

*Agenda Item 3e*



# Dispatch Review Project

Public Safety Commission

July 2, 2012



OFFICE OF THE MEDICAL DIRECTOR  
CITY OF AUSTIN/TRAVIS COUNTY EMS SYSTEM



# Dispatch Process

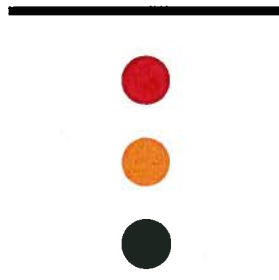
(information only will not be presented)

- o The ATCEMS System utilizes a dispatch process created by Medical Priority Dispatch System (MPDS). MPDS is the largest and most researched producer of call taking algorithms in the world.
- o After verification of address and call back number the Emergency Medical Dispatcher (**EMD**) ascertains what the problem is.
- o The problem indicates which of 33 different interrogation algorithms the EMD will use (**card type**) and pre-arrival instructions to assist the patient. The “cards” are computerized using a progressive algorithm determined by the answers to each question.
- o The answers supplied identify a **response determinant** and **priority** which is linked to resource assignment and response mode.
- o The interrogation algorithm cannot be altered by the end user however the resources and response mode to each **determinant** can be modified.



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# History

- o In setting of clinical uncertainty System resources are applied to mitigate risk and assure rapid response for life saving intervention
- o Prior to development of caller interrogation algorithm all units were assigned to every call and all responses were lights and sirens
- o EMD process allows limited data gathering in an effort to more selectively assign resources and provide pre-arrival instructions for life threats



## Goal of Review

- o Evidence based identification of P4 & P5 complaints that may not require first response in Travis County
- o Identification of P4 & P5 complaints that based on their acuity may need additional resources in Austin
- o Review P1-5 to identify opportunities to create a uniform response and provide the right resource to the right patient in the right amount of time



## Process

- o All P4 & P5 dispatches for FY2011 are identified and linked with electronic patient data
- o Manual filter of:
  - o Attended patients
  - o DOS, no patient found
  - o Data errors (ex HR <20)
  - o Untriaged (RA, e-rule, etc)
- o Remaining P4 & P5 represent the evaluated pool of calls using physiologic and intervention criteria



# Proxy for Acuity

TABLE 2. High-Acuity Patient Characteristics Considered Unacceptable for Alpha Response

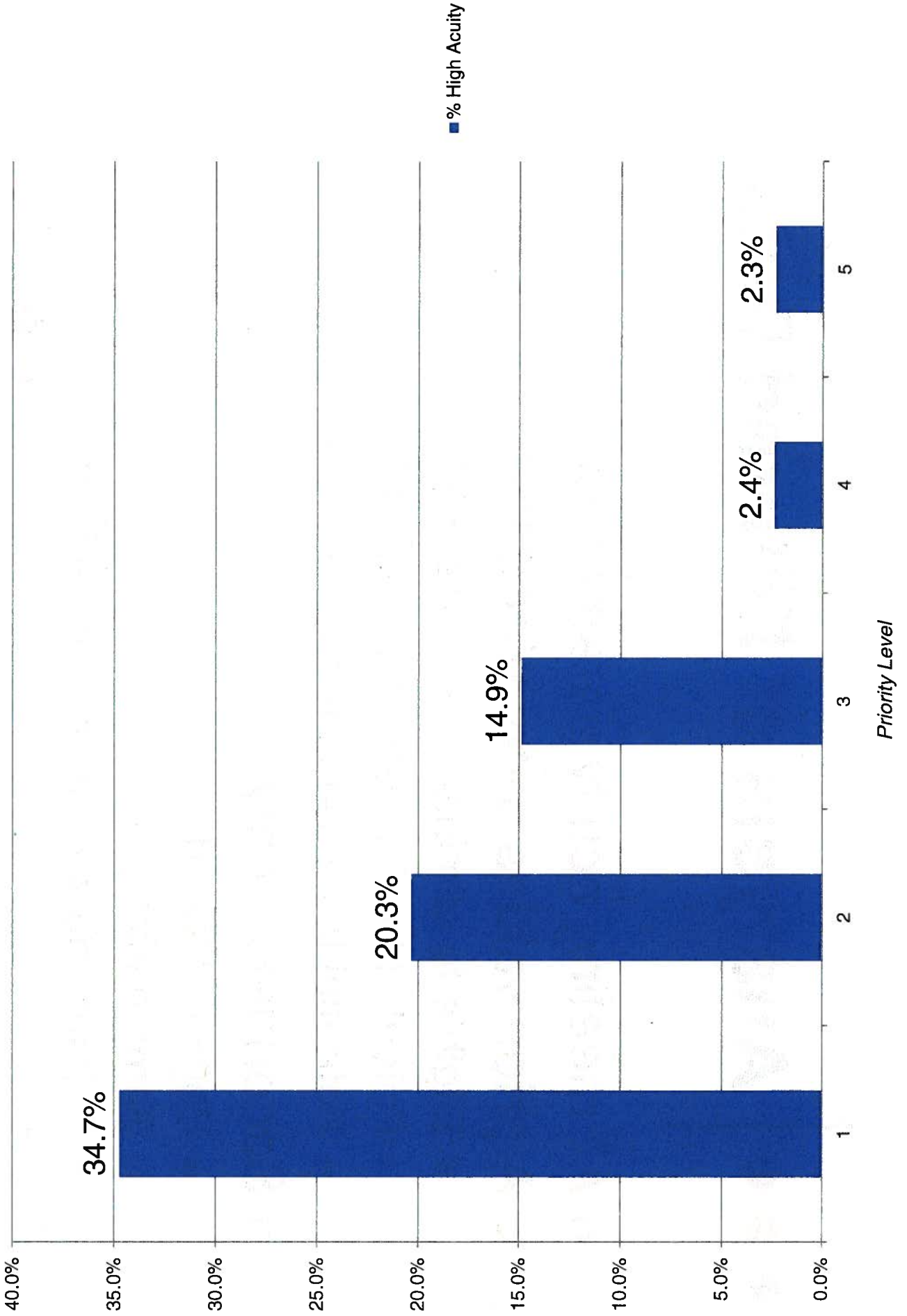
<p><b>Need for ACLS intervention</b></p> <ul style="list-style-type: none"> <li>• Administration of               <ul style="list-style-type: none"> <li>◦ Antidysrhythmics (amiodarone, lidocaine, procainamide)</li> <li>◦ Epinephrine / vasopressin</li> <li>◦ Atropine</li> <li>◦ Adenosine</li> <li>◦ Cardizem</li> <li>◦ Calcium</li> </ul> </li> <li>• Electrical cardiac therapy               <ul style="list-style-type: none"> <li>◦ Transcutaneous pacing</li> <li>◦ Cardioversion</li> <li>◦ Defibrillation</li> </ul> </li> </ul> <p><b>Evidence of acute coronary syndrome</b></p> <ul style="list-style-type: none"> <li>• Nitroglycerin for chest pain</li> <li>• Morphine for chest pain</li> <li>• STEMI</li> </ul> <p><b>Evidence of respiratory distress</b></p> <ul style="list-style-type: none"> <li>• Treatment for presumed CHF with any of the following:               <ul style="list-style-type: none"> <li>◦ nitroglycerin</li> <li>◦ furosemide</li> <li>◦ morphine</li> <li>◦ CPAP</li> </ul> </li> <li>• Treatment for presumed bronchospasm with any of the following:               <ul style="list-style-type: none"> <li>◦ albuterol</li> <li>◦ atrovent</li> <li>◦ methylprednisolone</li> <li>◦ magnesium sulfate</li> <li>◦ epinephrine</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Treatment for presumed allergic reaction with any of the following:               <ul style="list-style-type: none"> <li>◦ diphenhydramine</li> <li>◦ methylprednisolone</li> <li>◦ epinephrine</li> </ul> </li> <li>• Advanced airway management, including any of the following:               <ul style="list-style-type: none"> <li>◦ nasotracheal intubation</li> <li>◦ orotracheal intubation</li> <li>◦ placement of a laryngeal mask airway</li> <li>◦ use of surgical airway</li> <li>◦ use of bag-valve mask</li> </ul> </li> </ul> <p><b>Altered mental status</b></p> <ul style="list-style-type: none"> <li>• Treatment for hypoglycemia requiring any of the following:               <ul style="list-style-type: none"> <li>◦ glucose administration</li> <li>◦ glucagon administration</li> </ul> </li> <li>• Treatment for presumed narcotic overdose:               <ul style="list-style-type: none"> <li>◦ naloxone</li> </ul> </li> <li>• Treatment for seizure activity requiring any of the following:               <ul style="list-style-type: none"> <li>◦ benzodiazepines</li> <li>◦ magnesium sulfate (presumed toxemia)</li> </ul> </li> </ul> <p><b>Stroke</b></p> <ul style="list-style-type: none"> <li>• Paramedic evaluation based on Cincinnati Prehospital Stroke Scale</li> </ul> <p><b>Abnormal vital signs</b></p> <ul style="list-style-type: none"> <li>• SBP &lt;90, Pulse &gt;140, &lt;50</li> </ul>
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# Analysis of Filtered Data

- o All meeting acuity parameters
- o A priori values determined for:
  - o Eligible to eliminate response < 3%
  - o Potential to eliminate response 3-5%
  - o Potential to increase response >5%
- o Secondary analysis:
  - o Percent filtered
  - o Sample size (>1%)
  - o Subset analysis of call determinant

# % High Acuity By Call Priority







## Improved Analysis

- Priority 4 and Priority 5 response levels are lower acuity than Priority 1-3.
- However acuity is NOT evenly distributed within the priority level.
- Changes in the resources assigned can not be made safely based on the priority alone.
- Targeted response should be based on acuity within the individual card type.



# Sample of P4&5 > 10%

(information only)

Total number of events by card type for FY2011

Card Type	Total Data (C)	Filtered Data (D)	High Acuity (E)	(E/D)		(C/Sum C)		(D/C)
				Percent High Acuity	% of total	Percent High Acuity	% of total	
Allergic reaction Pri 4	61	27	11	40.74%	0.21%	44.26%		
Burn Pri 4	32	11	3	27.27%	0.11%	34.38%		
Gunshot Wound Pri 4	20	10	2	20.00%	0.07%	50.00%		
Seizure Pri 4	546	296	57	19.26%	1.84%	54.21%		
Seizure Pri 5	1421	1410	236	16.74%	4.78%	99.23%		
Choking Pri 5	173	172	28	16.28%	0.58%	99.42%		

Events remaining after filter process (slide 5)

High acuity patients in filtered events (slide 6)

% of all P4 & P5 events for FY2011 therefore sample does not total to 100%

# Sample of P4&5 > 10%

Card Type	Total Data (C)	Filtered Data (D)	High Acuity (E)	(E/D)		(C/Sum C)		(D/C)
				Percent High Acuity	% of total	% of total	% after filter	
Allergic reaction Pri 4	61	27	11	40.74%	0.21%	0.21%	44.26%	
Burn Pri 4	32	11	3	27.27%	0.11%	0.11%	34.38%	
Gunshot Wound Pri 4	20	10	2	20.00%	0.07%	0.07%	50.00%	
Seizure Pri 4	546	296	57	19.26%	1.84%	1.84%	54.21%	
Seizure Pri 5	1421	1410	236	16.74%	4.78%	4.78%	99.23%	
Choking Pri 5	173	172	28	16.28%	0.58%	0.58%	99.42%	

# Sample P 4&5 3-5%

Card Type	Total Data (C)	Filtered Data (D)	High Acuity (E)	(E/D)		(C/Sum C)		(D/C)
				Percent High Acuity	% of total	Percent High Acuity	% of total	
Hemorrhage Pri 5	291	288	14	4.86%	0.98%	98.97%	% after filter	
Stabbing Pri 4	45	21	1	4.76%	0.15%	46.67%		
Overdose Pri 4	513	233	10	4.29%	1.73%	45.42%		
Eye Injury Pri 4	80	27	1	3.70%	0.27%	33.75%		
Fall Pri 4	5270	4741	162	3.42%	17.73%	89.96%		

# Sample P 4&5 <3%

Card Type	(E/D)				(C/Sum C)		(D/C)
	Total Data (C)	Filtered Data (D)	High Acuity (E)	Percent High Acuity	% of total	% after filter	
Hemorrhage Pri 4	1104	821	23	2.80%	3.71%	74.37%	
Burn Pri 5	37	36	1	2.78%	0.12%	97.30%	
Assault Pri 4	3051	1092	29	2.66%	10.27%	35.79%	
Injury Pri 4	2359	1478	37	2.50%	7.94%	62.65%	
Animal Bite Pri 5	43	43	1	2.33%	0.14%	100.00%	
Psychiatric Pri 5	290	283	4	1.41%	0.98%	97.59%	

# Determinant Analysis for P5 Seizure

Card Type	Total Data	Filtered Data Subs	Filtered Data	High Acuity Subs	High Acuity	Percent High Acuity subs	(E/D)	(C/Sum C)	(D/C)
							Percent High Acuity	% of total	% after filter
<b>Seizure Pri 5</b>	1421		1410		236		16.74%	4.78%	99.23%
12A01		621		134		21.6%			
12A01E		670		96		14.3%			
12A02		10		2		20.0%			
12A02E		8		0		0.0%			
12A03		8		0		0.0%			
12A03E		93		5		5.4%			