

UNDERSTANDING THE SPECTRUM OF EMS DATA SOURCES AND THEIR VARIATION BY COMMUNITY

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IAED Research Organization

- ▶ IRB (9 members)
- ▶ Research Council/Committee (6 members)

IAED Research Studies Summary

Year	Completed	Ongoing	Planned/Proposed (Proposal writing)	Pending/On-Hold (No Proposal yet)	Total
2007	2	1		4	7
2008	4	4		1	9
2009	4	1	8	1	14
2010			5		5
Total	10	6	13	6	35

IAED Scientific Publications

Year	Published	Accepted/ in-press	In review (with editor)	In-preparation (authors)	Total
2007	2				2
2008	4				4
2009	1	1	1	6	9
2010		1			
Total	7	2	1	6	16

Types of Research Studies

- ▶ Protocol validation studies
 - Efficiency (e.g. Hierarchy of determinants & codes)
- ▶ Prediction of severity of outcomes
 - CAs & BIs
- ▶ Associations between CCs & determinants
 - Falls, chest pain, CA
 - Breathing, and diabetic problems
- ▶ Accuracy of diagnostic tools
 - Stroke, pulse, Aspirin tools

Summary of Some Studies

Studies

- ▶ Cardiac arrest predictability in seizure patients based on EMD identification of previous seizure or epilepsy History *Resus 2007*

- **Objective:** To determine predictability of at-scene CA from a dispatch determined patient history of seizure or epilepsy (“E” history)
- **Conclusion:** Knowing whether a seizure patient is epileptic or has history of seizures is of clinical value and relevant to dispatch

Studies

- ▶ Accuracy of EMDs' Subjective Ability To Identify When Higher Dispatch Levels Are Warranted Over An MPDS Automated Protocol's Recommended Coding Based On Paramedic Outcome Data. *EMJ 2007*
 - **Objective:** To establish the accuracy of the EMD's decisions to override the automated MPDS logic-based response code recommendations based on at-scene paramedic-applied transport acuity determinations : CA & BI
 - **Conclusion:** Automated, protocol-based calltaking is more accurate and consistent than the subjective, anecdotal or experience-based determinations made by individual EMDs

Studies

- ▶ The Medical Priority Dispatch System's Ability to Predict Cardiac Arrest Outcomes and High Acuity Pre-Hospital Alerts in Chest Pain Patients Presenting to 9-9-9. *Resus 2008*
 - **Objective:** To establish EMD predictability of CA and BI outcomes in chest pain patients by using the MPDS priority levels, and its more specific clinical determinant codes

MPDS Priority Level	Outcome				
	n	Cardiac Arrest		Blue-In	
		n(%)	p [*]	n(%)	p [*]
ALPHA†	1,484	2(0.13)	0.030	43(2.90)	<0.001
CHARLIE	19,463	20(0.10)		2,390(12.28)	
DELTA	43,707	84(0.19)		5,481(12.54)	

Results & Conclusions

10-D-1 (SRD)

Associated with CA and BI Acuity

10-D-2 (Not Alert)

Associated with CA and BI Acuity

10-D-4 (Naus./vomit)

More assoc. with 10-C-1, C-2 & all Cs, than Ds

10-C-3 (Cocaine)

Only 28 cases, 0 CAs, 2 BIs

P-10

Highest CAQ found in D-2 – Not Alert: 0.54%

Studies

- ▶ Association between Patient Unconscious or Not Alert Conditions and Cardiac Arrest or High Acuity Outcomes within the Medical Priority Dispatch System Falls Protocol.

PDM 2010

- **Objective:** To characterize the risk of CA and HT outcomes in patients with “not alert” condition, within the MPDS Falls protocol

Results:

- ▶ “*Not alert*” medical condition was significantly associated with CA and HT outcomes

Site	Medical condition	n	Cardiac Arrest			“ Hot-Transport”		
			n(%*)	RD(95%CI) [†]	p	n(%*)	RD(95%CI) [†]	p
EMSA	Not alert	654	8(1.22)	0.011(0.003, 0.020)	<0.001	74(11.31)	0.096(0.072, 0.121)	<0.001
	Alert	14,966	12(0.08)			252(1.68)		
RAA	Not alert	703	8(1.14)	0.011(0.003, 0.018)	<0.001	61(8.68)	0.049(0.028, 0.070)	<0.001
	Alert	16,897	13(0.08)			630(3.73)		
MEDIC	Not alert	651	2(0.31)	0.003(-0.001, 0.007)	0.015	39(5.99)	0.044(0.026, 0.063)	<0.001
	Alert	15,606	3(0.02)			243(1.56)		
Overall	Not alert	2,008	18(0.90)	0.008(0.004, 0.013)	<0.001	174(8.67)	0.063(0.051, 0.075)	<0.001
	Alert	47,469	28(0.06)			1,125(2.37)		

Studies

- ▶ Public Expectations of Receiving Telephone Pre-Arrival Instructions from Emergency Medical Dispatchers at 30 years Post Origination. *PDM 2010 (under review)*
 - **Objective:** To assess public expectations of receiving telephone Pre-Arrival Instructions (PAIs) from 9-1-1 EMDs, 30 yrs after introduction
 - **Conclusion:** The public has high expectations of receiving life-saving PAIs from EMDs

Some Planned/Ongoing Research

Planned Studies

1. Determining the **Accuracy of Emergency Medical Dispatcher-Assisted Layperson-caller Pulse Check** Using Medical Priority Dispatch System Protocol
2. Variability of **EMD compliance** to protocol-based triage dispatch system by **gender** and **work shift**
3. A comparison of **Aspirin administration equity** in **men** and **women** using the Medical Prioritisation Dispatch Sys
4. Evaluation of the **Level of Lawsuits Encountered** by Emergency Communication Centers and EMS Systems based on the use of the Medical Priority Dispatch System compared to other methods of Dispatch Processing

Planned Studies

5. The Previously Un-described **Effects of Code Hierarchy Bias** in Emergency Dispatch Coding and Outcome-based Studies
6. The **Relationship Between the EMD-Determined “Not Alert” Medical Condition and Paramedic Finding of Level of Consciousness** using **GCS**
7. Multi-center **EMS Influenza-Like-Illness Surveillance**
8. Identification of **stroke symptoms in alert patients who fall without injury**
9. Using the Medical Priority Dispatch System **Breathing Detector Diagnostic Tool to Identify Severe Respiratory Distress** in Patients

Some Lessons Learned

- ▶ Need for an **IRB**
- ▶ Limitations of **aggregated data**
- ▶ Availability of **standardized datasets** now
 - ProQA and CAD record linking issues
- ▶ Obstacles in obtaining **hospital outcome data**
 - Consent
 - Record linking problems
- ▶ Need for **more collaboration**

CONCLUSION

The future of better dispatch relies on the marriage of the unified protocol with the Science based on its vital and profound data