Jefferson.

Thomas Jefferson University
Jefferson Digital Commons

Master of Public Health Thesis and Capstone Presentations

Jefferson College of Population Health

6-27-2013

Knowledge and Attitudes Assessment of Out-of-Hospital Emergency Physicians in Yerevan, Armenia

Aline Baghdassarian, MD
Jefferson School of Population Health

Let us know how access to this document benefits you

Follow this and additional works at: http://jdc.jefferson.edu/mphcapstone_presentation

 Part of the Public Health Commons

Recommended Citation
Baghdassarian, MD, Aline, "Knowledge and Attitudes Assessment of Out-of-Hospital Emergency Physicians in Yerevan, Armenia" (2013). *Master of Public Health Thesis and Capstone Presentations.* Presentaion 89.
http://jdc.jefferson.edu/mphcapstone_presentation/89

This Article is brought to you for free and open access by the Jefferson Digital Commons. The Jefferson Digital Commons is a service of Thomas Jefferson University's Center for Teaching and Learning (CTL). The Commons is a showcase for Jefferson books and journals, peer-reviewed scholarly publications, unique historical collections from the University archives, and teaching tools. The Jefferson Digital Commons allows researchers and interested readers anywhere in the world to learn about and keep up to date with Jefferson scholarship. This article has been accepted for inclusion in Master of Public Health Thesis and Capstone Presentations by an authorized administrator of the Jefferson Digital Commons. For more information, please contact: JeffersonDigitalCommons@jefferson.edu.

Knowledge and Attitudes Assessment of Out-of-Hospital Emergency Physicians in Yerevan, Armenia

Aline Baghdassarian, MD

Capstone Chair: Harsh Sule, MD, MPP
Capstone Preceptor: Nancy Chernett, MA, MPH

June 27, 2013
Master's in Public Health
Thomas Jefferson University School of Population Health

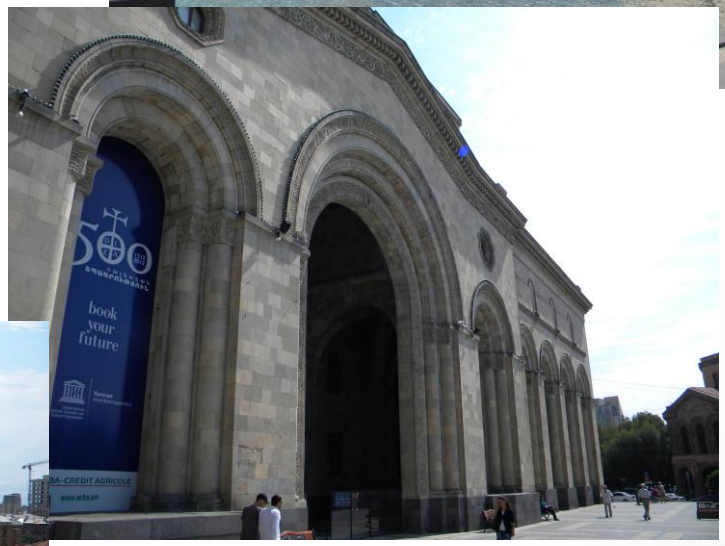
Objectives

- To evaluate the knowledge and attitudes of out-of-hospital emergency physicians (EPs) in pediatric rapid assessment and resuscitation
- To identify areas of improvement regarding the pediatric EMS system and PEC education in the capital, Yerevan

Background

Area is a total:
29,743 km²-
Slightly smaller than Maryland

- Area 227 km² (87.65 sq miles)
- Population 1.122 million (2011)



Yerevan

AMBULANCE
1-03

103

Pre and Post 1991

Soviet Era

- 37 administrative regions
- Regional hospital received 1-03 calls

  Had ambulance system
- When necessary, specialists arrived from Yerevan
- Transport to capital

  when necessary

Post Soviet Era

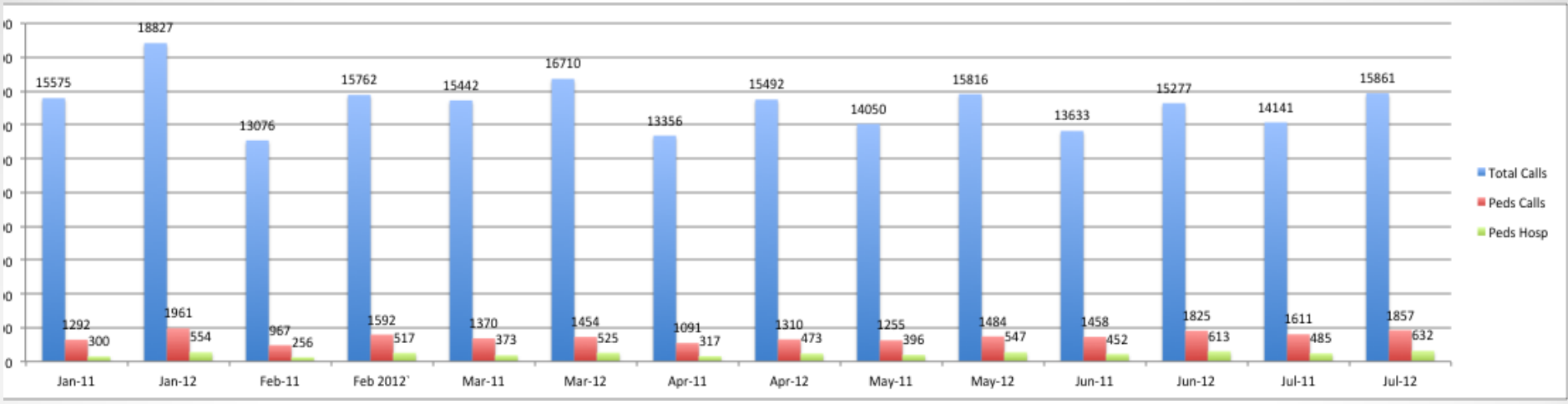
- 10 administrative regions
- Each marz has central dispatch center that receives1-03 calls
- Dispatch sub-centers
- Critical care pediatric transport from Yerevan

- 11 administrative divisions
- 10 provinces (marzes)
- Yerevan

Status of the EMS system in Yerevan

- 650 staff members
- 200 physicians
- One central dispatch center and 8 sub-centers
- EMS dispatcher (nurse or physician) receives 1-03 calls
- General ambulance dispatched
- If cardiorespiratory arrest and need for acute resuscitation, specialized resuscitation
- Care provided by the ambulance is free of charge for patients
- Total 35 ambulances in Yerevan, 10 are resuscitation ambulances staffed by physicians trained in acute resuscitation and airway management, such as anesthesiology or cardiology

Utilization of the EMS System



- Increase in 1-03 calls
- Increase in proportion of pediatric calls
- Increase in rates of pediatric hospitalizations

- Increased usage and need
- No pediatric specific education and training of ambulance providers
- No EMS guidelines or protocols to guide the care of pediatric patients received by the EMS system
- No published studies that have looked at the knowledge and attitudes of the providers regarding out-of-hospital care of pediatric patients

Goal and Aims of the Study

- Long-term goal: to improve our understanding of the perspectives, needs and barriers of EMS providers in order to develop interventional strategies to improve patient care and satisfaction in Yerevan, Armenia
  Specific Aims:
- To assess the basic knowledge of EMS providers in rapid pediatric assessment and resuscitation
- To identify the barriers and areas in need of improvement
- To describe the attitudes of pre-hospital providers in Yerevan regarding the current EMS system

Materials and Methods

Design

- August to September 2012
- Cross-sectional, voluntary, anonymous, self-administered survey
- Made available in Eastern Armenian, the official language of the country
- Study reviewed by the IRB of Thomas Jefferson University and approved as exempt research
- Informed consent was not required

Population

- All physicians working in the Yerevan EMS system were eligible for inclusion
- No exclusion criteria for this study

Survey Instrument

- Attitudes about the efficiency of the EMS system
- Attitudes about education regarding pediatric rapid assessment and resuscitation
- Attitudes regarding personal skills and need of further education and training
- Perceived barriers to the provision of PEC
- Knowledge of pediatric rapid assessment and resuscitation

Survey Administration

- Participant recruitment was done with the permission of MoH and the Yerevan Central Dispatch Center's director, and in collaboration with the USAID-funded three-year Healthcare System Strengthening project in Armenia (HS-STAR)
- Participants returned the filled, anonymous surveys to the Central Dispatch Center where they were picked up at the end of the study period

Outcome Measures

- The primary outcome variable was the participants' knowledge of rapid pediatric assessment and resuscitation
- Secondary outcomes were areas in need of more training and education and attitudes toward the current pediatric EMS system in Yerevan

Results

Survey Response and Characteristics of Respondents

- 170 copies of the survey questionnaires distributed to the different dispatch centers in Yerevan Armenia
- 80% returned the surveys (n=136).
- Only 126 participants competed the knowledge portion of the survey (74% response rate)
- The median age of participants was 49; the mode was 54 with an IQR of (36-54)

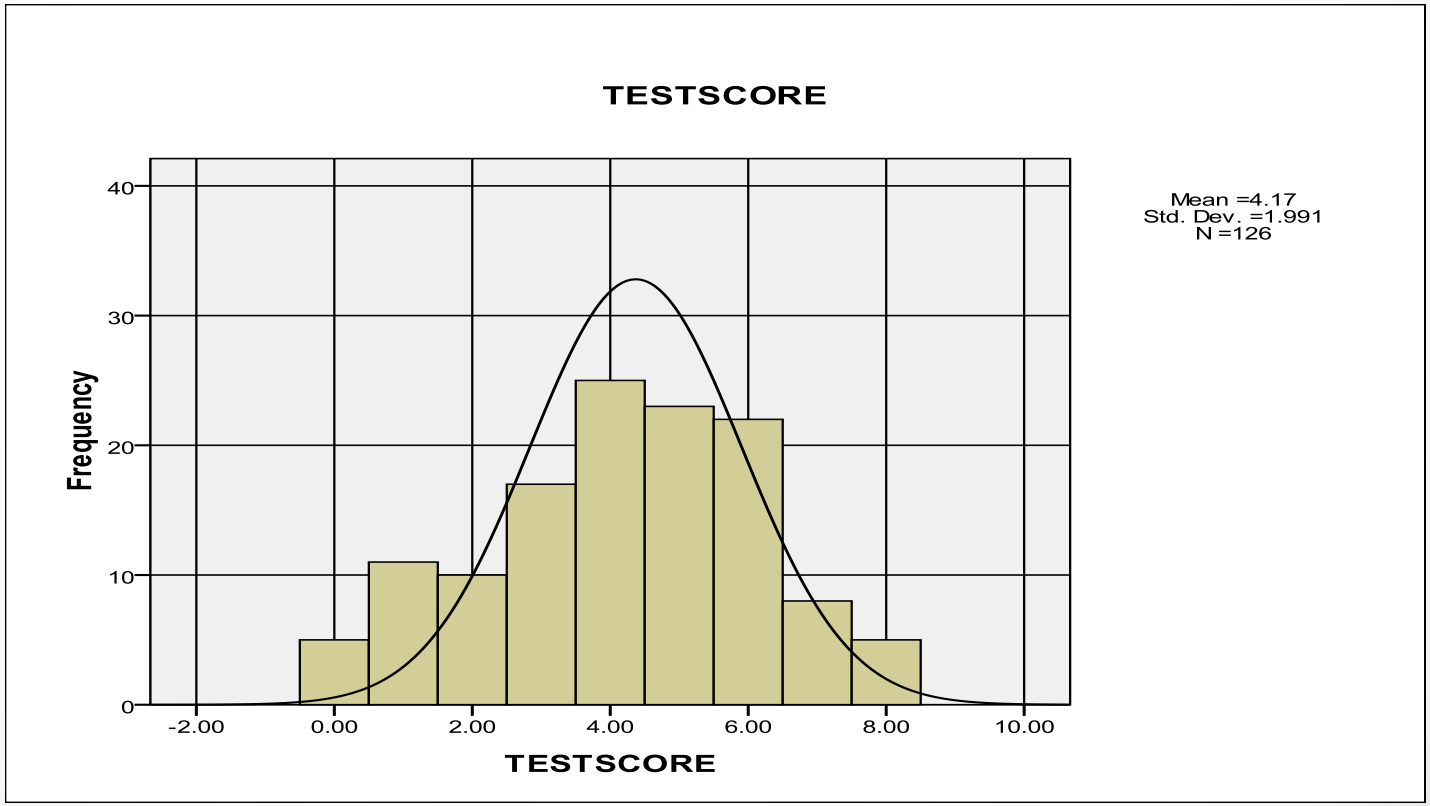
	Frequency (%)	
	All (N=136)	Did not complete knowledge test (N=10)
Sex		
Males	66 (48.5%)	5 (50%)
Females	67 (49.3%)	5 (50%)
No Response	3 (2.2%)	
Age: 22-34	33 (24.3%)	3 (30%)
35-50	43 (31.6%)	3 (30%)
51-65	56 (41.2%)	2 (20%)
66-75	3 (2.2%)	2 (20%)
No Response	1 (0.7%)	
Medical School Graduation Year		
1968-1984	51 (37.5%)	4 (40%)
1985-1999	46 (33.8%)	3 (30%)
2000-2012	33 (24.3%)	2 (20%)
No Response	6 (4.4%)	1 (10%)
Country of Medical School		
Armenia	131 (96.3%)	10 (100%)
Azerbaijan	2 (1.5%)	-
Russia	3 (2.2%)	-
No Response	None	-
Experience and Training		
Post Graduate Pediatric Education		
Yes	27 (19.9%)	3 (30%)
No	93 (68.4%)	6 (60%)
No Response	16 (11.8)	1 (10%)
Number of years on ambulance		
Less than 5	38 (27.9%)	3 (30%)
5-15 years	28 (20.6%)	-
16-20 years	10 (7.4%)	1 (10%)
More than 20 years	60 (44.1%)	6 (60%)
No Response	None	-
Type of Ambulance		
General	108 (79.4%)	10 (100%)
Resuscitation	28 (20.6%)	-
No Response	None	-
General Continuing Education in the past 5 years		
Yes	111 (81.6%)	8 (80%)
No	20 (14.7%)	1 (10%)
No Response	5 (3.7%)	1 (10%)

Knowledge

	True/False Statements	Correct Response, %	Incorrect Response, %	Unsure, %	No Response, %
1	In CPR the compression to ventilation ratio varies from infants to older children (True)	69.8	13.5	13.5	3.2
2	Chest compressions should start for a heart rate less than 100 in a neonate (False)	53.2	25.4	16.7	4.8
3	Chest compressions should start for a heart rate less than 60 in children (True)	35.7	31.7	21.4	11.1
4	Most children's heart stops because of respiratory issues (True)	41.3	26.2	16.7	15.9
5	The compression to ventilation ratio in neonates is 3:1 (True)	40.5	28.6	17.5	13.5
6	Hypotension in a child less than 10 years old is defined as SBP less than 70 + (2 x age) (True)	32.5	15.1	35.7	16.7
7	For 2-person CPR in children, the compression to ventilation ratio is 15:2 (True)	50.8	19.8	19.8	9.5
8	For 1-person CPR in children, the compression to ventilation ratio is 30:2 (True)	54.8	17.5	17.5	10.3
9	For anaphylaxis, the first medication to give is epinephrine IM 1mg/ml (1:1000) at a dose of 0.1mg/kg (False)	7.1	59.5	21.4	11.9
10	In children, tachycardia can be the only sign of shock (True)	31	31	25.4	12.7

Knowledge

- Mean score 4.17 ± 1.99 SD
- Majority (89.7%) failed the test -pre-defined passing score ≥7



	True/False Statements	Correct Response, %	Incorrect Response, %	Unsure, %	No Response, %
1	In CPR the compression to ventilation ratio varies from infants to older children (True)	69.8	13.5	13.5	3.2
2	Chest compressions should start for a heart rate less than 100 in a neonate (False)	53.2	25.4	16.7	4.8
3	Chest compressions should start for a heart rate less than 60 in children (True)	35.7	31.7	21.4	11.1
4	Most children's heart stops because of respiratory issues (True)	41.3	26.2	16.7	15.9
5	The compression to ventilation ratio in neonates is 3:1 (True)	40.5	28.6	17.5	13.5
6	Hypotension in a child less than 10 years old is defined as SBP less than 70 + (2 x age) (True)	32.5	15.1	35.7	16.7
7	For 2-person CPR in children, the compression to ventilation ratio is 15:2 (True)	50.8	19.8	19.8	9.5
8	For 1-person CPR in children, the compression to ventilation ratio is 30:2 (True)	54.8	17.5	17.5	10.3
9	For anaphylaxis, the first medication to give is epinephrine IM 1mg/ml (1:1000) at a dose of 0.1mg/kg (False)	7.1	59.5	21.4	11.9
10	In children, tachycardia can be the only sign of shock (True)	31	31	25.4	12.7

No statistically significant difference in score between providers of general ambulance and resuscitation ambulance p =0.69

Attitudes

…

Attitudes Towards Knowledge from the Anglo American Culture

- 76% agreed that "knowledge from the Anglo-American culture can be beneficial to medical advances in Armenia"

- While it is important to learn from guidelines, educational material and practices from Anglo-American cultures such as the United States of America, there should also be studies to adapt them to the needs of Armenia

Attitudes regarding PEC education and efficiency of the System (N=136)

	Strongly Agree, %	Agree, %	Disagree, %	Strongly Disagree, %	No Response, %
Prehospital care in Armenia is very efficient	16.2	60.3	12.5	4.4	6.6
Prehospital PEC related education in Armenia needs improvement	35.3	63.2	1.5	0	0
There is need for pediatric specific CME for prehosptial PEC providers in Armenia	36	62.5	0.7	0	0.7
Prehospital PEC guidelines make PEC safer and more efficient and effective	34.6	61.8	1.5	1.5	0.7

Attitudes about Standardization and ambulance capabilities (N=136)

	Yes, %	No, %	No Response, %	Not applicable, %
Is there lack of standardization regarding prehospital PEC in Armenia?	70.6	25.7	3.7	
If there is lack of standardization, does it affect the care you provide?	27.9	42.6	17.6	11.8
Transportation and Technical Capabilities of the Ambulance				
Do you have good pass ability across the country?	89.7	5.9	4.4	
Do you have comfortable patient compartment in the Ambulance?	86.8	7.4	5.9	
Do you have reliable equipment for lengthy transportation of a child?	45.6	45.6	8.8	

No statistically significant difference in attitudes regarding the effect of standardization between general & resuscitation ambulance, p =0.95, different age groups, p =0.53, post-graduate pediatric education, p =0.96 or different years of experience p =0.24

Satisfaction with own education and training

Participants were asked to rate their satisfaction with their own skills in a set of competencies that constitute the current United States national standard curricula skills for pre-hospital providers

• • •

4-point scale questions without a midpoint or neutral option.

"How satisfied are you with your skills for the following procedures?"

Skills Perceived as Satisfactory

- Majority reported to be satisfied or very satisfied with education and training in:
  - Rapid assessment (77.2%)
  - Adult CPR (76.5%)
  - Basic splinting (75%)
  - Wound care (73.6%)
  - Airway management (BVM) (69%)
  - Child CPR (63.2%)

Areas Perceived to Need More Education

- Majority of those who responded reported to be dissatisfied or very dissatisfied with education and training in:
  - Critothyrotomy (64%)
  - Digital trans-illuminated intubation (56%)
  - Naso-tracheal intubation (59%)
  - Child intraosseous line use (77%)
  - Epinephrine auto-injector use (62%)
  - Meconium aspiration (69%)
  - Peak expiratory flow rate testing (64%)
  - Neonatal (64%), infant (64%) and toddler (60%) intubation

Neonatal CPR Skill Assessment and Knowledge Test

- Of the respondents who were satisfied with their skills 34% responded incorrectly or were unsure about the knowledge question regarding the initiation of chest compressions in neonates, as opposed to 60% of those who reported being unsatisfied with their skill p=0.001
- The proportion of those who responded incorrectly to the knowledge question regarding the compression ventilation ratio in neonates did not vary with the respondents self assessment of neonatal CPR skills p=0.27

Child CPR Skill Assessment and Knowledge Test

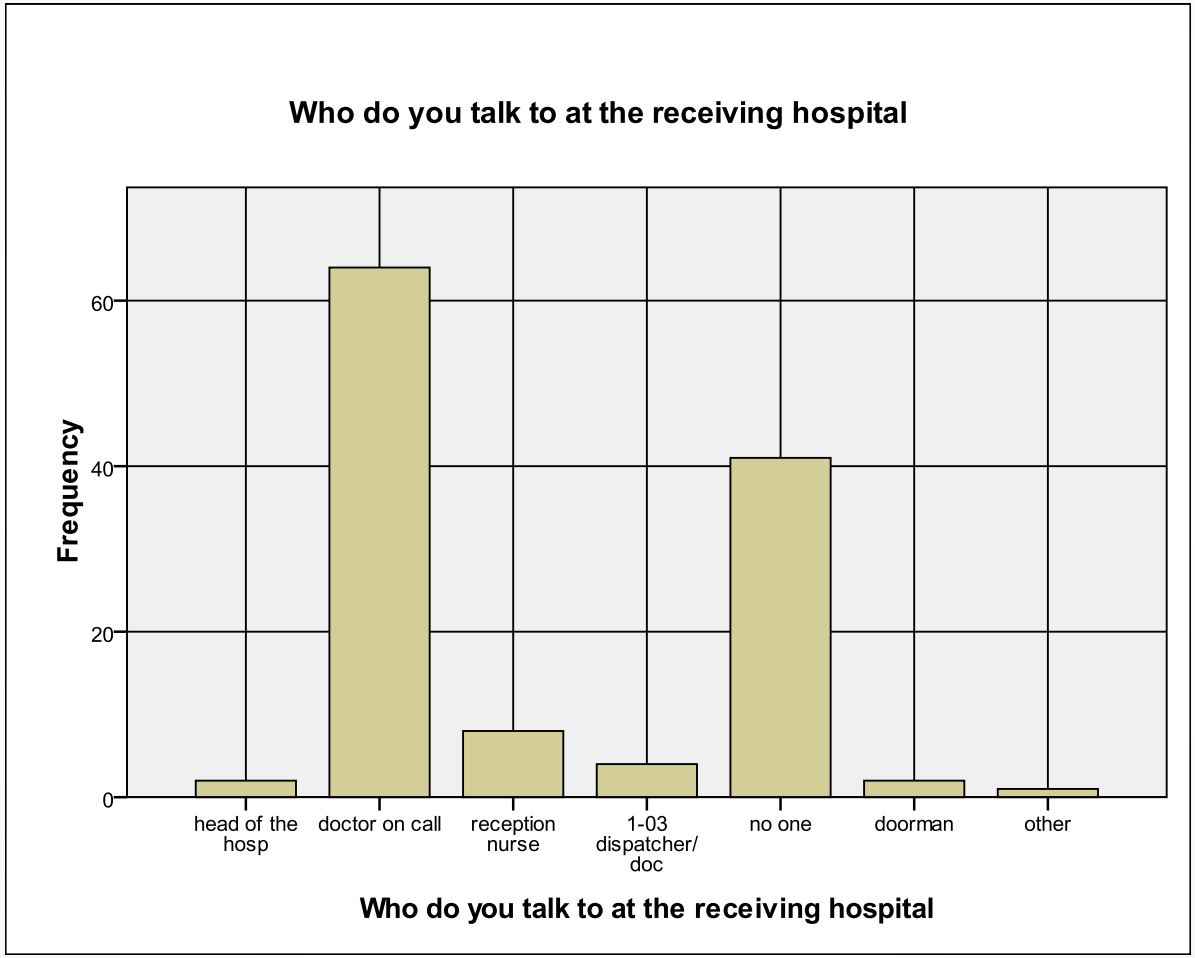
- The proportion of those who responded incorrectly to the knowledge question regarding the initiation of chest compression in children did not vary with the respondents self assessment of child CPR skills p=0.1
- Being satisfied with child CPR skills was associated with a answering correctly to the knowledge questions regarding the ventilation compression ratio in children for 2-persone CPR (p=0.03) and 1-person CPR (p=0.008)

- Satisfaction with their own skills regarding CPR of the different age groups and airway management was not statistically different across the different brigades and post-graduate pediatric education

Attitudes regarding the out-of-hospital care process

• • •

Should you need to transport a child from home to the hospital; who at the hospital do you need communicate with first?



Equipment and Medication Availability

"How often to you have the following available for pediatric emergency care?"

Assess the frequency of availability of equipment and medications recommended by the American College of Surgeons for ambulances in the US

Participants were also asked to list the most commonly missing equipment on the ambulances as a free text.

Pediatric Medication Administration

- 43% denied administering medications to pediatric patients
- The majority of respondents were not familiar with the Broselow® pediatric emergency length based weight estimation tape (54%)
- 60% reported never having used the tape

Medication Availability

Most Commonly Available Medications

- Normal saline (56%)
- Antiarrhythmic medications (51%)
- Magnesium sulfate (55%)
- Antihistamines (60%)
- Atropine (56%)

Not Needed or Used Medications

- Glucagon (30%)
- Adenosine (30%)
- Hydroxycobalamine (29%)
- Etomidate (29%)
- Paralytics (29%)

Equipment Availability

- Ambu-bag (5 times)
- Pulse oximeter (2 times)
- EKG (2 times)
- small IV catheters (4 times)
- intubation equipment (6 times)
- defibrillator/pediatric paddles (2 times)
- small blood pressure cuff (once)
- oxygen (once)
- nasogastric tube (once)
- IO needle (once)

- The difference in use and availability between the different brigades did not reach statistical significance.

Perceived Barriers

The last section of the survey consisted of open-ended questions regarding the process of out-of-hospital PEC and barriers to the provision of effective care

Most Common Barriers

- Lack of pediatric equipment and medications (51 times)
- Lack of specialized knowledge and skills (52 times)
- Lack of knowledge and understanding of pediatric medication dosing and pharmacology (31 times)
- Lack of pediatric specific CME (30 times)

Other barriers

- Process of transfer to the hospital and communication with the accepting doctor and bed availability (6 times)
- Family and friend interference with care (6 times)
- Lack of government support (4 times)
- Lack of pediatric brigade availability (3 times)
- Lack of specialists (1 time)

Discussion

This study highlights many of the systemic issues related to out-of-hospital pediatric emergency care in Yerevan, Armenia as perceived by the providers in addition to the knowledge gap regarding pediatric rapid assessment and resuscitation

Need for Education and CME

- The clear need for continuing medical education and pediatric training calls for the design and implementation of an educational curriculum that meet the needs of the physicians participating in the EMS system

Guidelines

- In our study sample, the participants appreciated the importance of guidelines from a system's perspective yet don't perceive that the quality of care that they individually provide to be affected by the lack of guidelines
- This finding reflects on the self- efficacy of the providers and their ability to provide care in the current system
- The feasibility of implementation of guidelines to support the provider decision making in PEC should be studied further

Transition of Care

- Smooth transition of patient care to the inpatient facility influences the effectiveness of the system and the safety of the patients
- The MoH has initiated a process to address this barrier. The initiative includes requiring providers to inform the hospital physician on call about incoming ambulance patients
- This process would benefit further by equipping hospitals with an emergency and triage unit capable of receiving patients and insuring a safe transition to inpatient care

Limitations

- Recall bias
- Social desirability bias- self-assessment of skills
- Selection bias- non response rates up to 25% for certain questions
- Many of the findings between groups did not reach statistical significance potentially due to the lack of power given the small number if individual groups
- This study also didn't address the knowledge or attitudes of nursing. As an integral part of the medical team of the EMS system, nursing education would play an important role in the future development of the EMS system in Yerevan, Armenia

Next Steps

- The results of this study will be used to design out-of-hospital pediatric EMS curriculum for the EMS providers in collaboration of the MoH. Based on the findings of this study we will also move on to conduct focused analysis of skills assessment and equipment use and availability
- Further studies are also needed to address the design and implementation of pediatric EMS guidelines, the transfer of care and the appropriate use of the 1-03 system and EMS resources by the community

Conclusions

- Out-of-hospital emergency physicians in Yerevan, Armenia lack pediatric-specific assessment and resuscitation knowledge and training.
- There is a need for additional PEC training and CME within the EMS system in Armenia, along with additional support for existing activities

Thank You

- Harsh Sule, MD, MPP- Capstone Chair
- Nancy L. Chernett, MA, MPH- Capstone Preceptor

- I would like to acknowledge the invaluable contributions of the USAID HS-STAR program team who lent us their expertise and assistance in the development of the survey tool in Eastern Armenian and who largely contributed to recruitment and survey response.