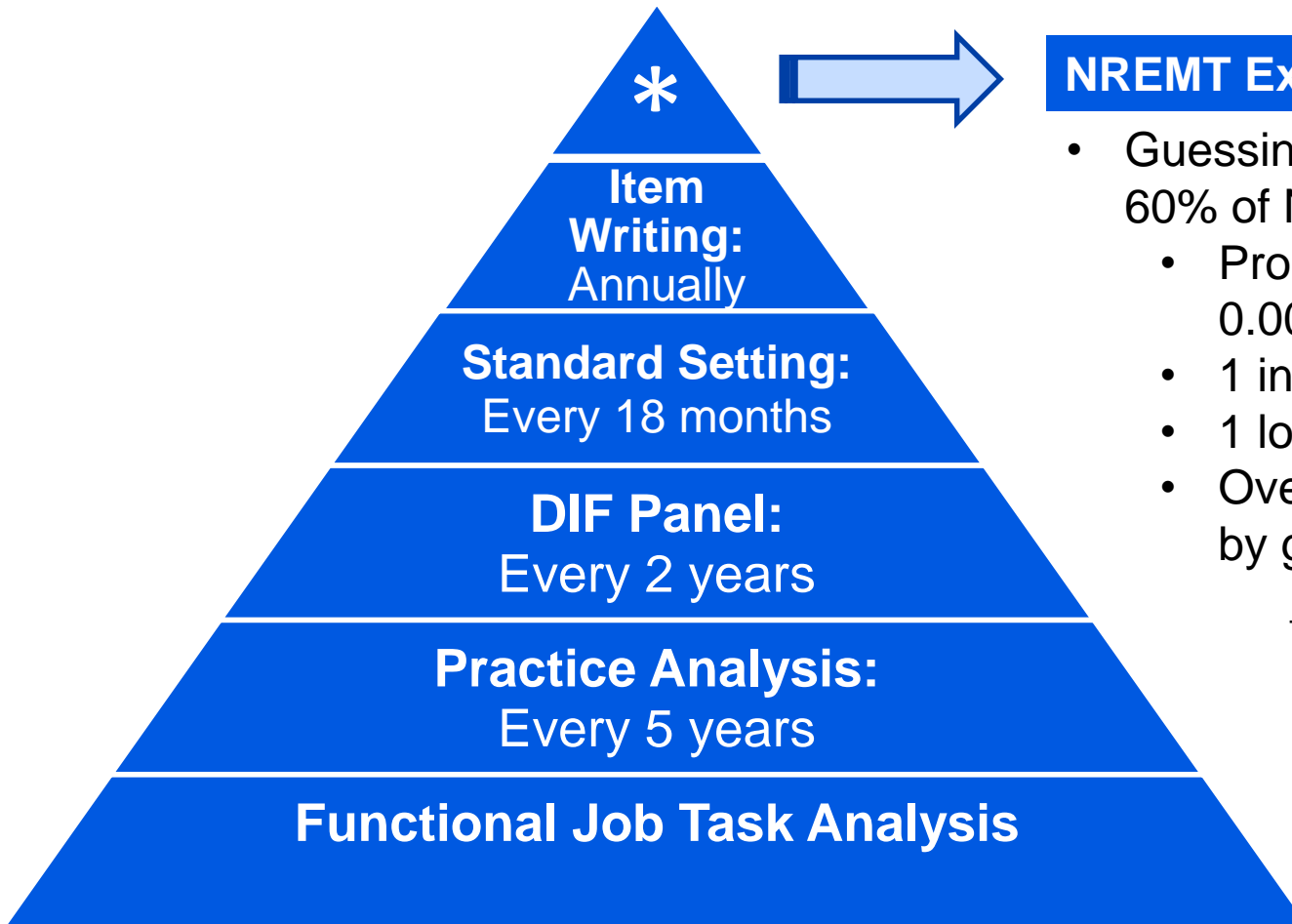


Scenario Development Workshops

- 22 across the nation
- NAEMSE partners
- Educator/instructor focus
- Develop formative & summative scenarios



NREMT Psychometric Rigor



NREMT Examination Statistics

- Guessing correctly on at least 60% of NREMT items
 - Probability = 0.000000009727
 - 1 in 1,000,000
 - 1 logit lower than cut score
 - Overall chance of passing by guessing on all items:
1 in 150,000,000

ICE-NCCA ACCREDITED – EACH LEVEL.



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Practice Analysis

- 5 year intervals
 - 1994-2014
 - Detect changes in EMS practice
 - Tasks in 5 areas
- Annual topic area census
- Evidence environment impact on standard(s) of care.



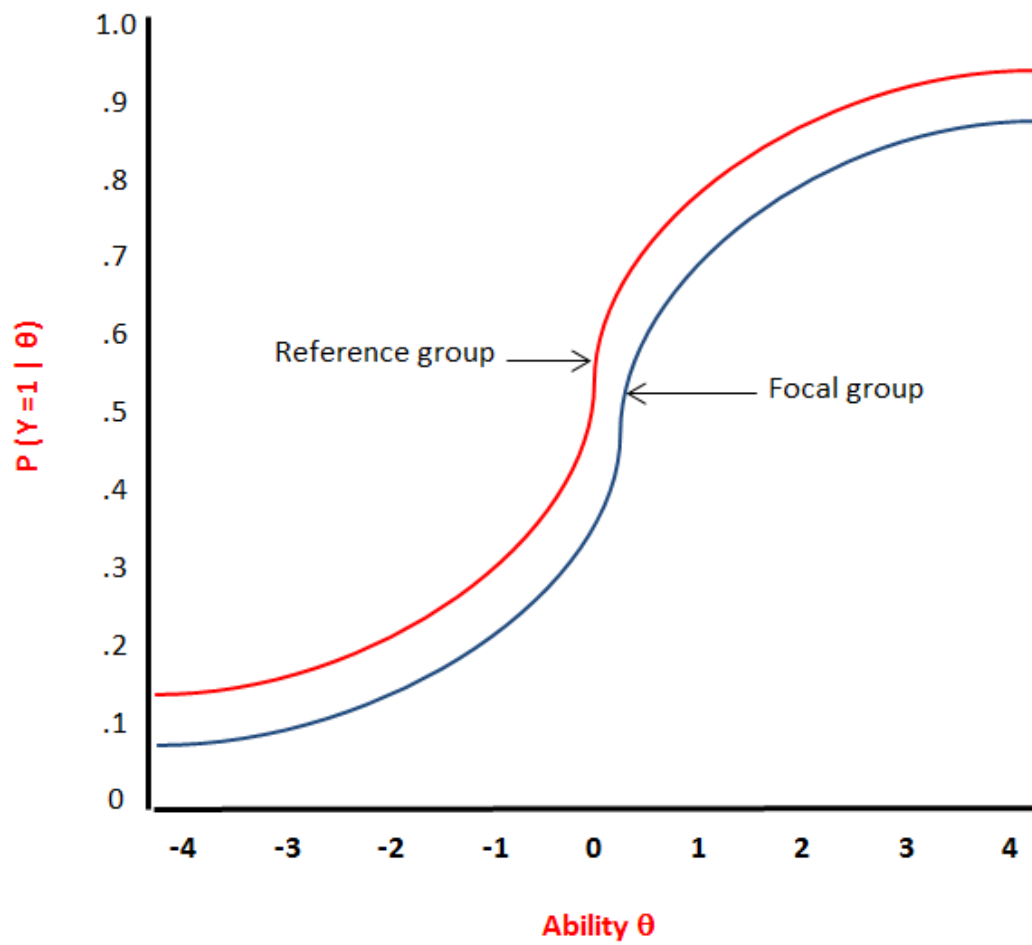


Figure 1. ICC for Uniform DIF



Standard Setting

- Modified Angoff process
- Passing criteria established
- Pass or fail is based on performance against the criteria, not the group
- What is the BMCC expected to know & do?



Eligibility

- State Approved Program
- CAAHEP Accreditation (*LoR) – Paramedic
- NREMT eligibility requirements
- Work with the state on complex cases



Provider Certification Levels

- Variable length CAT & Psychomotor Exam
- EMR
- EMT
- *AEMT
- NRP
- NREMT programs are accredited NCCA/ICE



Rasch Model

$$P(Y_{pi} = 0) = 1 - P(Y_{pi} = 1)$$

$$= 1 - \frac{e^{(T_p - D_i)}}{1 + e^{(T_p - D_i)}}$$

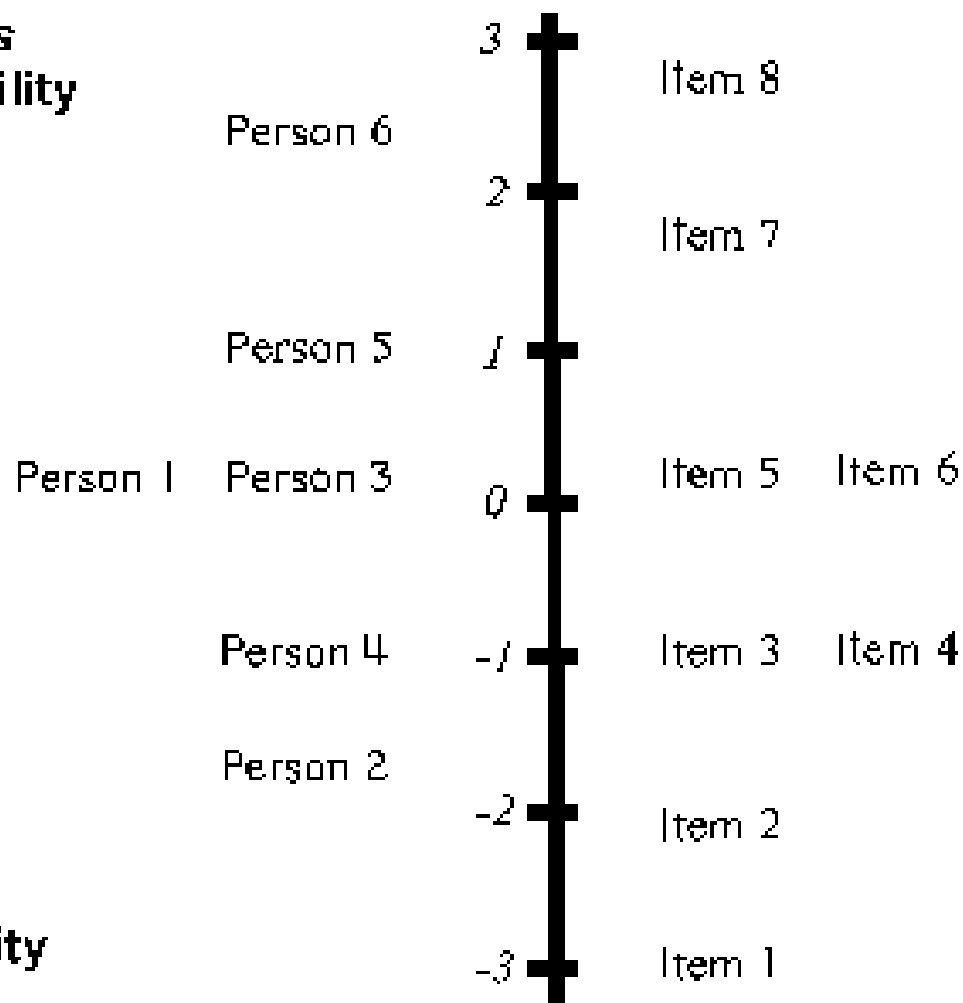
$$= \frac{1 + e^{(T_p - D_i)}}{1 + e^{(T_p - D_i)}} - \frac{e^{(T_p - D_i)}}{1 + e^{(T_p - D_i)}}$$

$$= \frac{1}{1 + e^{(T_p - D_i)}}$$

Where T_p is the ability of the person
and D_i is the difficulty of the item.



**Persons
greater ability**



**Items
more difficult**

less ability

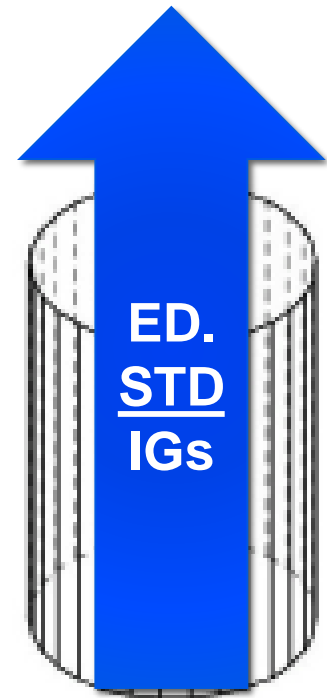
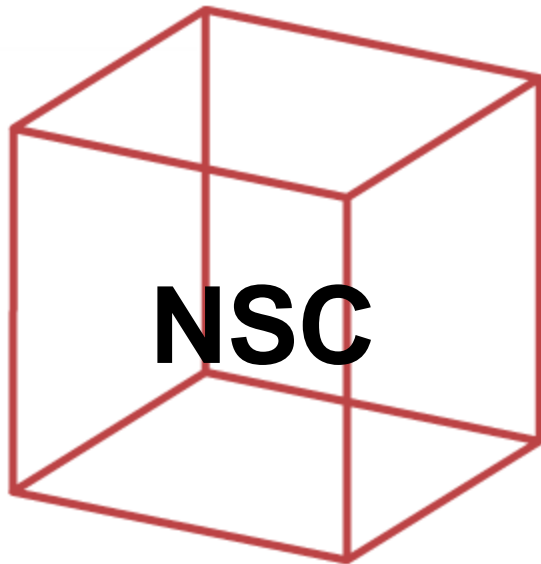
easier



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NSC vs. Ed Stds & IGs

Depth & Breadth



NREMT Test Plan

- 70 – 120 items; maximum 2 hrs.
- Airway, Respiration & Ventilation*
- Cardiology & Resuscitation*
- Trauma*
- Medical & Ob/Gyn*
- EMS Operations

* Content to include 85% Adult/geriatrics and 15% Pediatrics



NREMT Exam Performance

NREMT 1/1/2013 – 11/20/2014

	n	1 st	3 rd Cum.	6 th Cum.	Failed 6x
National	114,934	70%	79%	80%	n = 43



NRP Test Plan

- 80 – 150 items; maximum 2 hrs. 30 min.
- Airway, Respiration & Ventilation*
- Cardiology & Resuscitation*
- Trauma*
- Medical & Ob/Gyn*
- EMS Operations

* Content to include 85% Adult/geriatrics and 15% Pediatrics



NRP Exam Performance

NRP 1/1/2013 – 11/20/2014

	n	1 st	3 rd Cum.	6 th Cum.	Failed 6x
National	18,161	74%	86%	87%	n = 35



Where do you get those \$#*&! questions?

**PRACTICE
ANALYSIS**



- Education
Std./IGs
- AHA Guidelines
- CDC National
Trauma Triage
Protocols
- Textbooks
- Recent Literature



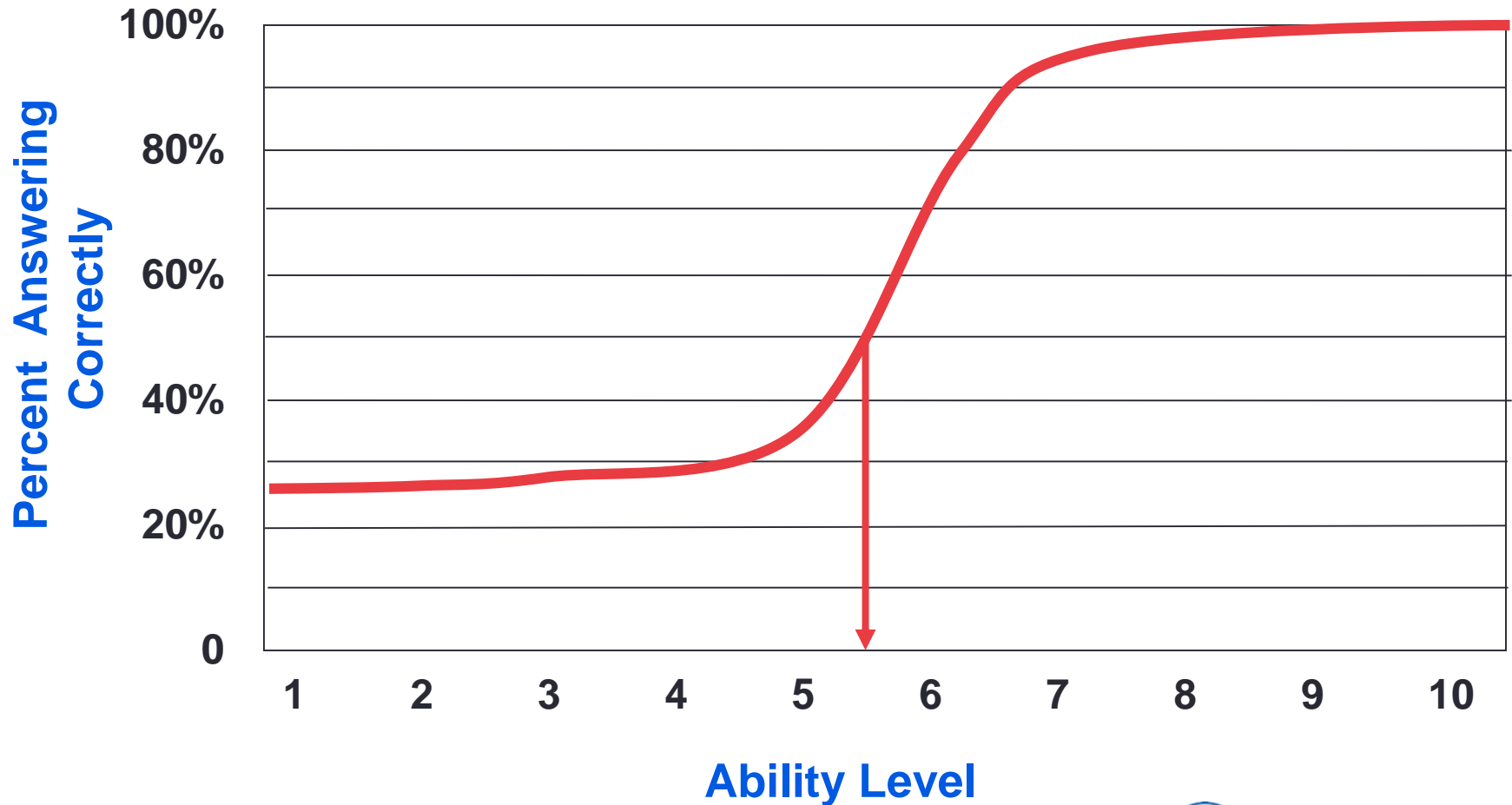
**EXAM
CONTENT**



Pilot Testing

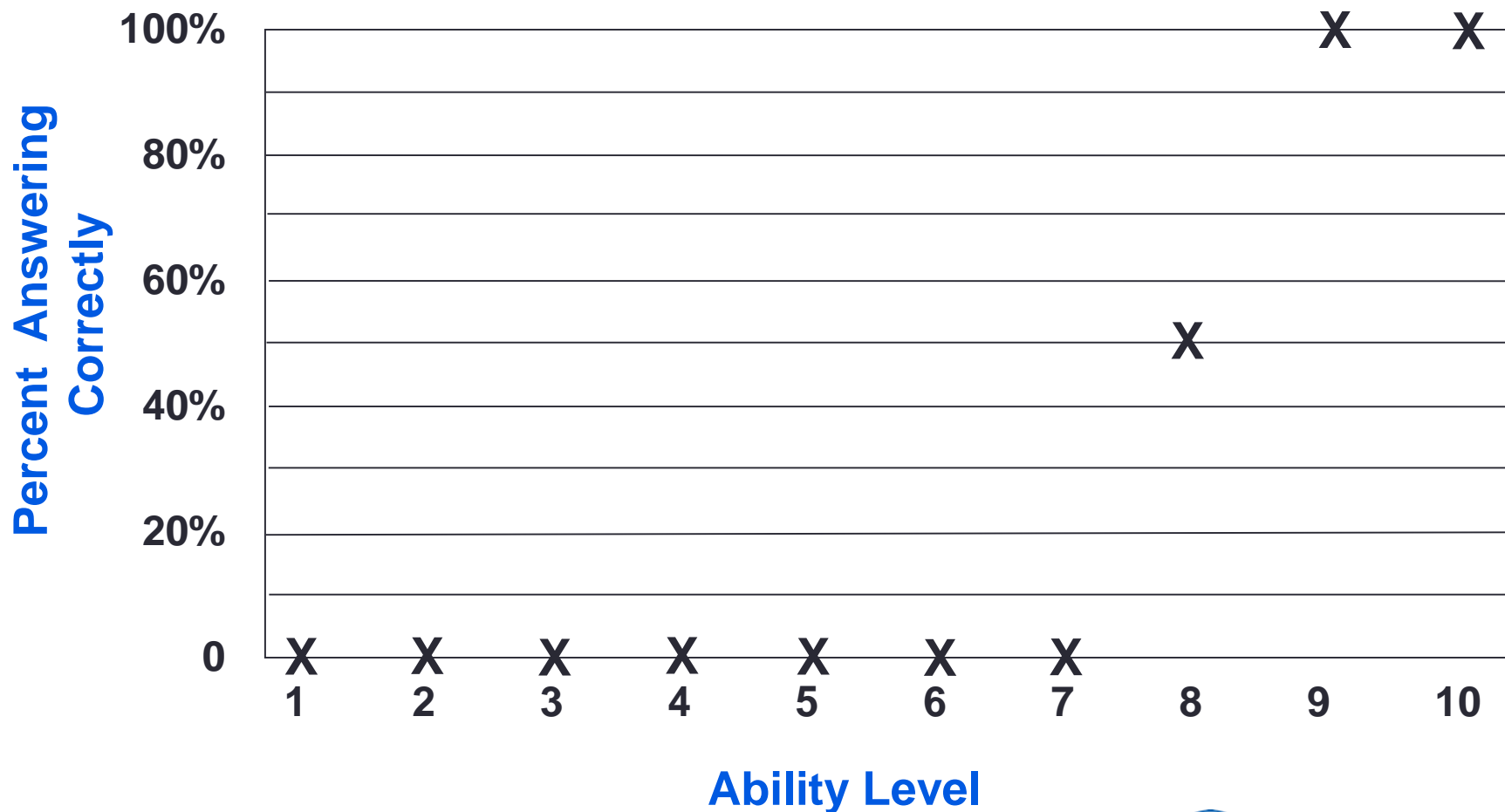
Level	# of Pilot items
EMR	30
EMT	10
AEMT	35
Paramedic	20

Pilot Testing



Pilot Testing

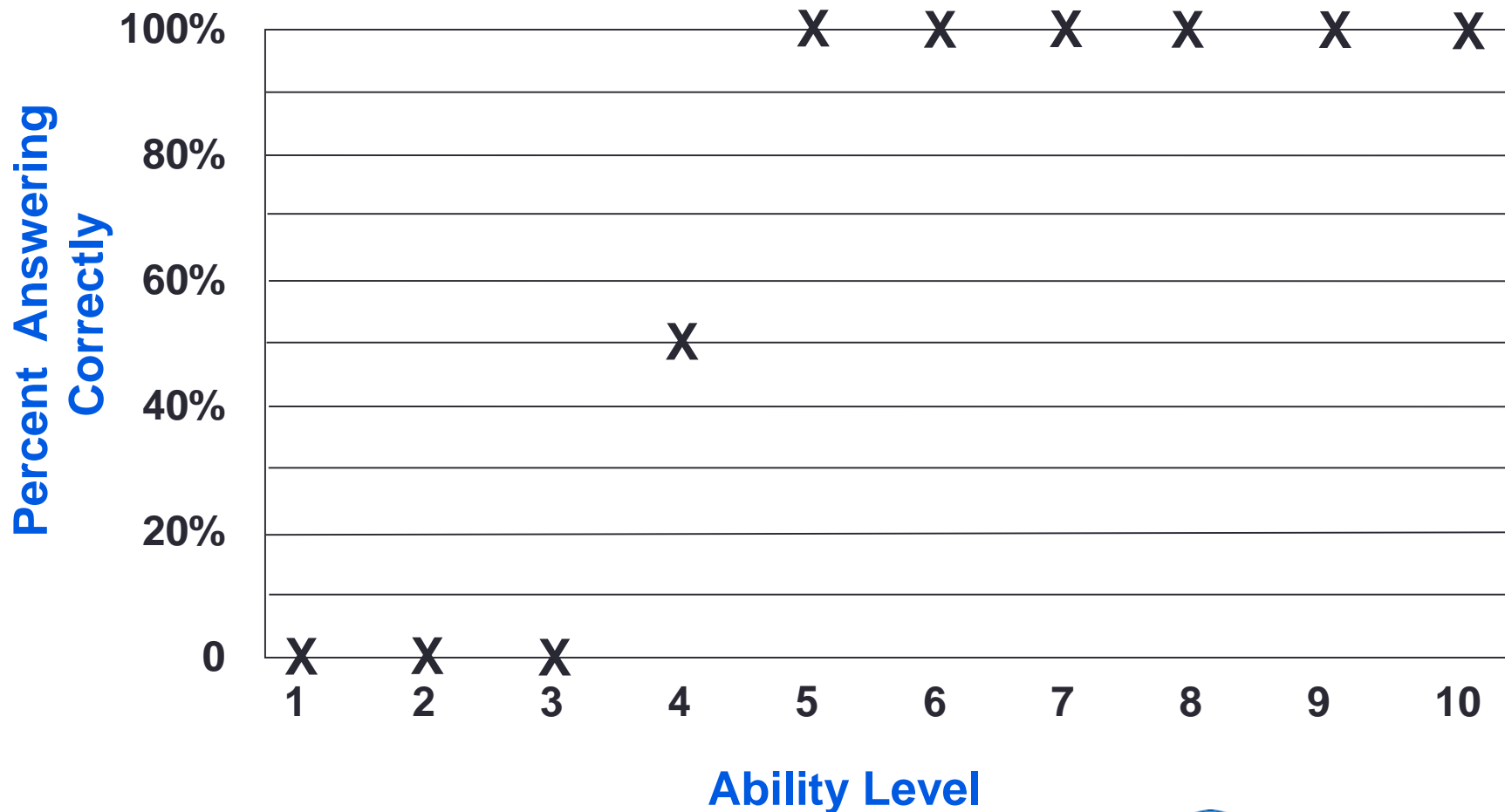
GOOD QUESTION



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Pilot Testing

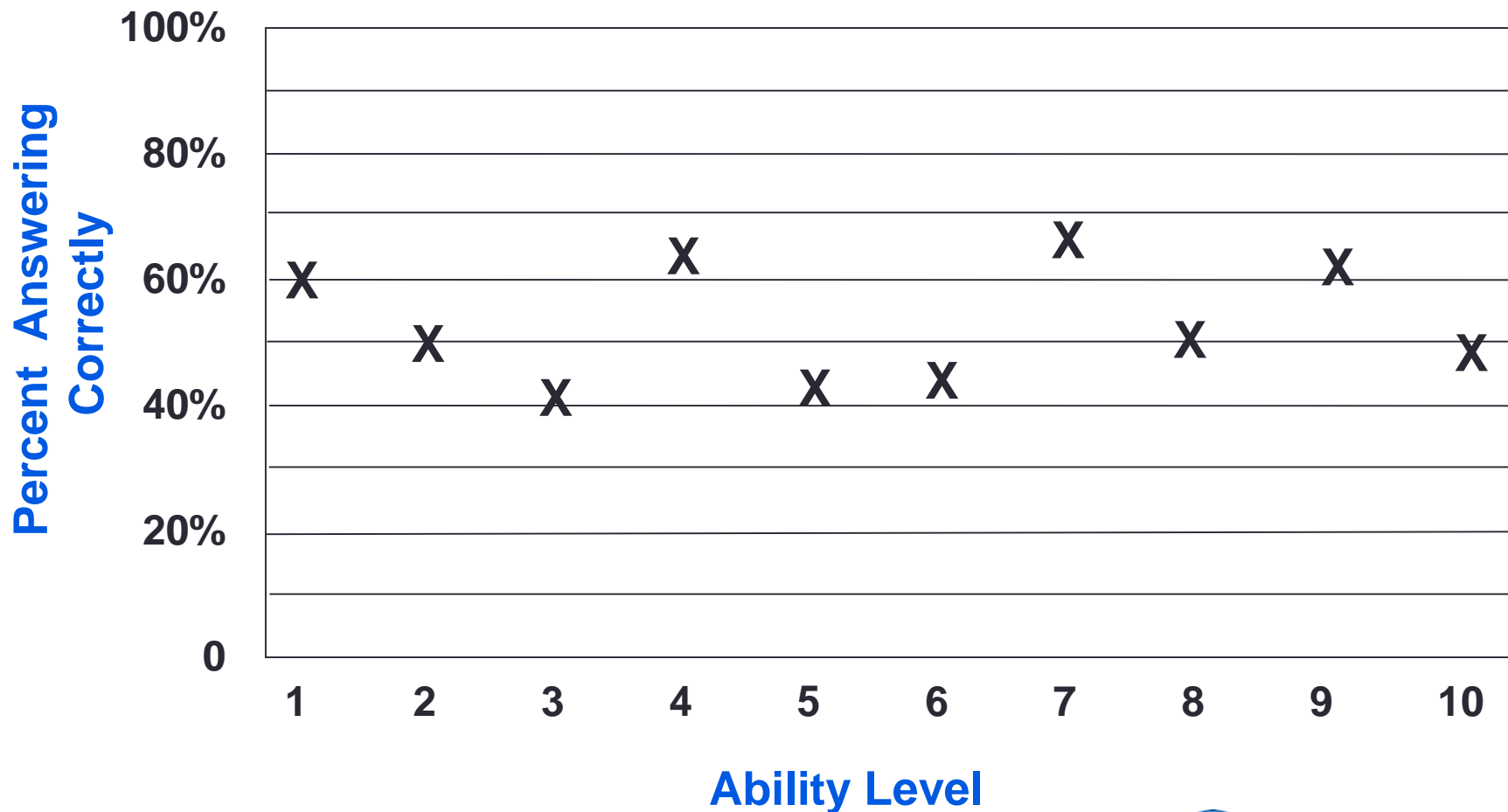
GOOD, EASY QUESTION



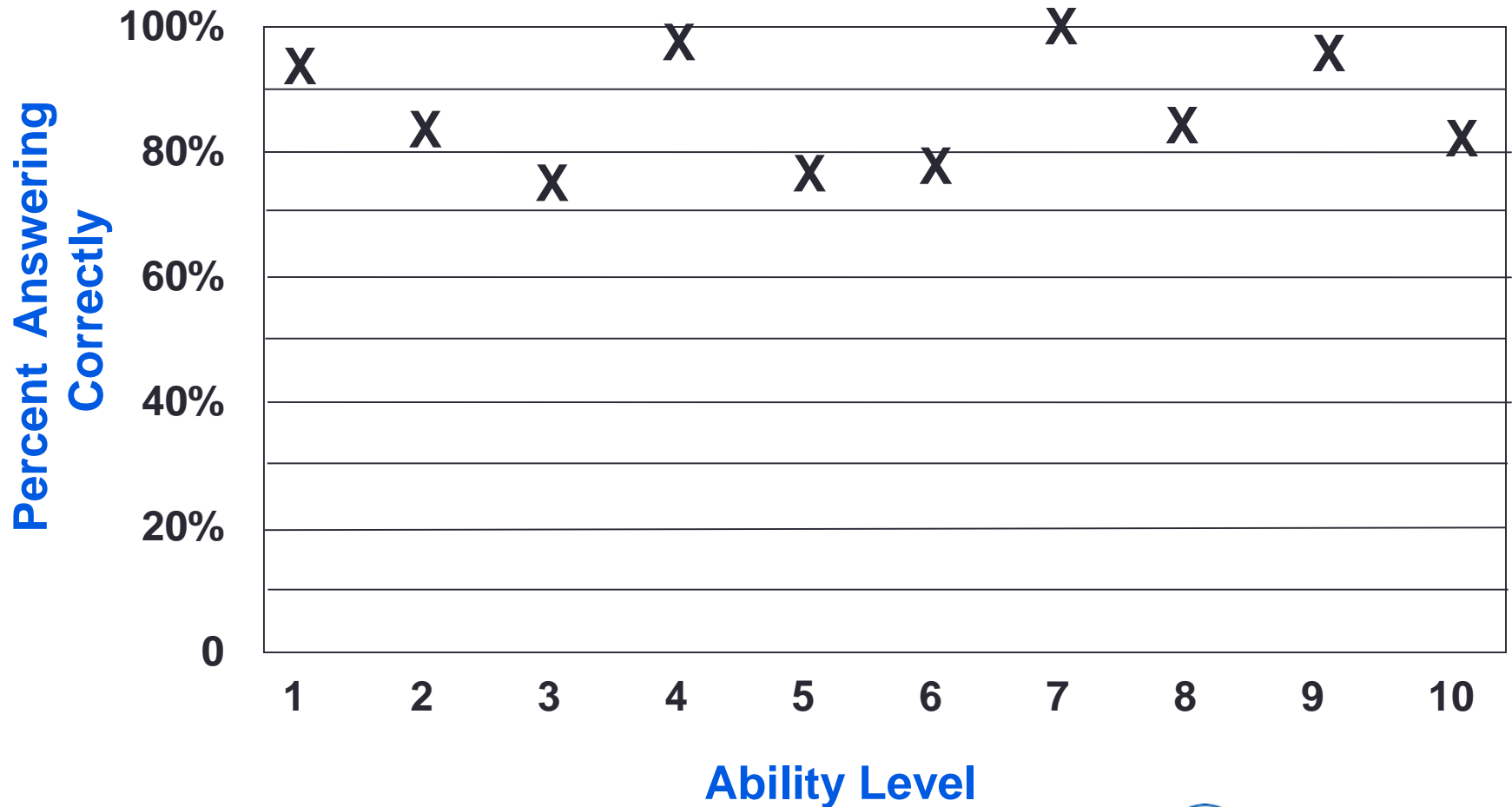
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Pilot Testing

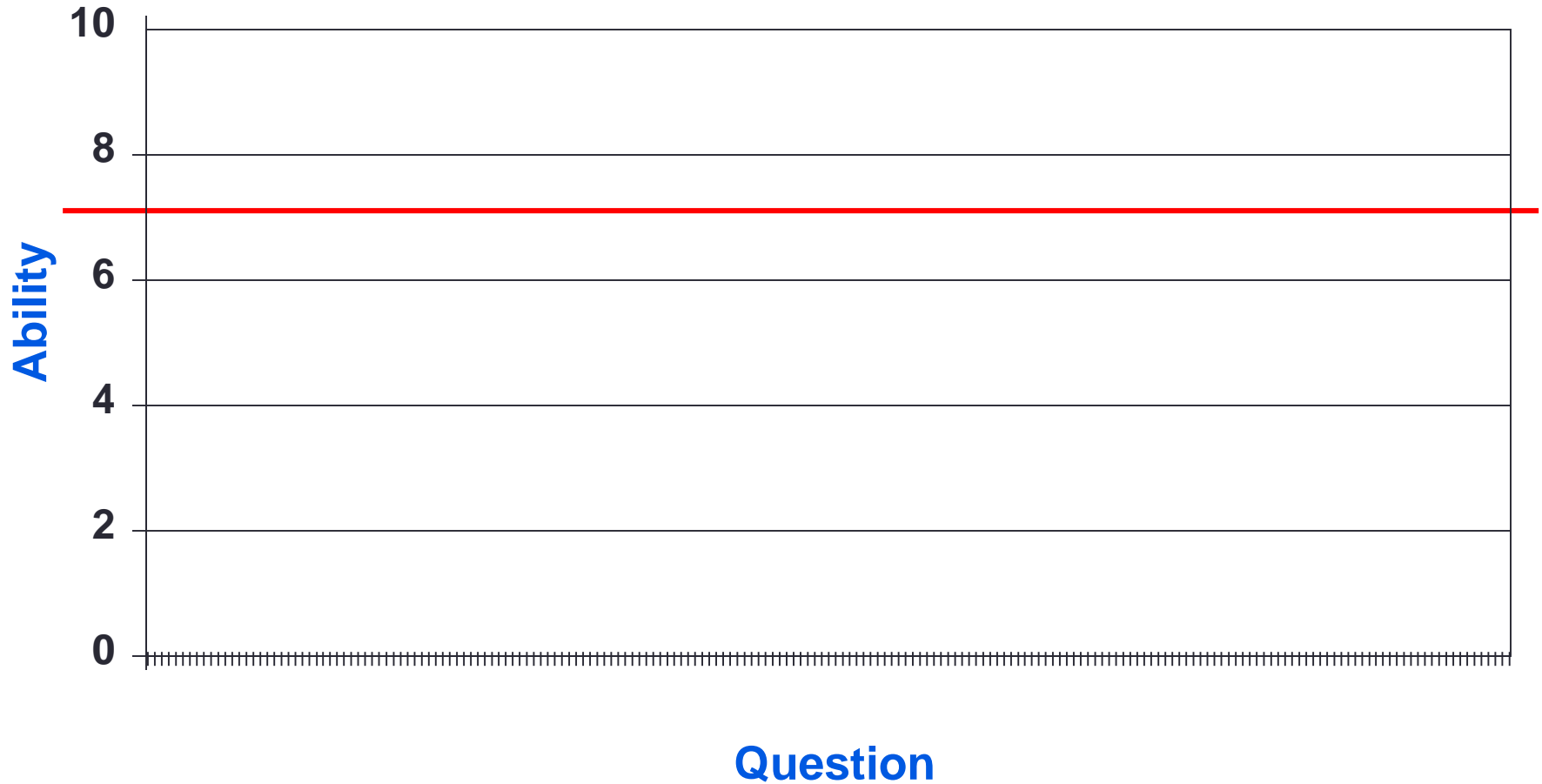
*BAD QUESTION;
POOR DISCRIMINATION*



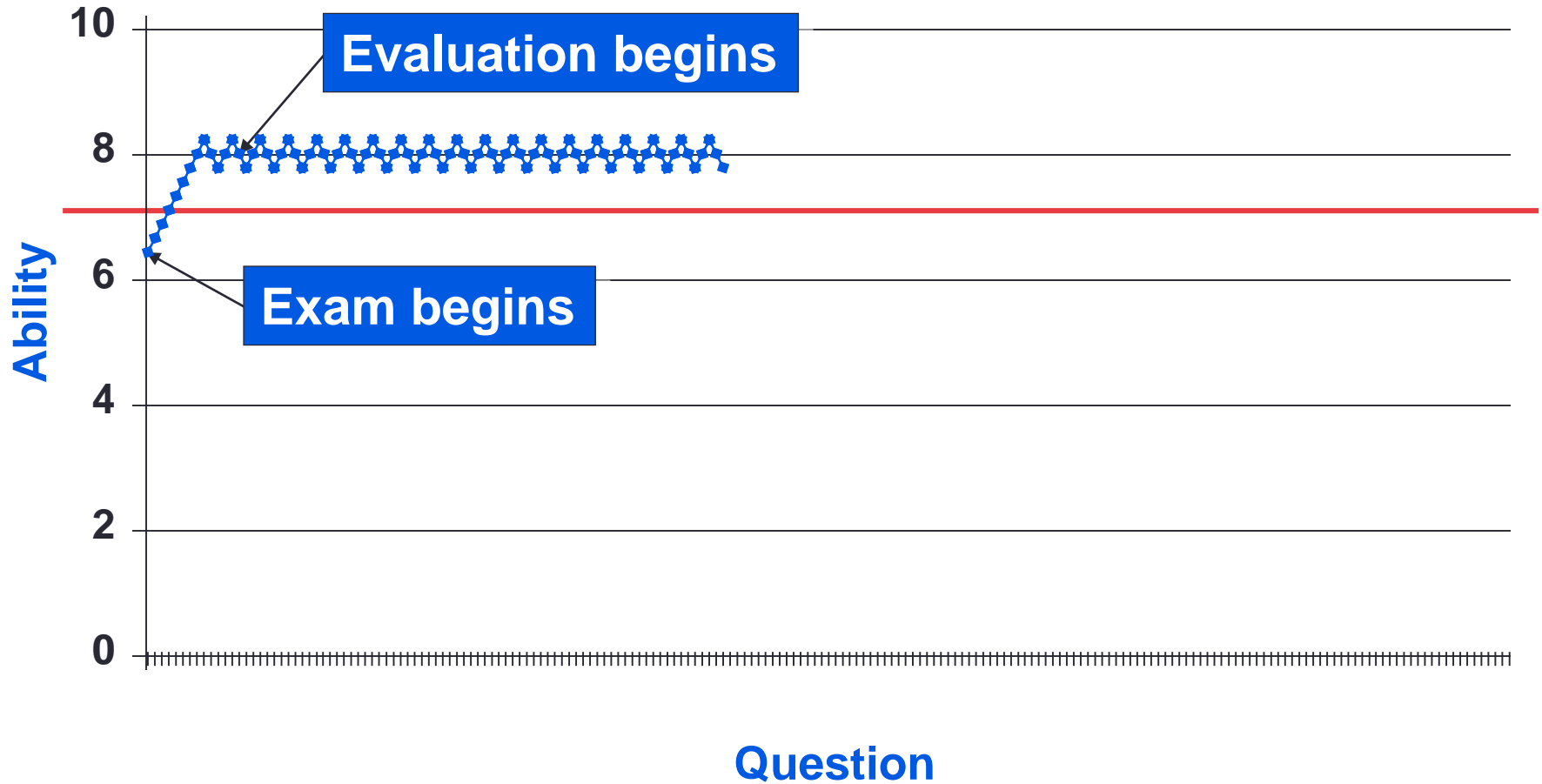
Pilot Testing



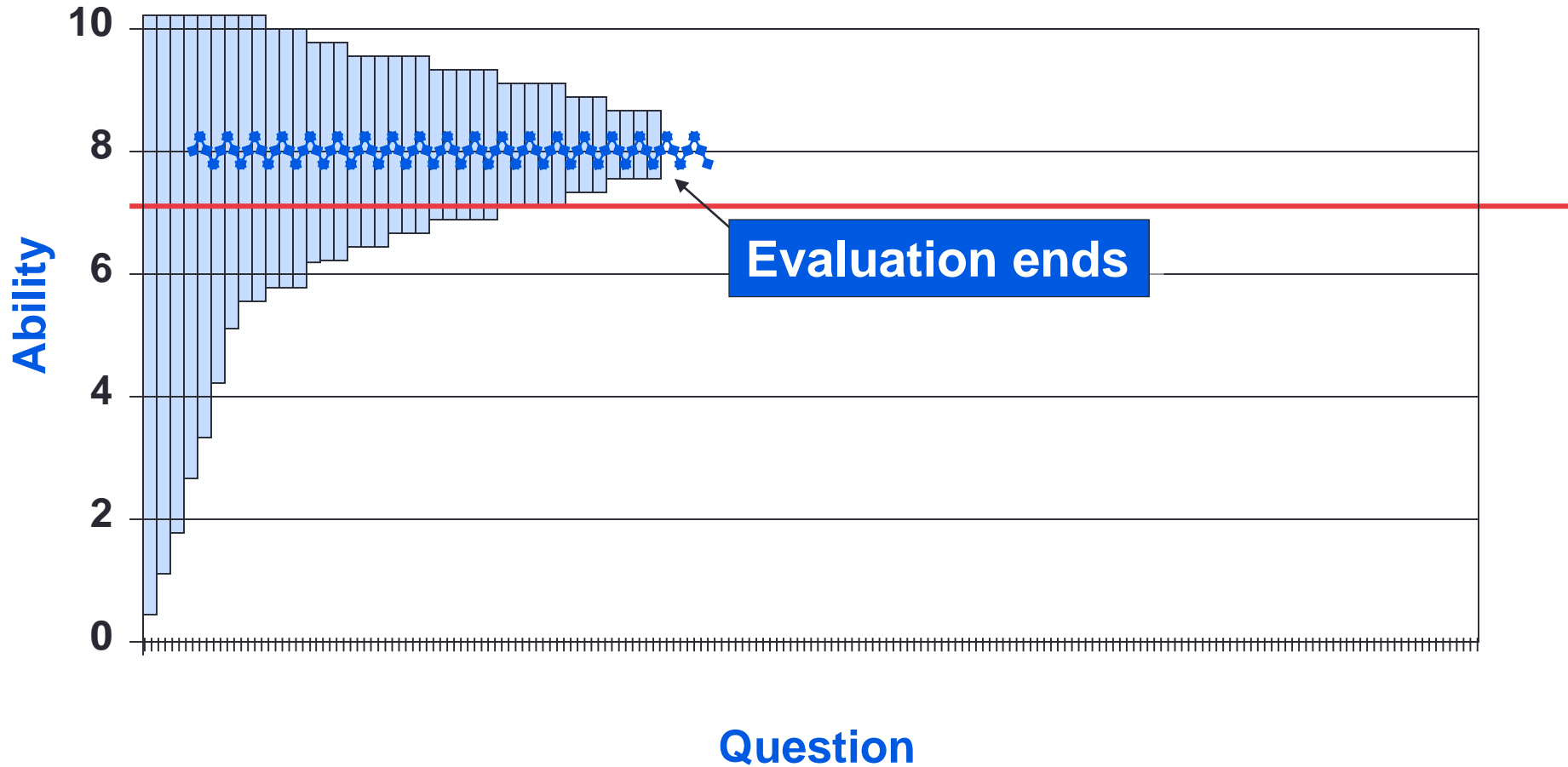
A Computer Adaptive Test



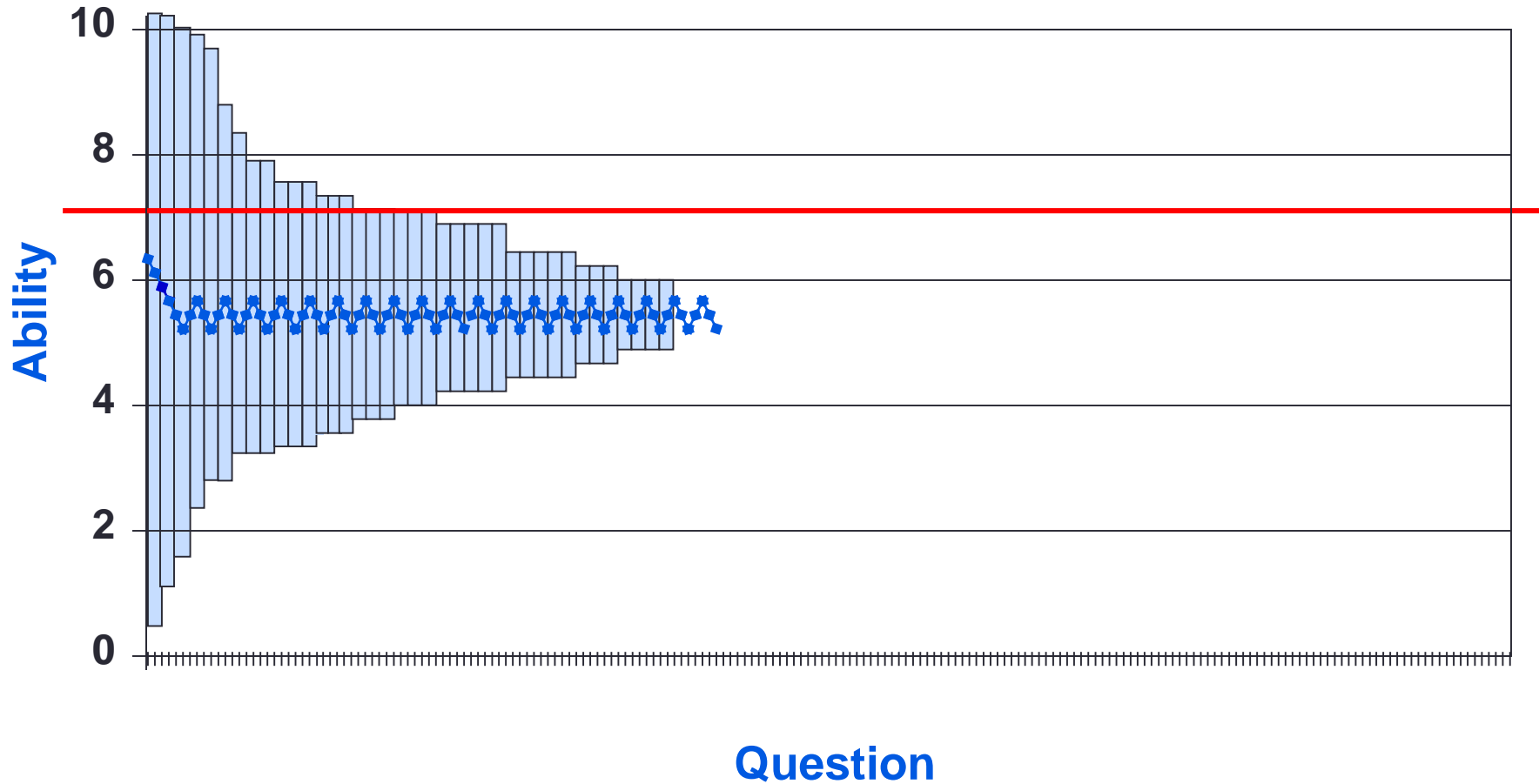
The “Perfect Candidate”



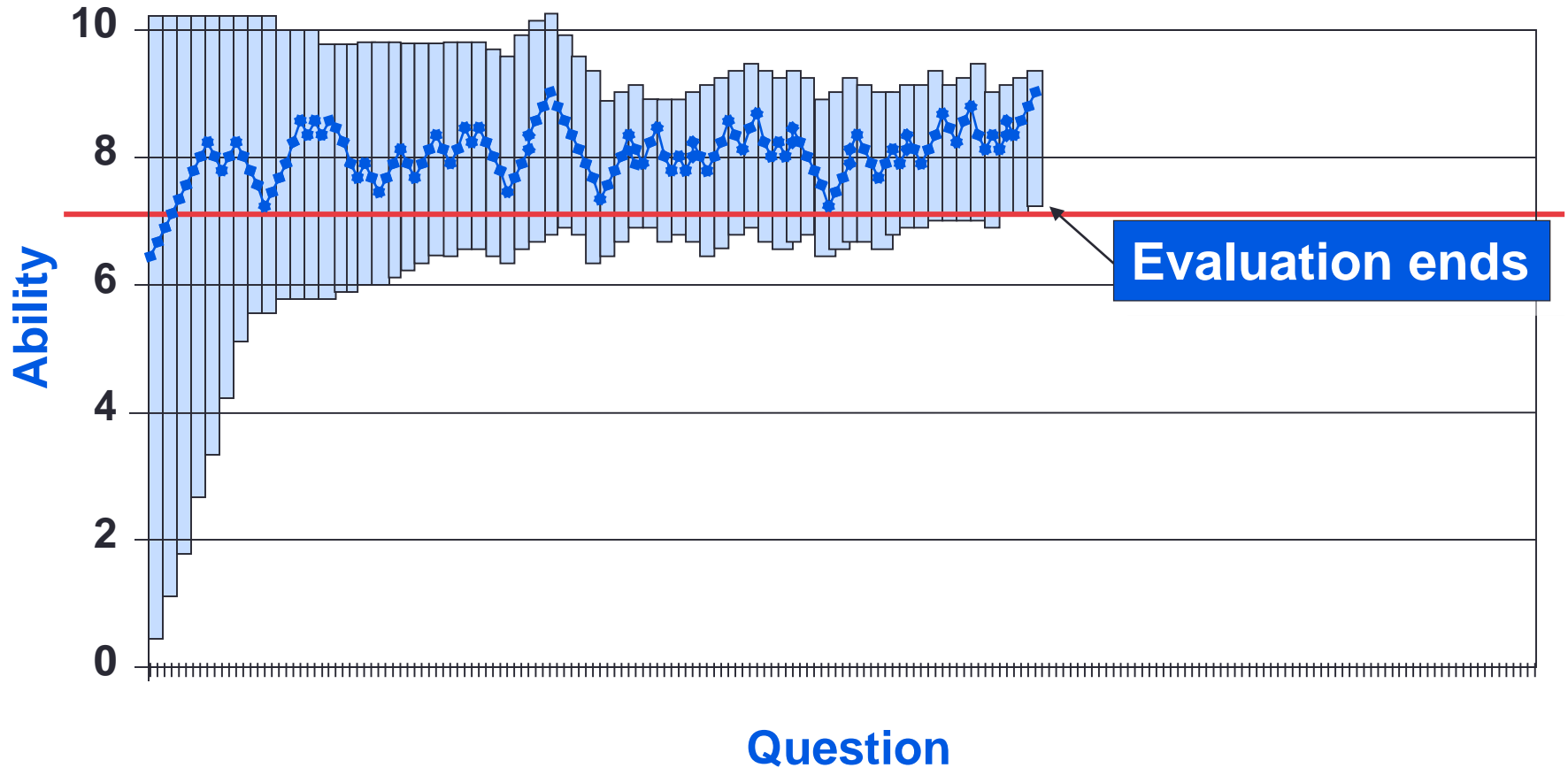
The Confidence Interval



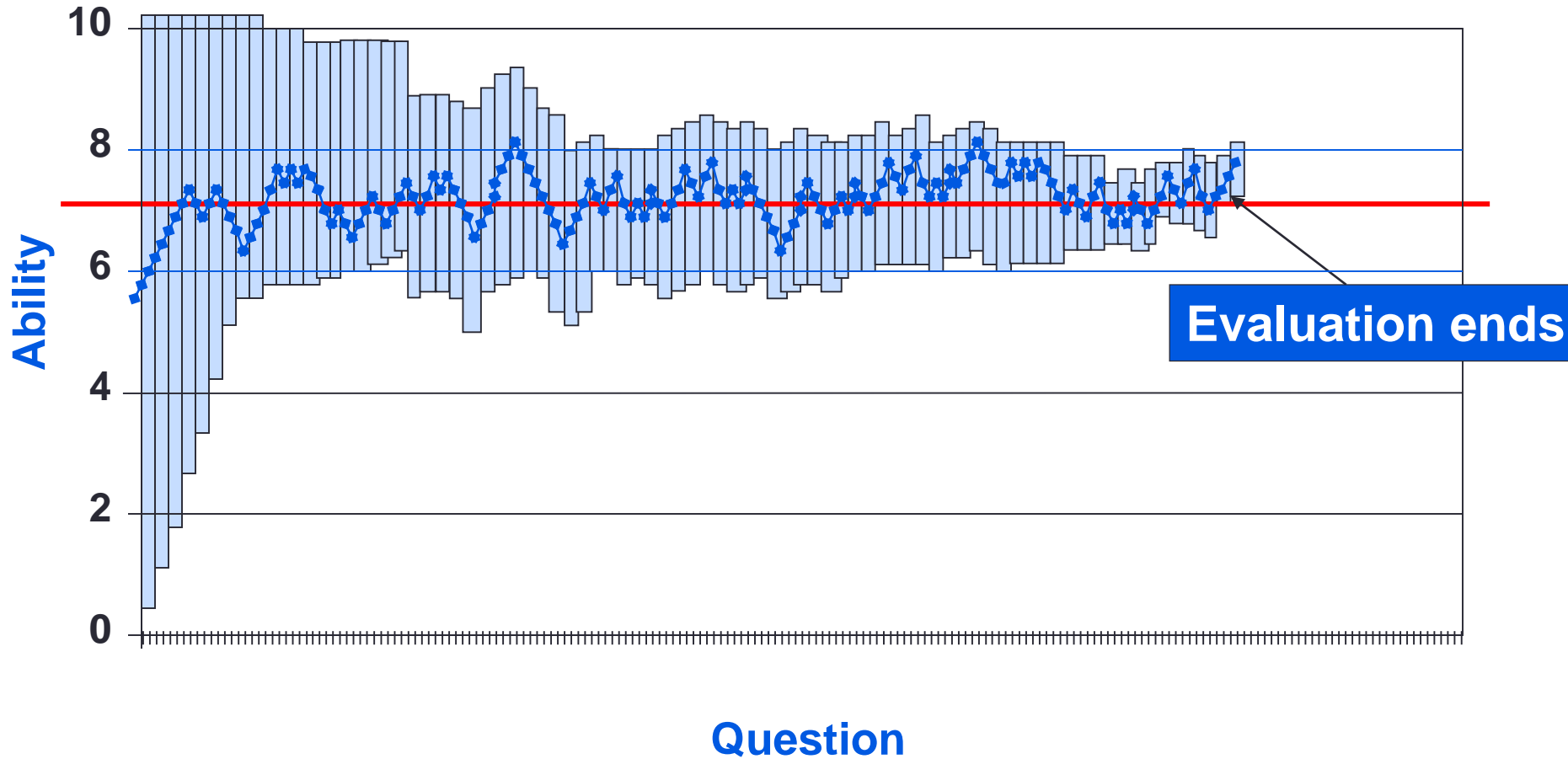
The Confidence Interval



A "Real" Candidate



A "Real" Candidate



Exam Termination Criteria

- A maximum number of items are delivered*, OR
- The candidate runs-out-of-time*, OR
- 95% certainty that the candidate's ability (theta) is either at/above or below the passing standard



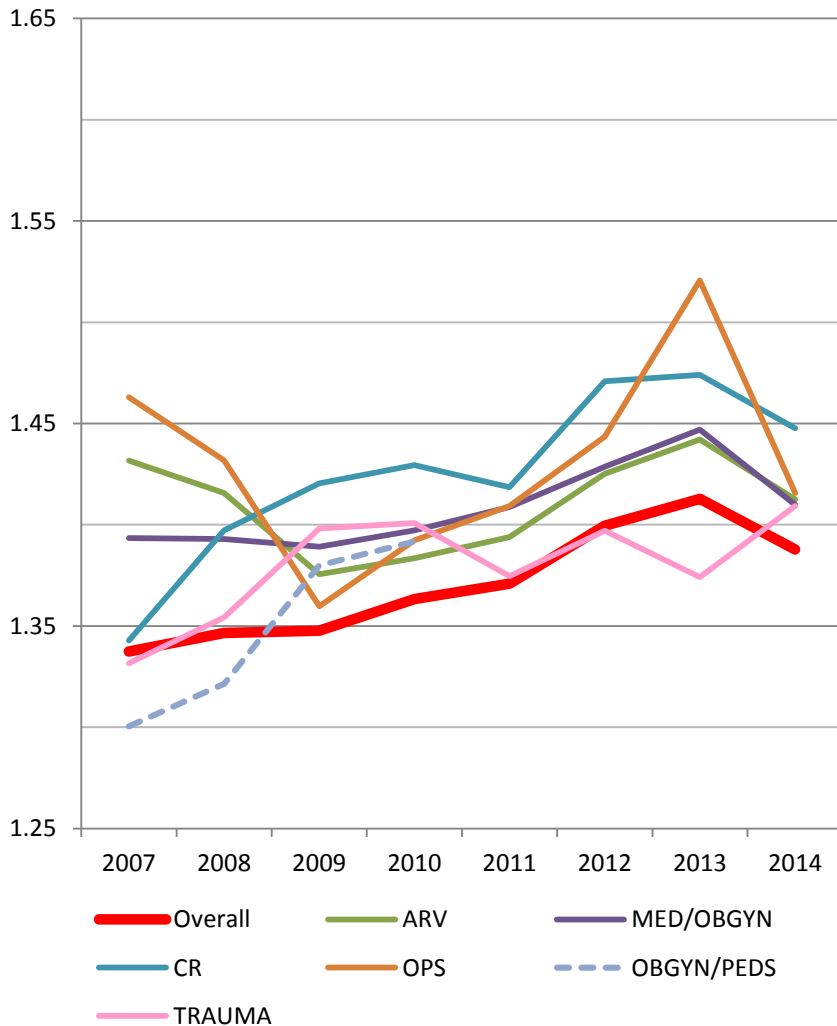
Important Concepts

- There is no minimum percentage of items correct to pass.
- Every candidate will be challenged to the limit of his/her ability.
- Individualized

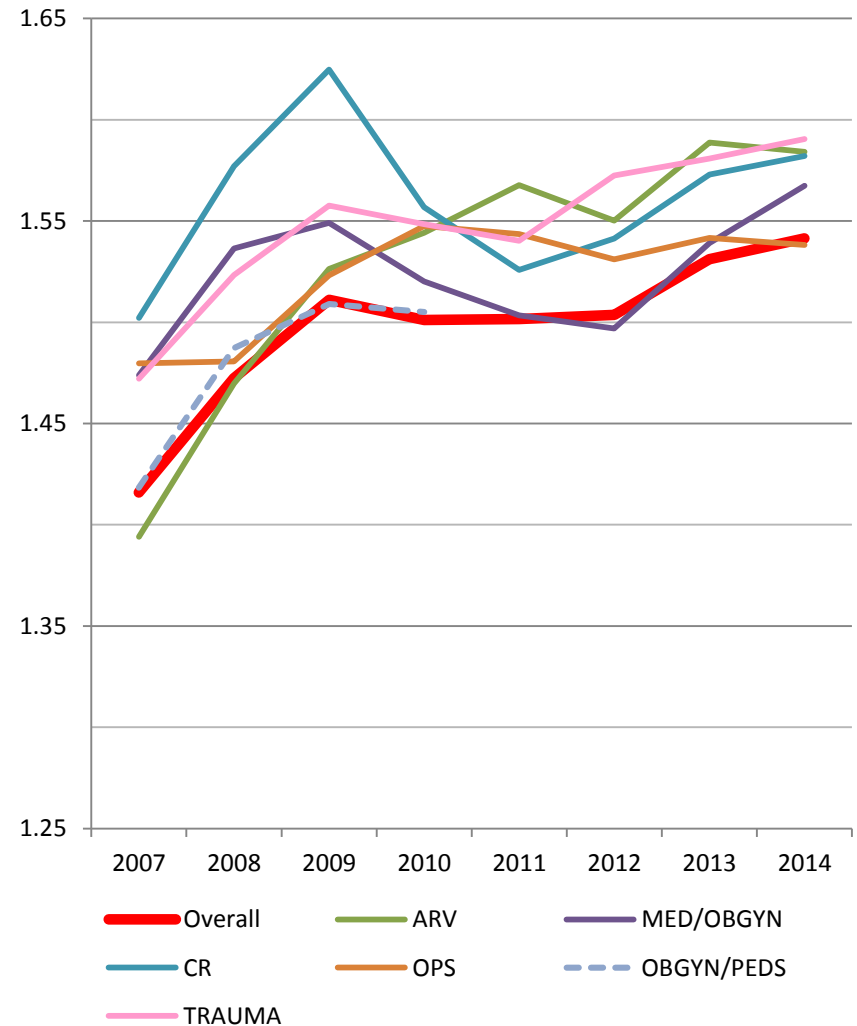


Overall Ability EMTs and Paramedics by Content Area

EMT Mean Cognitive Ability (2007-July 2014)

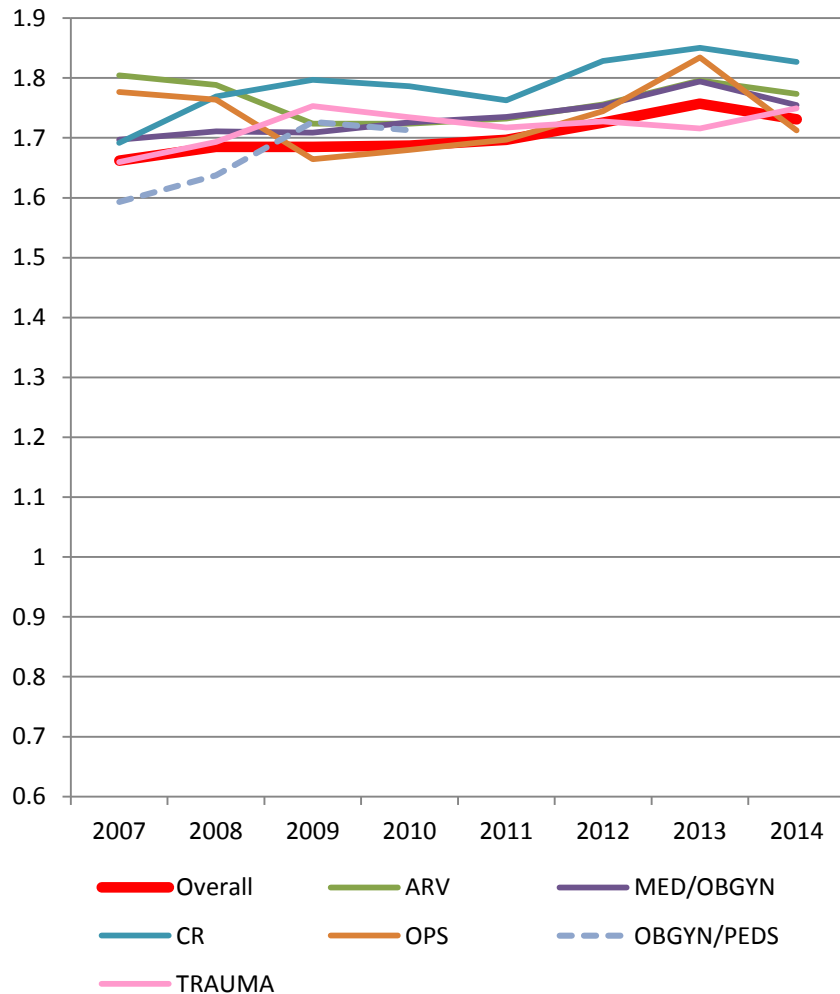


Paramedic Mean Cognitive Ability (2007-July 2014)

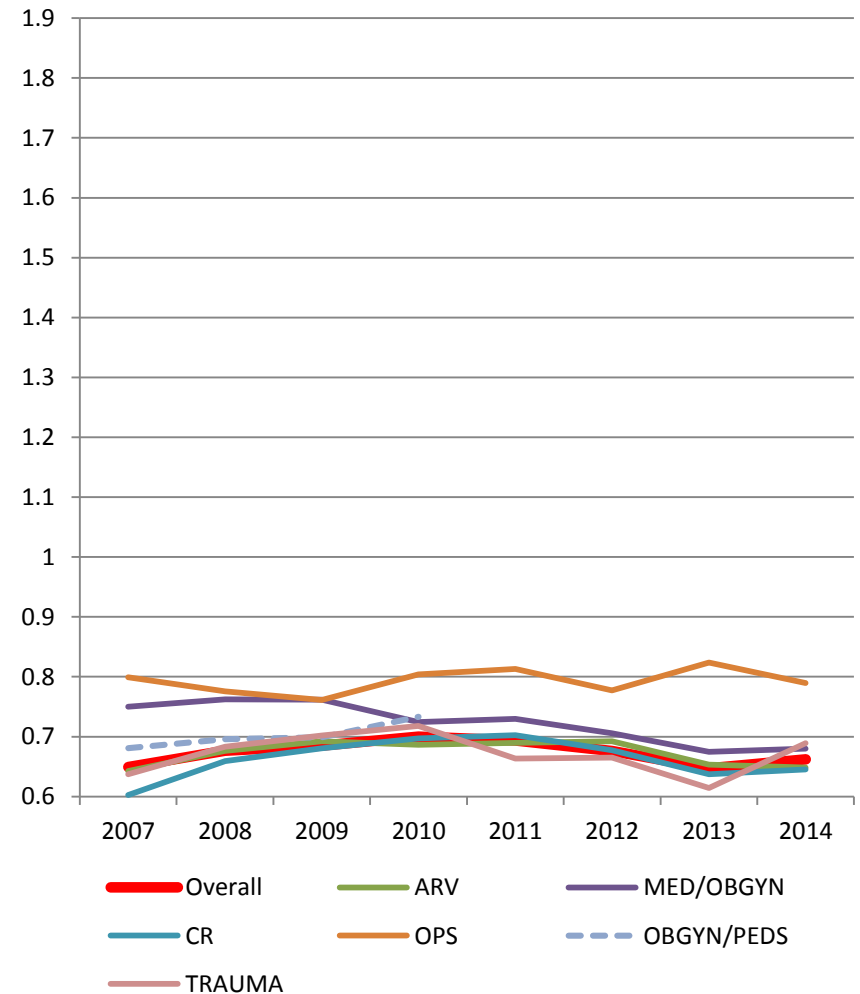


EMT First Time Pass vs. Fail by Content Area

First Time Pass EMT Mean Cognitive Ability (2007-July 2014)

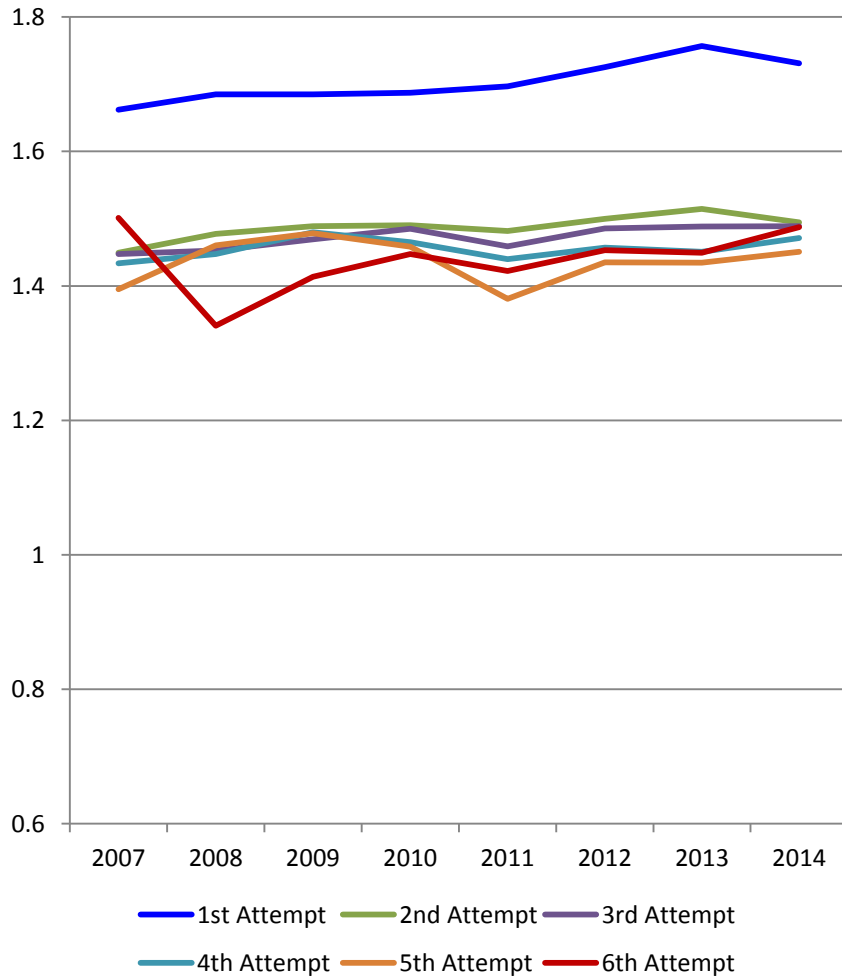


First Time Fail EMT Mean Cognitive Ability (2007-July 2014)

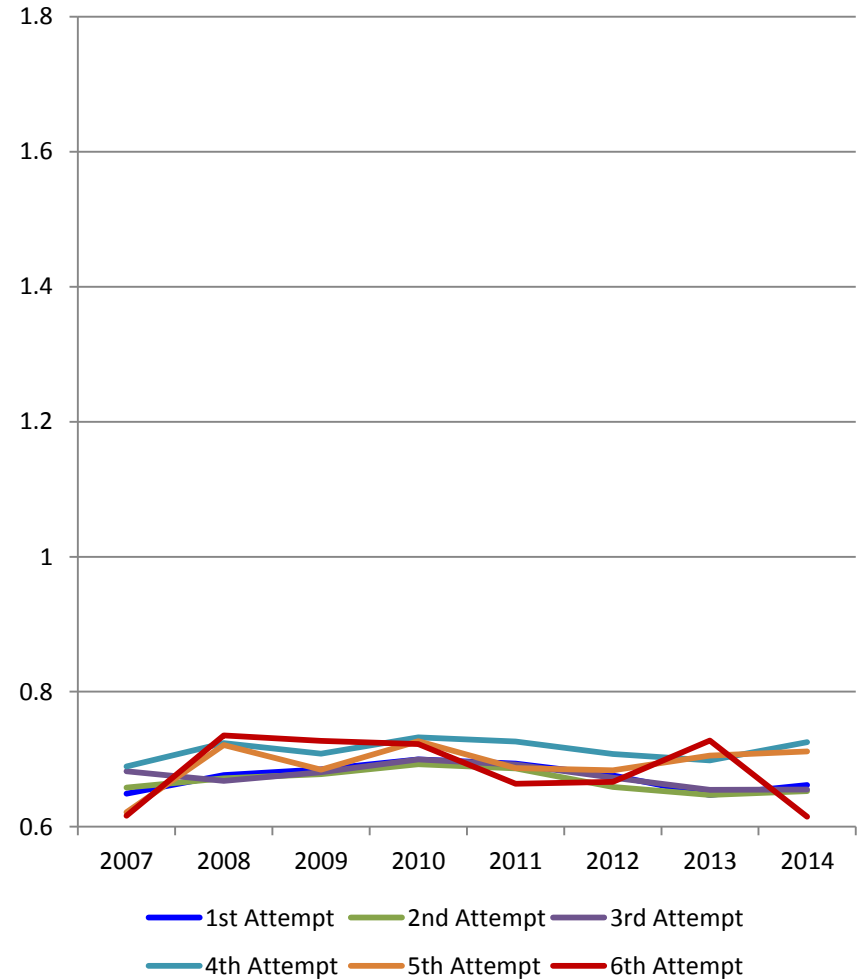


EMT Ability by Attempt Number

EMT Pass Mean Cognitive Ability
(2007-2014)



EMT Fail Mean Cognitive Ability
(2007-2014)



Successful EMT Candidate

A 58 year old female complains of palpitations that began while she was watching TV. Her vital signs are BP 110/72, P 152, R 18 and her SpO2 is 95% on room air. While transporting her, you should

- administer oxygen by non-rebreather mask.
- provide reassurance.
- attached the AED and analyze her rhythm.
- administer 1 baby aspirin.



Unsuccessful EMT Candidate

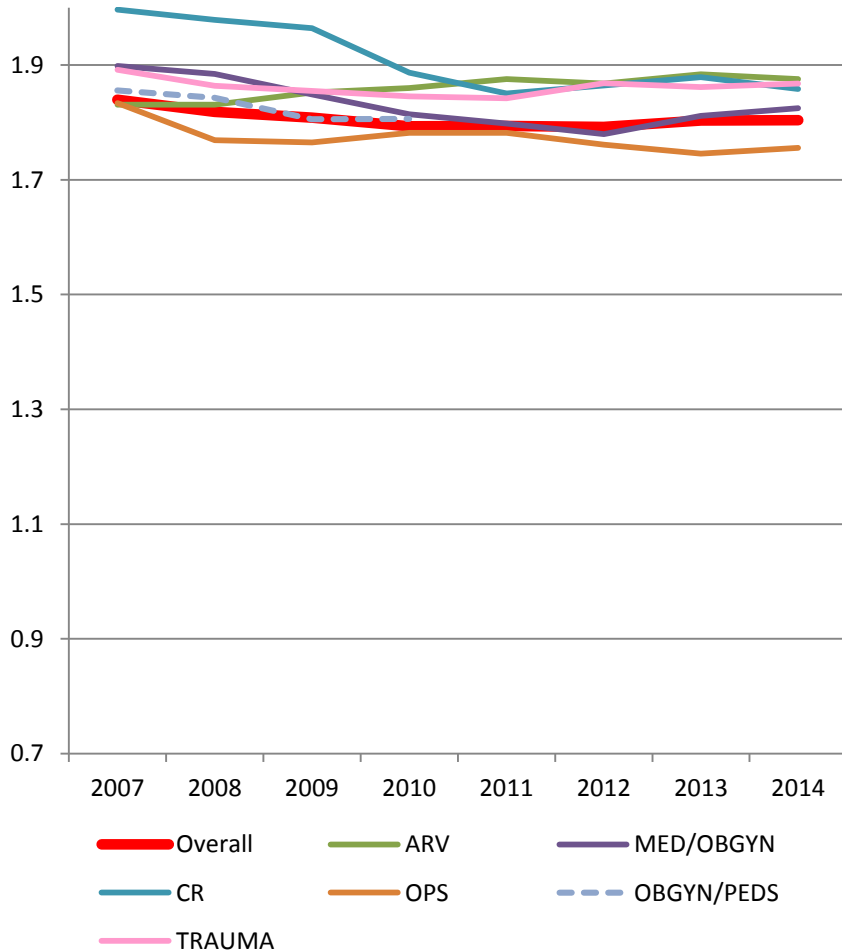
A 47 year old male complains of burning to his eyes after he was splashed with antifreeze. You should first

- cover his eyes with sterile gauze.
- request a Hazmat team response.
- apply cold packs to his eyes.
- flush his eyes with sterile water or saline.

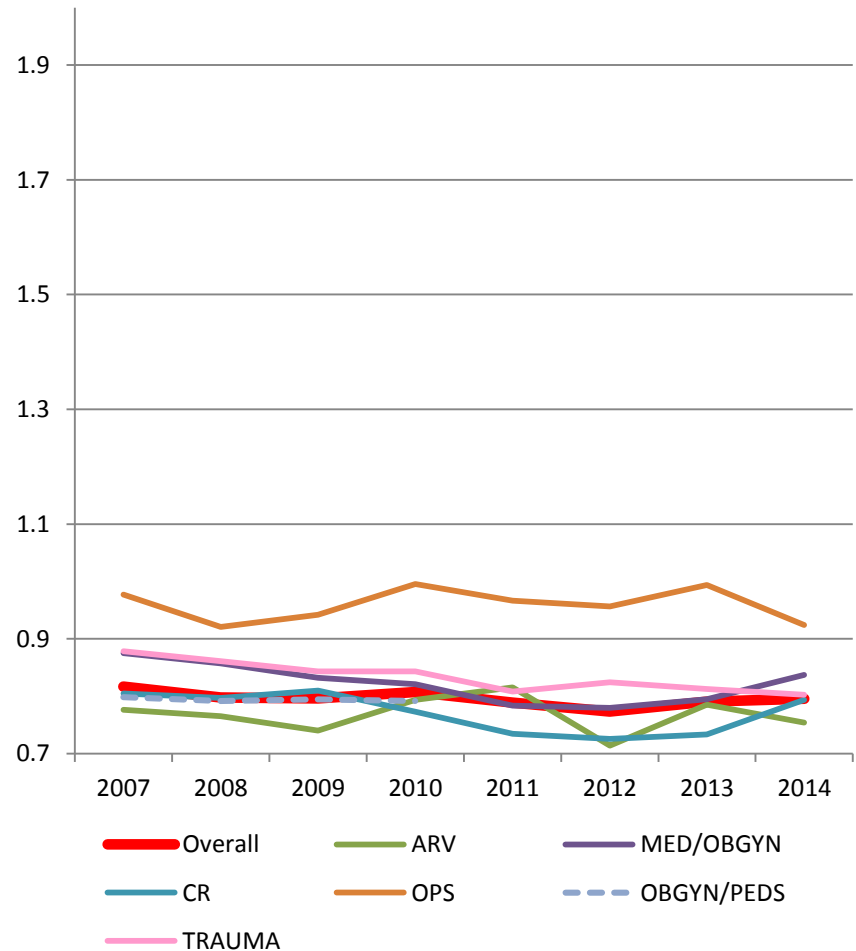


Paramedic First Time Pass vs. Fail by Content Area

First Time Pass Paramedic Mean Cognitive Ability
(2007-July 2014)

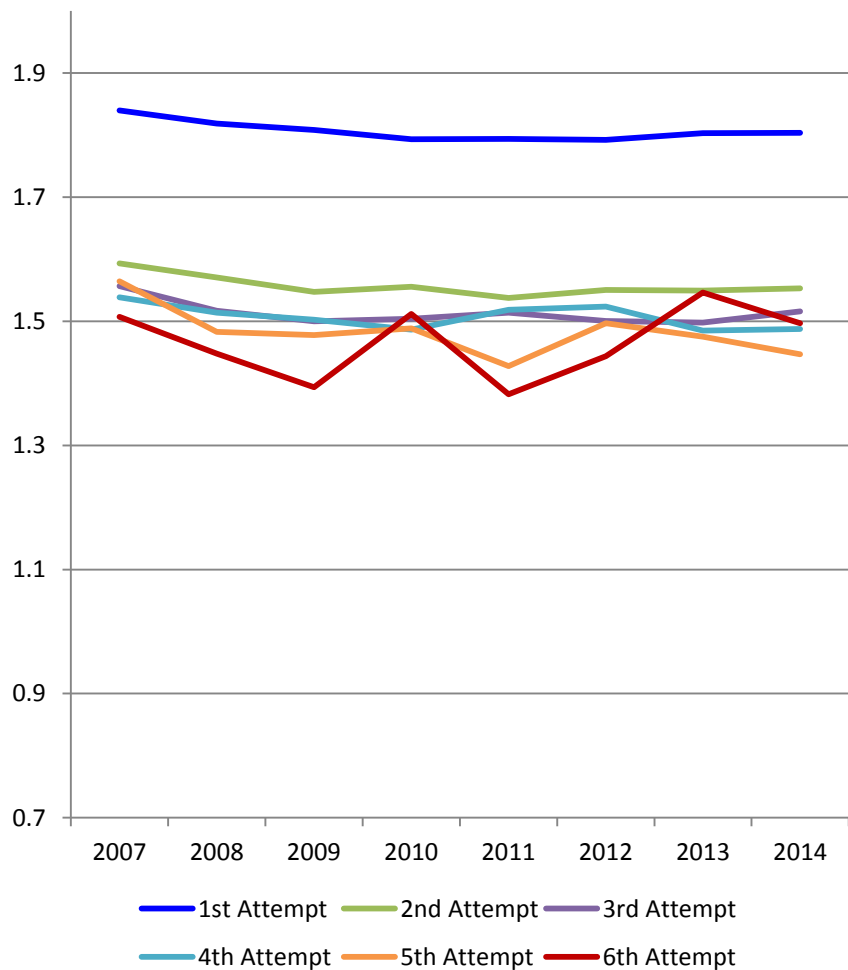


First Time Fail Paramedic Mean Cognitive Ability
(2007-July 2014)

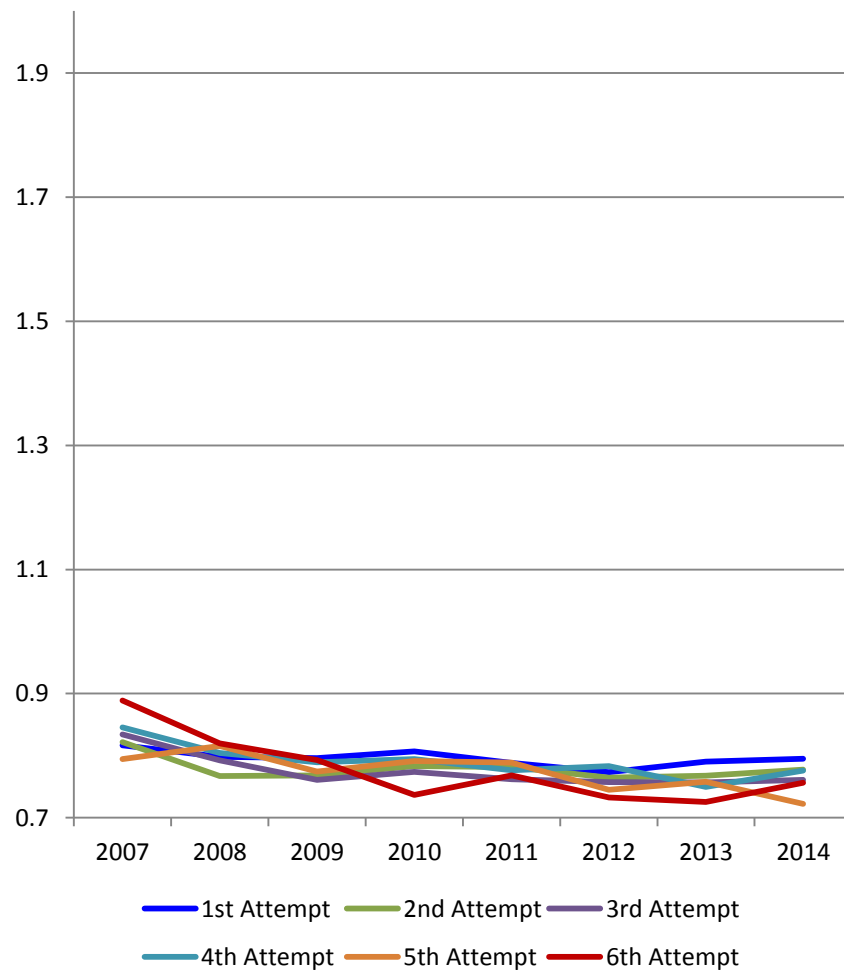


Paramedic Ability by Attempt Number

Paramedic Pass Mean Cognitive Ability
(2007-2014)



Paramedic Fail Mean Cognitive Ability
(2007-2014)



Successful Paramedic Candidate

A 6 year old female was resuscitated from cardiac arrest after drowning. She is alert and her vital signs are BP 74/52, P110, R 16 and her SpO2 is 97% on room air. You should next

- administer oxygen by non-rebreather mask.
- administer a fluid bolus.
- assist her ventilations.
- transport her with her head elevated.



Unsuccessful Paramedic Candidate

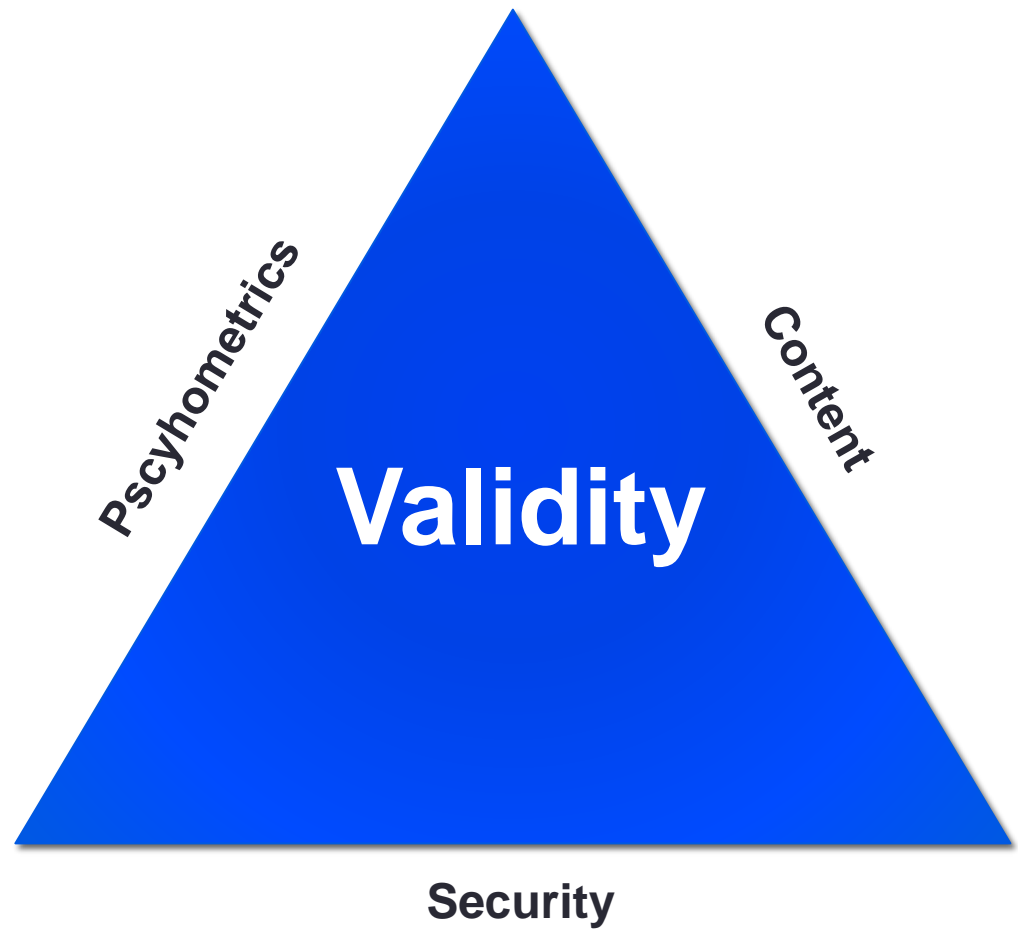
The signs and symptoms of an allergic reaction are caused by the systemic release of

- ADH.
- histamine.
- glucagon.
- prions.

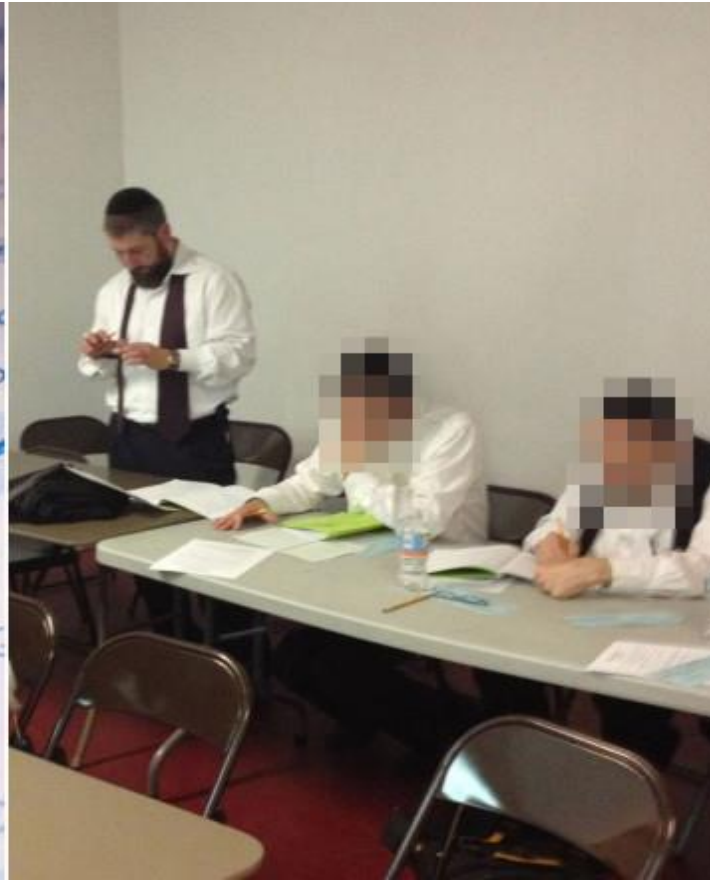
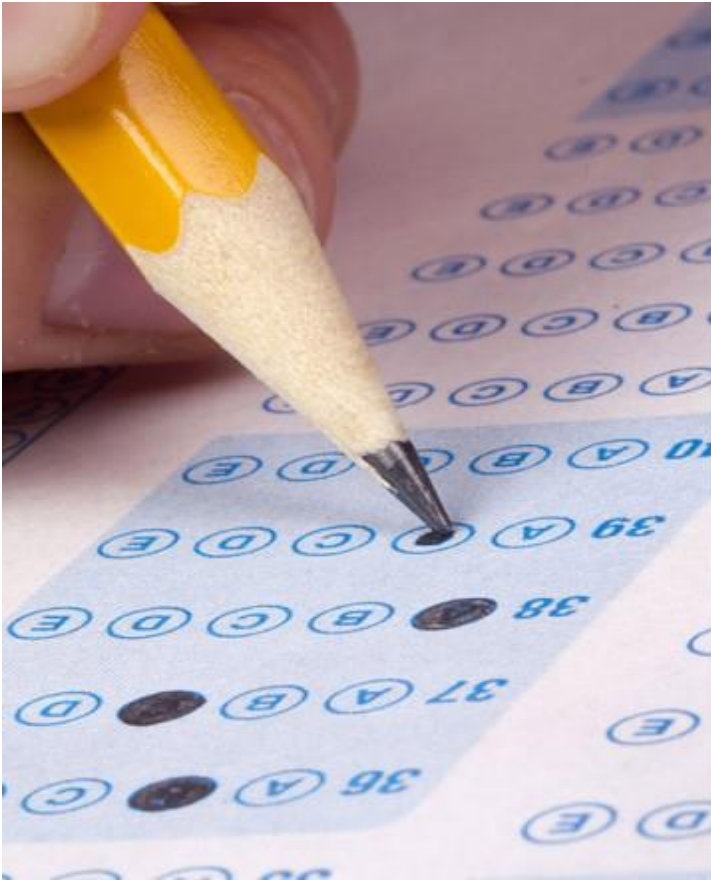


Security — The Validity Paradigm

The New Paradigm



Who is being authorized to respond to 9-1-1 calls?



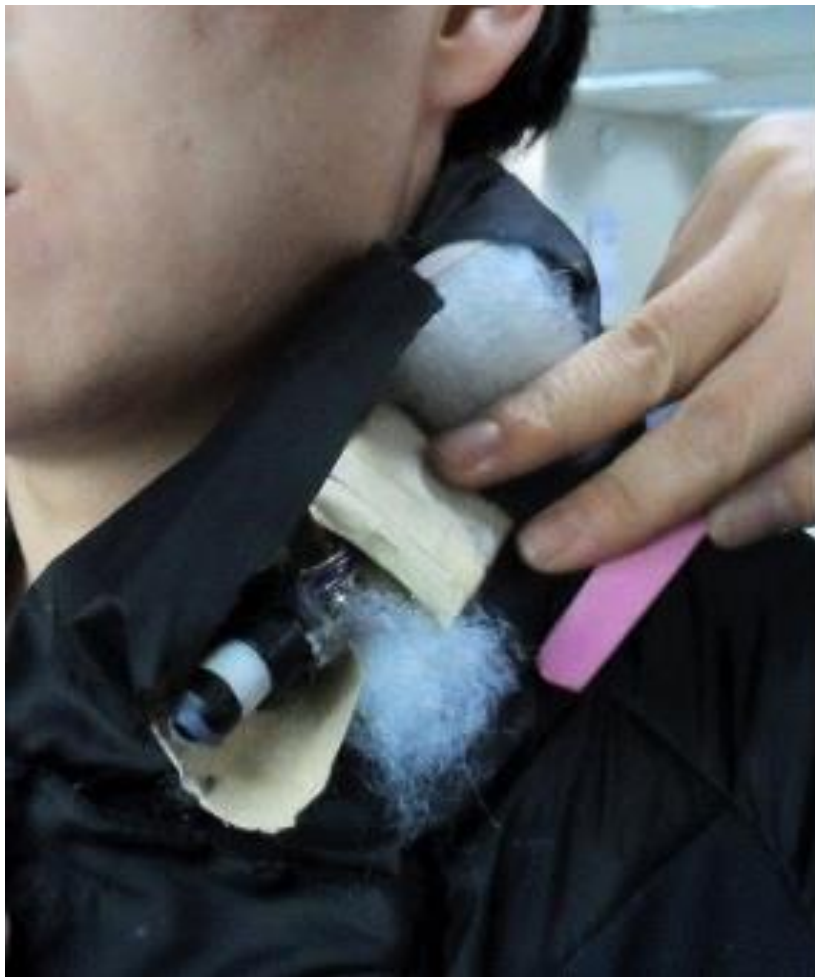
Who is being authorized to respond to 9-1-1 calls?



Who is being authorized to respond to 9-1-1 calls?



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Pearson-VUE Testing Center



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National Comparators

- NREMT
 - EMR, EMT, AEMT, Paramedic
- NCSBNE
 - NCLEX RN & NCLEX PN
- USMLE
 - 3 step exam process



NREMT, NCSBNE, USMLE

- NREMT, NCLEX, USMLE
 - Assess the providers ability to apply and demonstrate: knowledge, skills and ability to provide safe and effective patient care.
 - Attestation of competency



Eligibility

- State Approved Program
- CAAHEP Accreditation (*LoR) – Paramedic
- NREMT eligibility requirements
- Work with the State on complex cases



Mark King Reinstatement Initiative

- Reinstatement your national certification
 - State license
 - Good standing
 - Required to maintain
 - No NREMT testing



Criminal Conviction Policy

- Evolving to increase effectiveness
- May not be needed with REPLICA

- Quiet Epidemic in EMS
- DWI/DUI/OVI
- Mental health, Addiction & substance abuse
- Work to be done
- Other professions?





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Paramedic Program Accreditation and Student Performance



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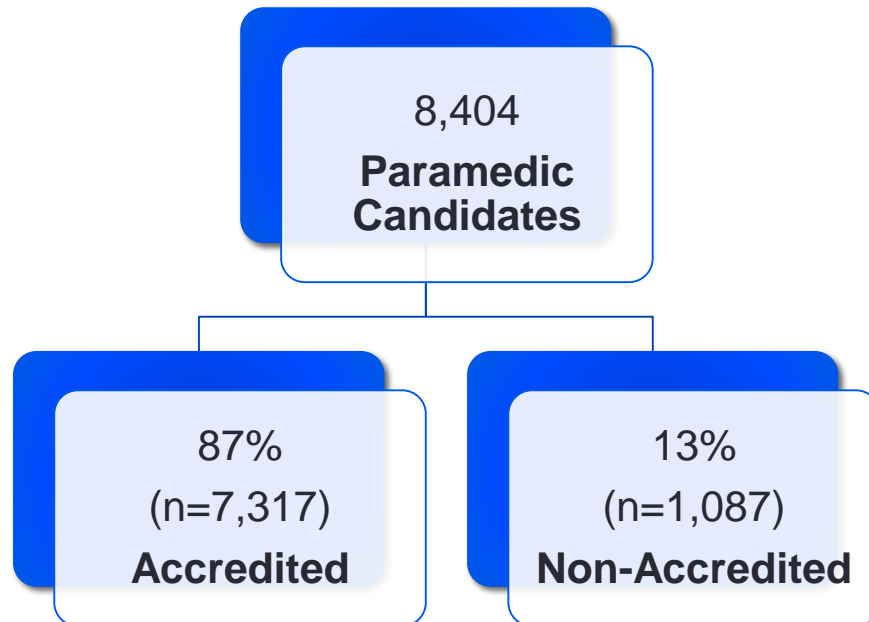
Research Question

- Is there a difference in performance between candidates graduating from accredited versus non-accredited programs on the National Paramedic Certification examination?



Study Population

- All 2012 Paramedic program graduates who applied for National Certification



Methodology

- Chi-Square
- Independent Sample t-test
- Logistic regression

*All theta scores have been transformed from a logit to a 0-1000 scale



Accredited/Non-Accredited Candidate Performance 1st Attempt Pass Rates

- 1st Attempt Pass Rates
 - **Accredited: 76%**
 - **Non-accredited: 67%**
- * $p < 0.001$



Accredited/Non-Accredited Candidate Performance Cumulative 3rd Attempt Pass Rates

- Cumulative 3rd Attempt Pass Rates
 - **Accredited: 89%**
 - **Non-accredited: 82%**
- * $p < 0.001$



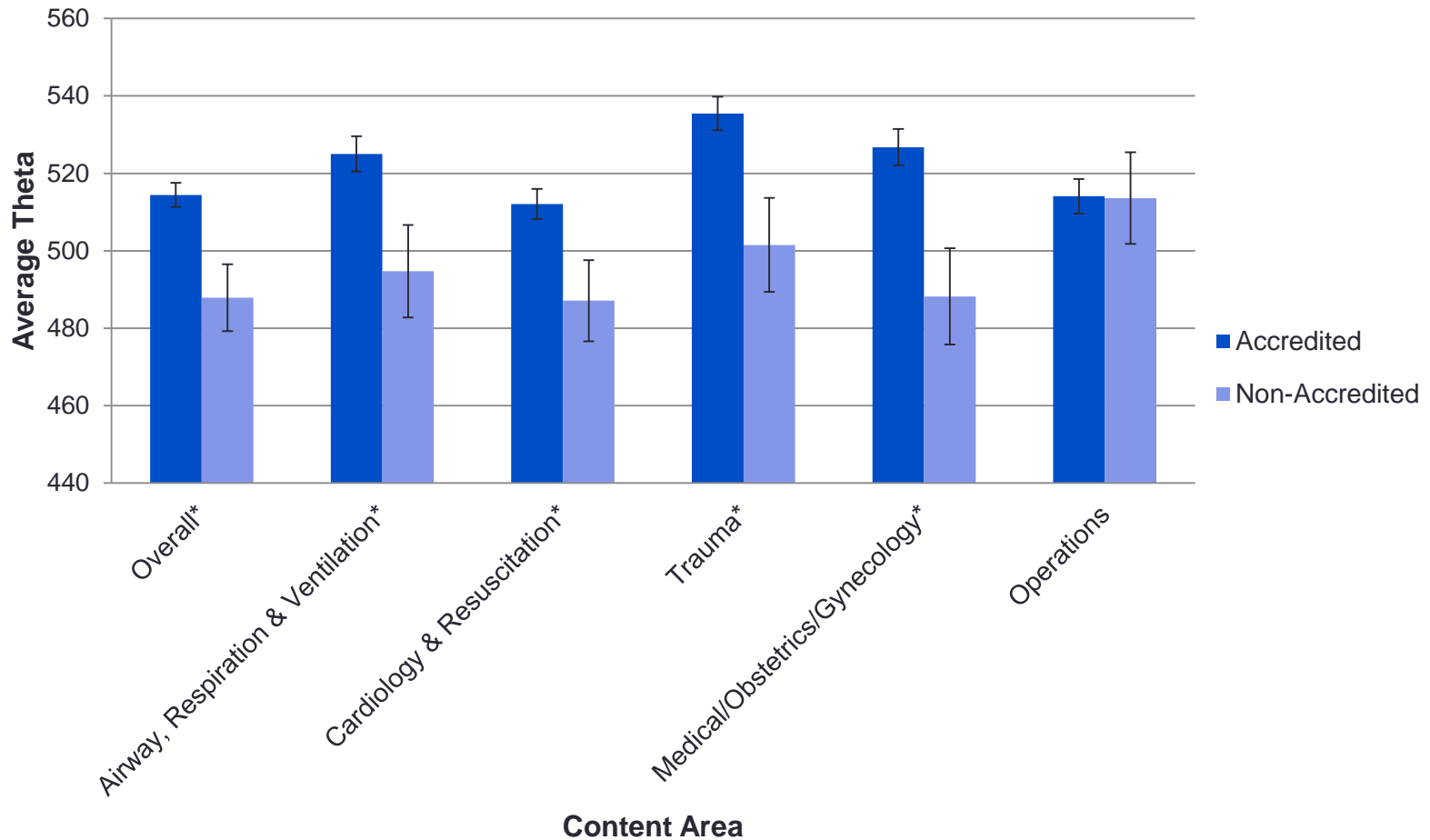
Odds of Passing 1st Attempt

- Accredited program graduates
 - OR: 1.51 (95%CI: 1.31-1.73)

* $p < 0.001$



Content Area Performance by Accreditation Status



*p<0.001



Conclusions

- Accredited program graduates:
 - Higher 1st and cumulative 3rd attempt pass rates
 - 50% greater odds of first-time success on cognitive examination
 - Higher cognitive performance in all content areas with the exception of EMS operations



EMS Education Programs

High vs. Low Performing



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Research Question

- Is attending a high-performing EMS education program associated with student performance on the National EMS Certification examinations?



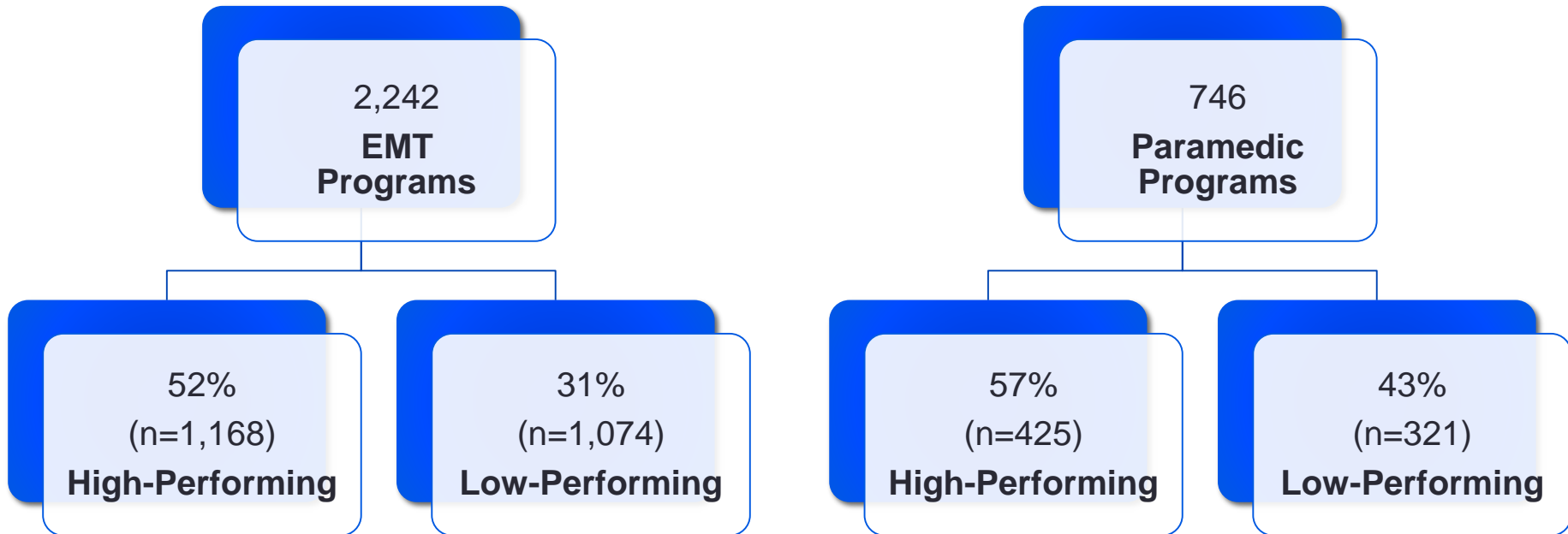
High/Low Performing Program Definitions

- Modified Margolis Method
 - Benchmark: 2012 1st time pass rates
 - EMT: 65%
 - Paramedic: 68%
 - Programs were classified as high-performing if 2013 1st time pass rate was above benchmark



Study Population

- All 2013 EMT and Paramedic programs and graduates who applied for National Certification



Methodology

- Chi-Square
- Independent Sample t-test
- Logistic regression

*All theta scores have been transformed from a logit to a 0-1000 scale



EMT and Paramedic Graduates

- 67,716 EMT graduates in 2013
 - 59% (n=40,237) of EMT graduates attended a high-performing program
- 11,177 Paramedic graduates in 2013
 - 65% (n=7,262) of paramedic graduates attended a high-performing program



High/Low Performing Program 1st Attempt Pass Rates

- EMT 1st Attempt Pass Rates
 - High-Performing: 83%
 - Low-Performing: 43%
 - * $p < 0.001$
- Paramedic 1st Attempt Pass Rates
 - High-performing: 88%
 - Low-performing: 44%
 - * $p < 0.001$



High/Low Performing Program Cumulative 3rd Attempt Pass Rates

- **EMT** Cumulative 3rd Attempt Program Pass Rates
 - High-Performing: 90%
 - Low-Performing: 60%
 - * $p < 0.001$

- **Paramedic** Cumulative 3rd Attempt Program Pass Rates
 - High-performing: 95%
 - Low-performing: 67%
 - * $p < 0.001$

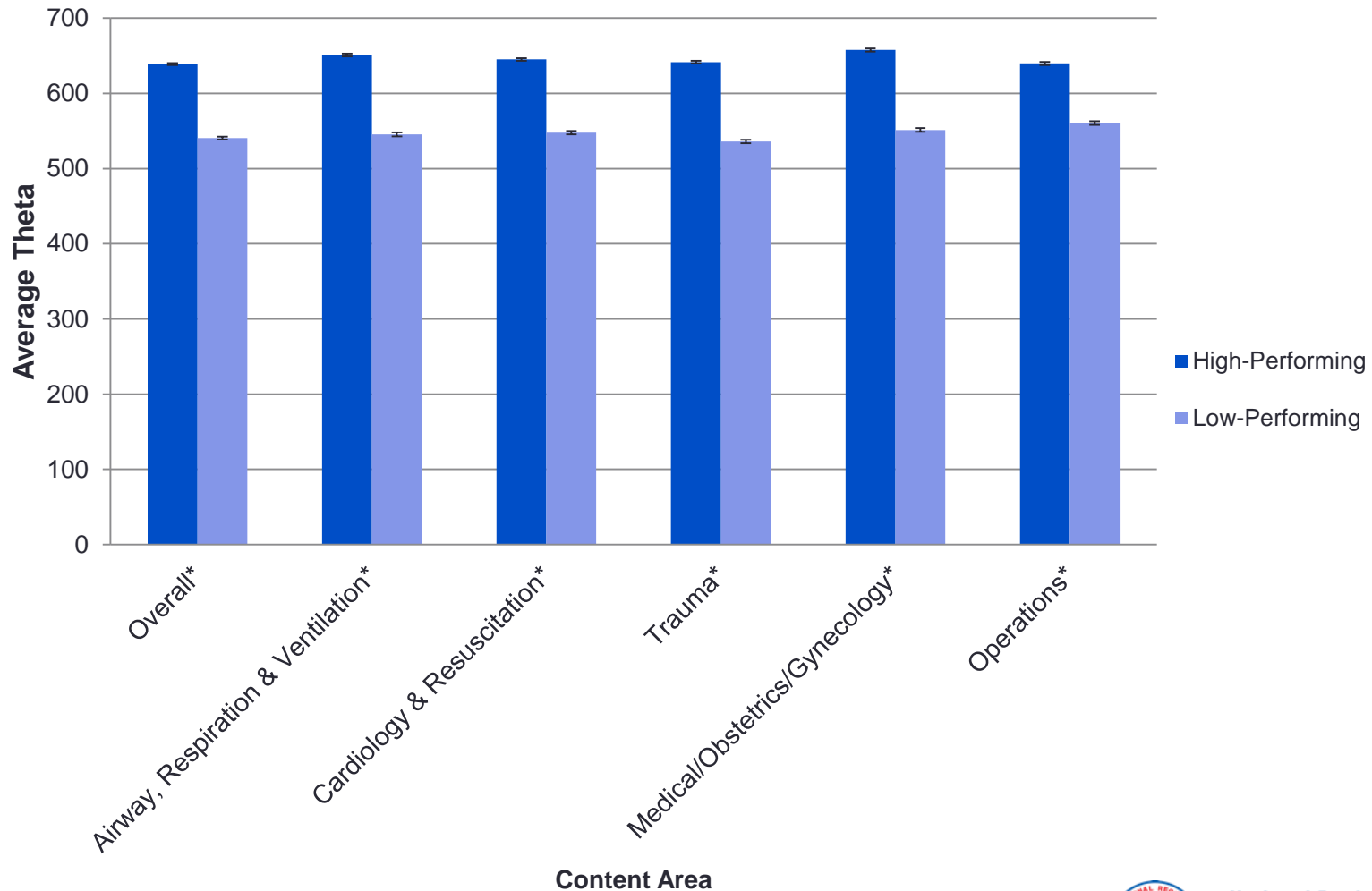


Odds of Passing 1st Attempt

- **EMT** from high-performing program
 - OR: 3.63 (95%CI: 3.51-3.76)
- **Paramedic** from high-performing program
 - OR: 4.68 (95%CI; 4.29-5.12)



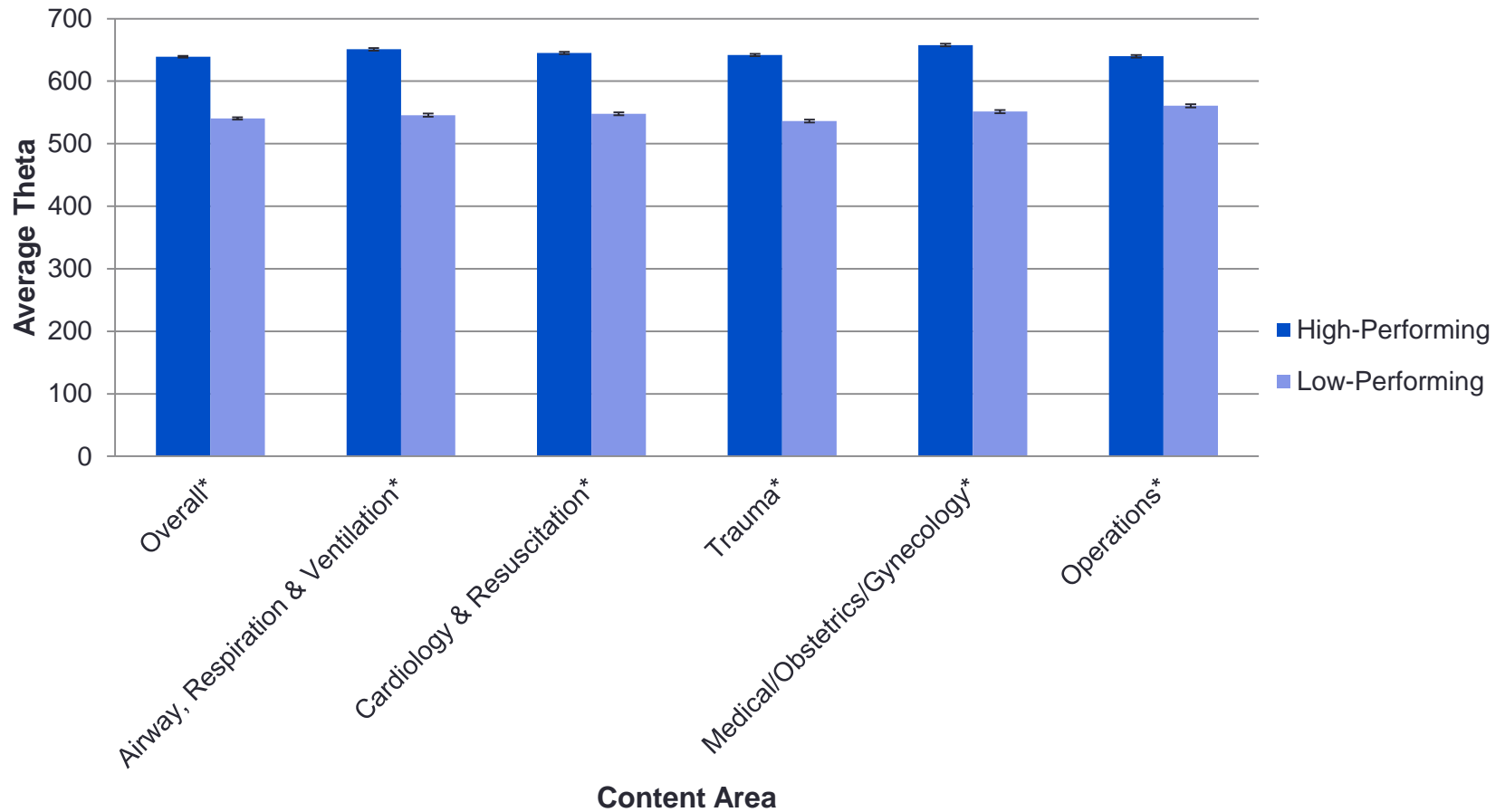
EMT Content Area Performance



*p<0.001



Paramedic Content Area Performance



*p<0.001



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Conclusions

- High-performing program graduates
- Higher 1st and cumulative 3rd attempt pass rates
- Nearly 4-fold increase in odds of passing 1st attempt
- Higher cognitive performance in all content areas



WI information



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Education vs. Certification

Most grades are composition measures (Pekel, 2013).

Factors such as attendance, attitude, participation inflate grades (ACT, 2005; Pekel, 2013)

Borderline students significantly impacted by grade inflation (Randall & Englherd, 2010; Pekel, 2013).

Grade inflation motivates compliance not learning (Pekel, 2013).



Education vs. Certification

Certification is a measurement of competency (NREMT, 2015).

Cognitive exam is psychometric valid measure of ability to practice clinically (by design) (NREMT, 2015; Dickison, 2015).

NREMT measures the ability to practice safe and effective care (Wagoner, 2015; NREMT, 2015).



Education vs. Certification

Educational exams measure of what was taught, not ability practice clinically (Dickison, 2015).

Summative assessments measure educational achievement (Wagoner, 2015).

Grades should be a measure of achievement in the domain (Marzano, 2000; Rankall & Englbers, 2010).



Take-Home Points

- NREMT Certification is a psychometrically rigorous and legally defensible process
- Identifies academically prepared competent providers
- National Certification

- **Item Writing opportunities**



Questions?



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