Evolving Diagnostic Processes for Dispatch

Jeff Clawson, MD
International Academies of Emergency Dispatch
Conflict of Interest

• Priority Dispatch Medical Director, CEO
• IAED Board of Trustees, Council of Standards, Certification Board
• Level of Conflict: About as much has Ghaddafi has in Libya this week
• No Medical Directors were harmed in the making of these diagnostics…
The Diagnostic Tools provide...

New Evaluation & Treatment Methods in Protocol Use
They say Paramedics don’t diagnose, but Dispatchers do...
What are Dispatch Diagnostics?

**Micros vs. Macros**

- **Micros**: a single Key Question searching for a single objective or finding
- **Macros**: a group of questions or evaluations searching for a single objective or finding and treating or rectifying that finding
EMDs have 9 Diagnostic Tools

- Agonal Breathing Detector
- Pulse Check
- Compressions Monitor
- Contractions Timer
- Stroke Diagnostic
- Aspirin Diagnostic & Instruction
- Accelerator Stuck & Can’t Stop Vehicle
- Police Suspect Info Relay
- Severe Respiratory Infection (SRI) Symptoms
- Meningitis Identification Tool*
- Lost-Caller Locator Tool*

* In study testing now
Diagnostic Tool Icons for Rapid EMD Access

- Agonal Breathing
- Compressions
- Stroke
- Accelerator Stuck
- SRI Symptoms
- Pulse Check
- Contractions
- Aspirin Eval
- Suspect Info
Agonal Breathing

- Often described as “gasp for air”
- Can look like a fish-out-of-water taking dying breaths
- How it sounds over the phone:
Agonal Breathing
“The Great Pretender”
• “Pseudo” breathing in arrest situations can confound lay people and EMDs
• Just training appears to be insufficient to assure this caller observation is not misunderstood
• In 2004, the Academy Research Division added a direct counting process tool to identify both the rate and the effectiveness of breathing
• Ropollo, Idris, et al, published the effectiveness of agonal breathing counting at dispatch
Okay, I want you to tell me every time s/he takes a breath, starting now*.

Breathing Rate
- 08.422 sec = 7 bpm
- 10.000 sec = 6 bpm

Pattern Analysis
- Single interval exceeds agonal limit
- Rate < 6 breaths per minute

ProQA Entry Recommendations
- Ineffective/Agonal

Close
Pulse Check Tool

• Part of the manual protocol for 25 years
• Provides accurate timing for the caller
• Easier rate calculation for the EMD
• New scientific study underway to validate the accuracy of this process**

**Mythbusters take on the concept that the layperson can’t take a pulse
Instructions for Taking a Pulse (select one):

(Read verbatim)

Find the Adam’s apple on her/his neck.
Feel on either side of it for a pulse.
Be careful not to push too hard.
Count the pulses for 15 seconds.
I’ll time you.

Clear/Restart 00:15

How many did you count?
Click caller’s count at right.

ProQA Entry Recommendations

Rate < 50

Beats Per Minute

44

Close
Compressions Monitor

- Based on obvious difficulties with callers performing accurate CPR rates on their own
- Also based on some EMDs counting at an incorrect rate
- Helps with longer 1st compressions periods – now at 600
- Timer help for the EMD – the metronome
Select the appropriate age range:

- Adult 18 or over
- Child (1-7 yrs)
- Adult under 18
- Infant (< 1 yr)
- Newborn/Neonate (< 30 days)

To start the counter, select the appropriate number of compressions:

- Clear/Restart
- 100 Times
- 30 Times
- 5 Times

Ideal Compressions:

- Compressions: 600
- Ideal stop time: 6:00
- Elapsed time: 2:58

Actual Compression Rate Delivered:

202 cpm – 1

We have calculated the rate to be:

Too Fast

Close
Contractions Timer

- Simplifies evaluation over an extended time period
- Eliminates an anxious caller’s “best guess” error
- For a patient with a 5-minute contraction interval, timing a single interval can take from 5:01 to 9:59 minutes to actually time it out
- Accounts for differences between 1st and 2nd plus pregnancy imminent births situations
- Under consideration for starting earlier at the point of Chief Complaint determination
Okay, I want you to tell me every time she starts having a contraction, starting now*. 

**03:49** Intervals **01:08**

Contractions Interval
- Contraction length 02:35
- Contraction length 01:08

Pattern Analysis
- Contractions evaluated = 2
  - Delivery could be IMMINENT

One contraction every = 01:51 minute
  - Rate above normal limits

Select one to calculate:
- 1st Delivery
- 2nd+ Delivery

ProQA Entry Recommendations
- IMMINENT Delivery

Contraction Interval Colour Legend
- 0-2 minutes
- 2-5 minutes
- 5 plus minutes

IMMINENT Delivery: prepare the caller for delivery. (See PAI Childbirth-Delivery sequence.)
Stroke Identification Icon

Droopy-Mouth Face
Brain Attack!

This concept has gotten dispatch’s attention…
Earliest Point in the System

• EMDs are the first, first responders – they are there the second the phone stops ringing – Zero Response Time.
• They are trained to precisely use a protocol to evaluate and give care.
• It’s like they are there, just via remote control.
• “Listen, I’ll tell you exactly what to do next…”
• Before 2004, Stroke Protocol selection was based on **Chief Complaint selection only**
• **Expansion of Determinant Response Codes** following the emergence of “Brain Attack” science
• San Diego study showed remarkably that EMDs had **twice the sensitivity** of paramedics in recognizing strokes: 83% to 44%
• The Tool establishes a **detailed EMD evaluation process** based on commonly used tests which can be **mathematically adjusted** to increase prediction based on outcome
I want you to get close enough to ask her/him three questions. Tell me when you're ready.

Ask her/him to smile.
(Wait) Was the smile equal on both sides of her/his mouth?
- Normal smile
- Slight difference in smile (possible difference)
- Only one side of mouth or face shows a smile (obvious difference)
- Cannot complete request at all

Ask her/him to raise both arms above her/his head.
(Wait) What was s/he able to do?
- Both arms raised equally
- One arm higher than other (both raised unequally)
- Only one arm raised
- Cannot complete request at all

Ask her/him to say, "The early bird catches the worm."
(Wait) Was s/he able to repeat it correctly?
(Clarify) Was it slurred, garbled, or not understandable?
- Said correctly
- Slurred speech
- Garbled or not understandable speech
- Cannot complete request at all
Ask her/him to say, "The early bird catches the worm."

(Wait) Was s/he able to repeat it correctly?

(Clarify) Was it slurred, garbled, or not understandable?

- Said correctly
- Slurred speech
- Garbled or not understandable speech
- Cannot complete request at all

Finished

Close

ProQA Entry Recommendations
Clear evidence of stroke (2,2,2)

Strong evidence of stroke (2,2,1)

Partial evidence of stroke (2,1,1)

No test evidence of stroke (1,1,1)
Aspirin Diagnostic & Evaluation Tool Icon
Aspirin Dx & Instruction Tool

- Aspirin proven to reduce the extent and effects of heart attack victims if used early
- Established due to strong evidence-based recommendations of the Resuscitation Councils (ILCOR) – especially the AHA
- Optional – based on Medical Director approval (this concern seems to be lessening)
- Now used in approximately 80% of all version 12 (current) MPDS centers (about 2,000 centers)
- In first 2 years, we estimated a total reduction of 114 years of patients waiting for aspirin
Select one for alert chest pain patient => 16:

1st Party

2nd Party

Does anyone there have any aspirin or Bufferin available? (Ask them now.)

Does anyone there have any aspirin or Bufferin available? (Ask them now.)

Aspirin retrieval

Please stay on the line. I need to check three more things. If you can, send someone else (not you or the patient) to look for some aspirin.

Has s/he passed black or bloody stools in the last 24 hours?

© 2004-2011
Is s/he **allergic** to aspirin, or ever had a **bad reaction** to it before?

*Do not proceed with aspirin instructions. Return to normal PDI sequence.*

Has s/he vomited blood or coffee ground material in the last 24 hours?

Has s/he passed black or bloody stools in the last 24 hours?

**Recommendations**

Get one adult aspirin/Bufferin or four baby (low-dose) aspirins and tell me when you have them.

(Which type do you have?)

- ADULT (325mg)
- BABY or LOW-DOSE (81mg)

**Administration Instructions**

*Do not proceed with aspirin instructions. Return to normal PDI sequence.*
Select one for alert chest pain patient => 16:

1st Party

Does **anyone there** have any aspirin or Bufferin **available**? (Ask them now.)

- YES
- NO
- UNSURE

2nd Party

Is s/he **allergic** to aspirin, or ever had a **bad reaction** to it before?

- YES
- NO

Has s/he vomited **blood** or **coffee ground material** in the last 24 hours?

- YES
- NO

Has s/he passed **black** or **bloody stools** in the last 24 hours?

- YES
- NO
(Sent someone for ASA) Did they return with aspirin?  
- YES  
- NO

**Recommendations**

Get one adult aspirin/Bufferin or four baby (low-dose) aspirins and tell me when you have them.

[Which type do you have?]

- **ADULT (325mg)**
- BABY or LOW-DOSE (81mg)

**Administration Instructions**

Tell her/him to chew one adult aspirin/Bufferin right now.

[Buttons]

- Unable to chew
- Request to wash down ASA
- Close
Confirm taking aspirin

You are about to close the Aspirin Diagnostic. Did the patient take aspirin?

Yes  No
Reason for NOT taking

Dumb ass
Recent Toyota vehicle malfunctions
Sudden Unintended Acceleration (SUA) has been occurring for decades
Two cases of actual occupant calls to 911
Very restricted time to act
Needs the “Perfect Storm” situation to occur and a call to be placed
Okay, shift into neutral or "N" now.
Critical ED Information
* Some vehicles require pushing a button on the side of the shift handle with your thumb to allow shifting to neutral.
* A standard key ignition must be turned off only as far as the ACC position, which shuts down the engine but not the lights and accessories (like when you want the radio still on).
* Turning off the ignition to the ACC position will change the brakes and steering to manual mode. They should still work, but will be somewhat stiffer than normal (harder to turn and press the brake).
* In no case advise them to remove the key from the ignition until the vehicle is stopped.
* Do not encourage them to either exit the vehicle or remain in the vehicle.
Turn the ignition key just **one click** back (ACC position) so that the engine **shuts off** but it **doesn't lock** your steering wheel.

Turning off the ignition will **change** the power brakes and steering to **manual mode**. They should still **work**, but will be somewhat **stiffer than normal** (harder to turn and press the brake).
Meningitis Diagnostic & Evaluation Tool Icon
ProQA Diagnostic Tools Version: 3.4.7.3

Meningitis Diagnostic Tool

Select age:
- < 2 years
- >= 2 years

Meningitis Dx Indicators
- Rash
- Glass/blanch test performed
- Limp
- Sleepy/not alert
- Refusing to feed
- Hands or feet cold to the touch
- S/he doesn't look right

Comments about "Doesn't look right"
- baby looks like Marshal Isaacs...

Total Positive Answers
- Critical Single Criteria: 2
- Major Criteria: 2
- Minor Criteria: 3

Tool Predictive Value (ProQA)

SIGNIFICANT evidence

Return to KQs
Reset
Originally requested by Scotland Yard from London Ambulance Service: Suspect Data is Transferred from Protocol to Ambulance CAD to Police CAD
Police Suspect Info Tool

- Inter-discipline relay for when the Medical Dispatch Center is separate from Police or in rare situations where it is the 1° PSAP
- Suspect’s Description
- Escape Details
- Weapons/Safety Info
<table>
<thead>
<tr>
<th><strong>Police Suspect Info</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Provided Info below</strong></td>
</tr>
<tr>
<td><strong>Suspect's Description</strong></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
</tr>
<tr>
<td><strong>Age (group)</strong></td>
</tr>
<tr>
<td><strong>Height</strong></td>
</tr>
<tr>
<td><strong>Build (weight)</strong></td>
</tr>
<tr>
<td><strong>Clothing</strong></td>
</tr>
<tr>
<td><strong>Identifying Features</strong> (what &amp; where)</td>
</tr>
<tr>
<td><strong>Escape Details</strong></td>
</tr>
<tr>
<td><strong>Mode of Escape</strong></td>
</tr>
<tr>
<td><strong>Route &amp; Direction</strong></td>
</tr>
<tr>
<td><strong>Weapons Info</strong></td>
</tr>
<tr>
<td><strong>Weapons (used or seen)</strong></td>
</tr>
<tr>
<td><strong>Additional Safety Info</strong></td>
</tr>
</tbody>
</table>
1. The patient was assaulted.
2. This happened now (less than 6 hours ago).
3. The attacker is gone: Up the M-5
4. The attacker is armed with a knife.
5. There is SERIOUS bleeding.

Police Suspect Info:
- Gender: Male
- Ethnicity: White
- Age (group): Teenager
- Height: Short
- Build (weight): Large
- Clothing: Unknown
- Identifying Features: 42 tattoos and 13 scars
- Mode of Escape: Motorcycle
- Route & Direction: North by Northwest on the M-5
- Weapons (used or seen): Knife
- Additional Safety Info: considered armed and dangerous by Interpol

6. Are they completely awake (alert)?
- Yes
- No
- Unknown
Caller Locator Dx Tool

• Callers in various forms of distress may **not be able** to identify their location

• This may be due to several factors:
  – No noticeable address/location identifiers
  – No ANI/ALI (waiting for NG911 Phase 2)
  – Inability to speak or be clearly understood
    • Due to stroke
    • Extreme difficulty breathing
    • Drug effects on cognition, etc.
Through retroactive Dispatch Diag Science, we have determined that Paul Pepe’s indefatigable persona is due to...
Onward Eagles, through the dispatch fog...

jeff.clawson@emergencydispatch.org
Future Eaglettes – Practicing required hand signs…
Questions...

...and (a few) Answers

jeffclawson@emergencydispatch.org
Diagnostic Tools Icons

- Agonal Breathing
- Compressions
- Stroke
- Suspect Info
- Pulse Check
- Contraction
- Aspirin Eval
Severe Respiratory Infection Tool

- Used to identify patients with flu
- Used to inform responders of these patients
- Under new construction to create two different modes of SRI:
  - Long format
  - Short format
- New Protocol 36 – Surveillance Only level
Severe Respiratory Infection Tool
1\textsuperscript{st} Stroke Evaluative Question

ProQA Diagnostic Tools Version: 3.4.7.3

Stroke Diagnostic Tool

Ask her/him to smile.

(Wait) Was the smile \textit{equal} on \textit{both sides} of her/his mouth?

- Normal smile
- Slight difference in smile (possible difference)
- Only one side of mouth or face shows a smile (obvious difference)
- Cannot complete request at all

Answer Selected

© 2004-2011
2nd Stroke Evaluative Question

Ask her/him to raise both arms above her/his head.

(Wait) What was s/he able to do?

- Both arms raised equally
- One arm higher than other (both raised unequally)
- Only one arm raised
- Cannot complete request at all