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…

IAED © 2004-2011

The Diagnostic Tools provide…

New Evaluation & Treatment Methods in Protocol Use

IAOED © 2004-2011

They say Paramedics don't diagnose, but Dispatchers do…

© 2004-2011

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

IAOED © 2004-2011

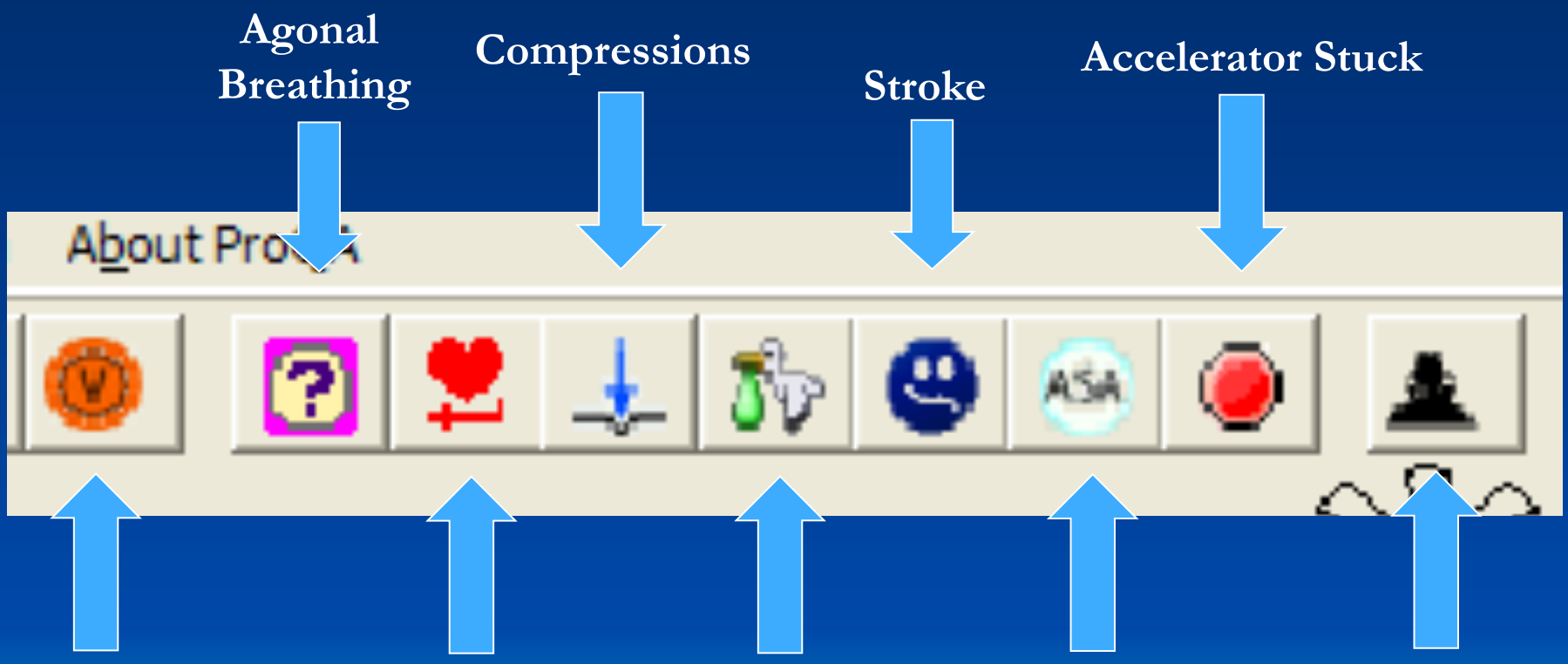
EMDs have 9 Diagnostic Tools

- 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

IAOED © 2004-2011

Diagnostic Tool Icons for Rapid EMD Access



IAOED © 2004-2011

Agonal Breathing

- Often described as "gasping for air"
- Can look like a fish-out-of-water taking dying breaths
- How it sounds over the phone:

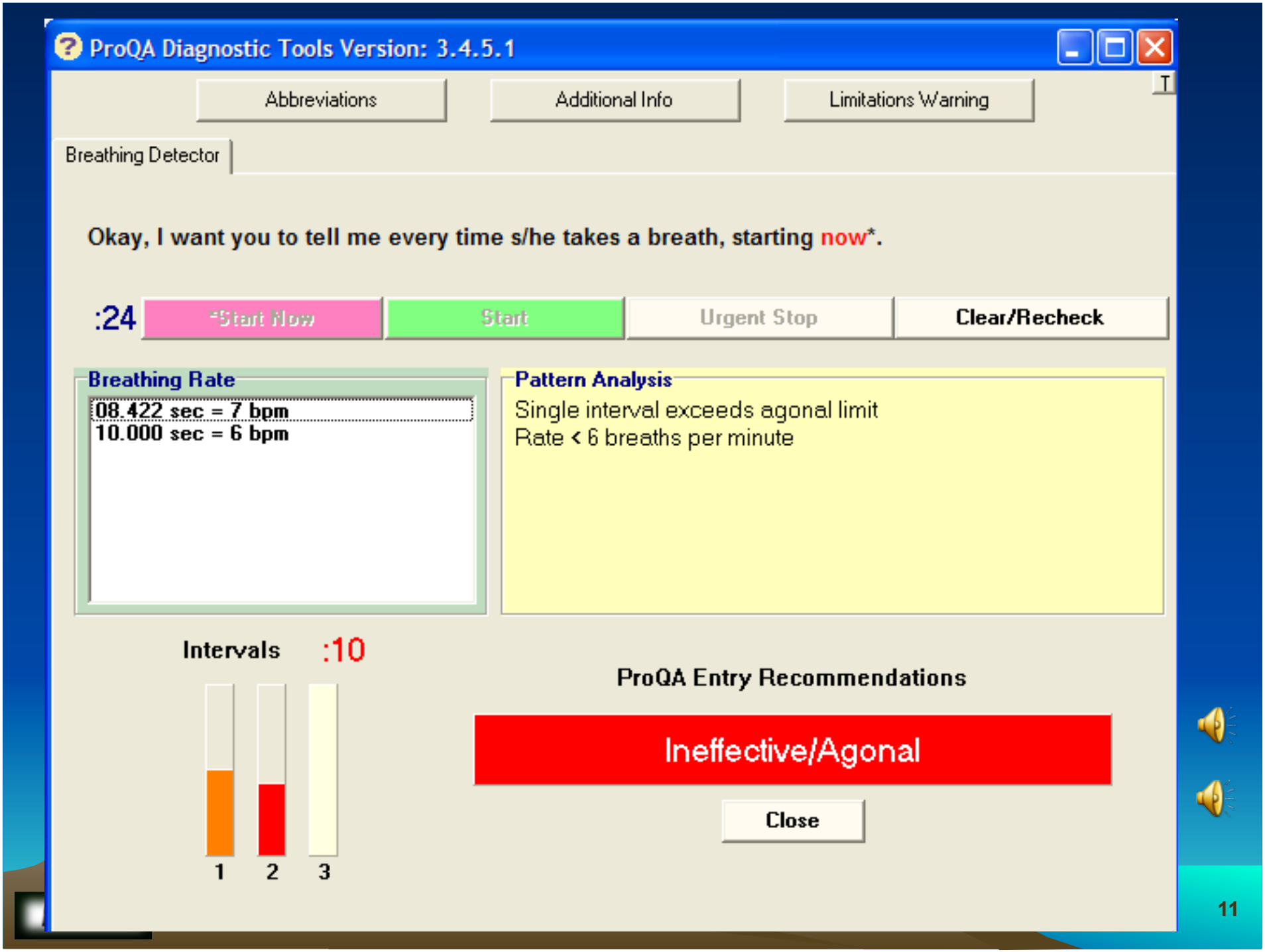
IAOED © 2004-2011

Agonal Breathing
"The Great Pretender"

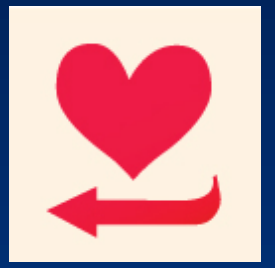
Agonal Breathing Detector

- "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

IAOED © 2004-2011


ProQA Diagnostic Tools Version: 3.4.5.1
Abbreviations
Additional Info
Limitations Warning
Breathing Detector
Okay, I want you to tell me every time s/he takes a breath, starting now*.
:24
*Start Now
Start
Urgent Stop
Clear/Recheck
Breathing Rate
08.422 sec = 7 bpm
10.000 sec = 6 bpm
Pattern Analysis
Single interval exceeds agonal limit
Rate < 6 breaths per minute
Intervals
:10
1
2
3
ProQA Entry Recommendations
Ineffective/Agonal
Close

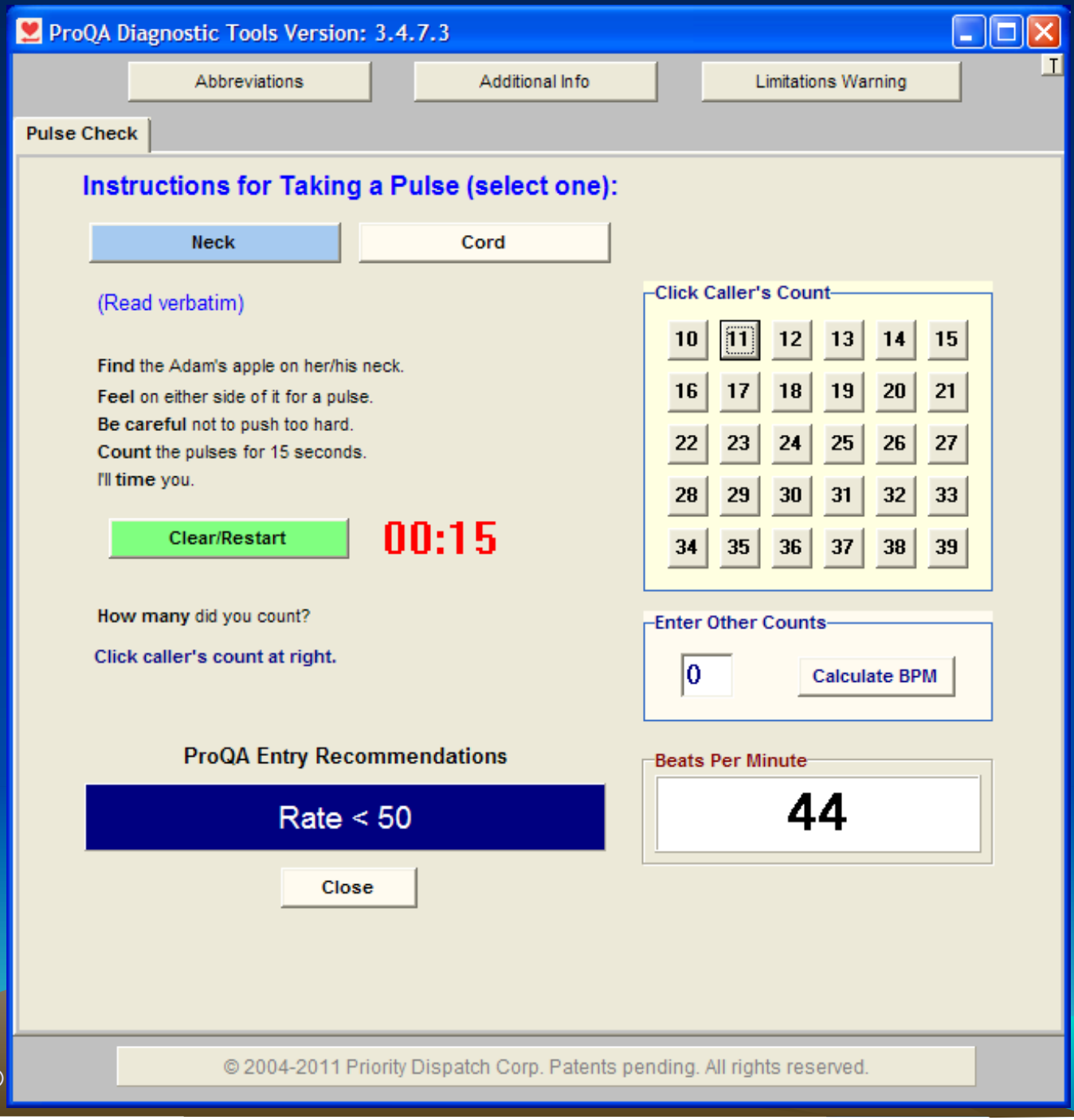
Pulse Check Tool



- 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

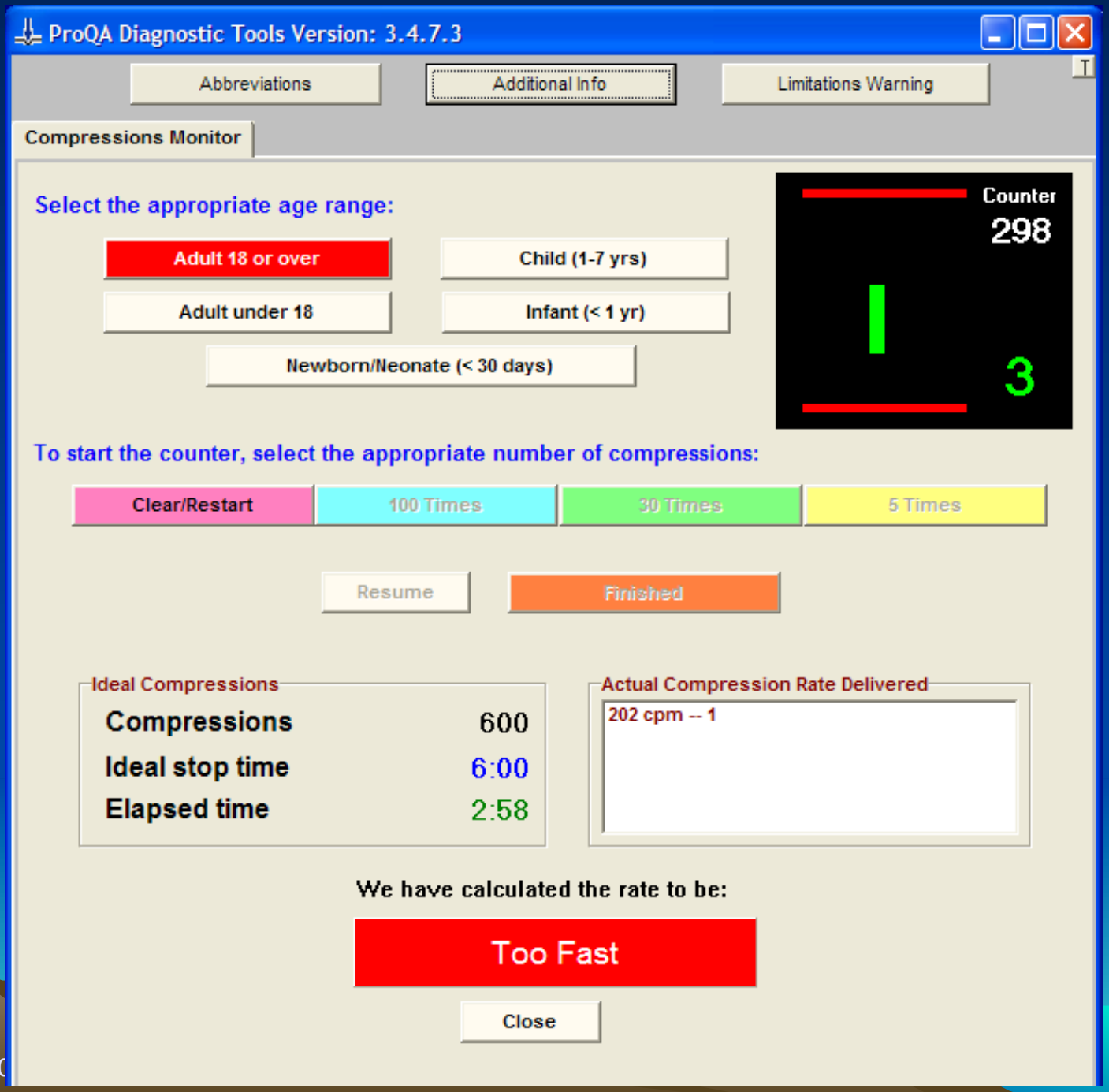
IAOED © 2004-2011


ProQA Diagnostic Tools Version: 3.4.7.3
Abbreviations
Additional Info
Limitations Warning
Pulse Check
Instructions for Taking a Pulse (select one):
Neck
Cord
(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.
Click Caller's Count
10 11 12 13 14 15
16 17 18 19 20 21
22 23 24 25 26 27
28 29 30 31 32 33
34 35 36 37 38 39
Enter Other Counts
0
Calculate BPM
ProQA Entry Recommendations
Rate < 50
Beats Per Minute
44
Close
© 2004-2011 Priority Dispatch Corp. Patents pending. All rights reserved.

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

IAOED © 2004-2011

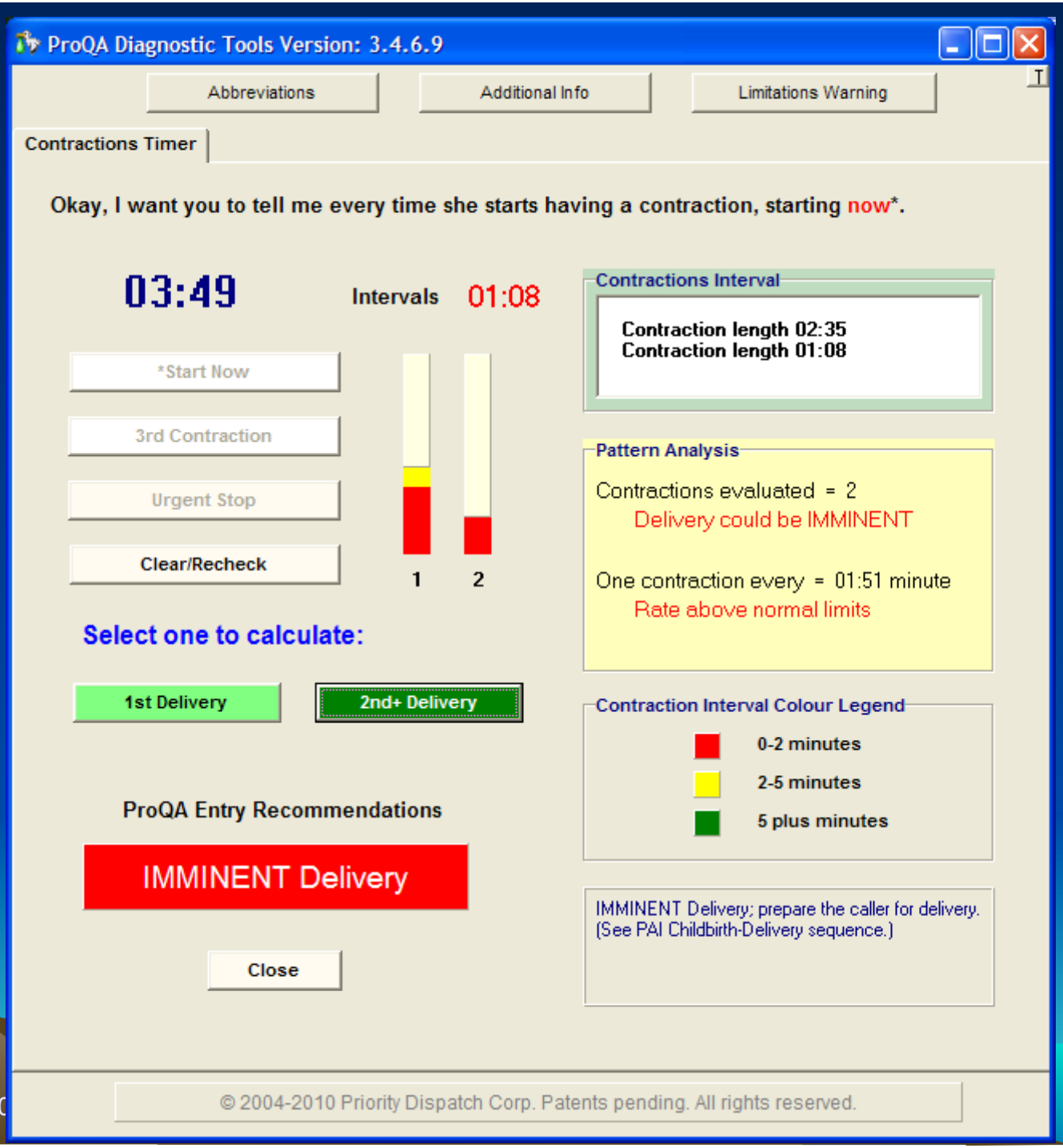

ProQA Diagnostic Tools Version: 3.4.7.3
Abbreviations
Additional Info
Limitations Warning
Compressions Monitor
Select the appropriate age range:
Adult 18 or over
Child (1-7 yrs)
Adult under 18
Infant (< 1 yr)
Newborn/Neonate (< 30 days)
Counter
298
3
To start the counter, select the appropriate number of compressions:
Clear/Restart
100 Times
30 Times
5 Times
Resume
Finished
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

IAOED © 20

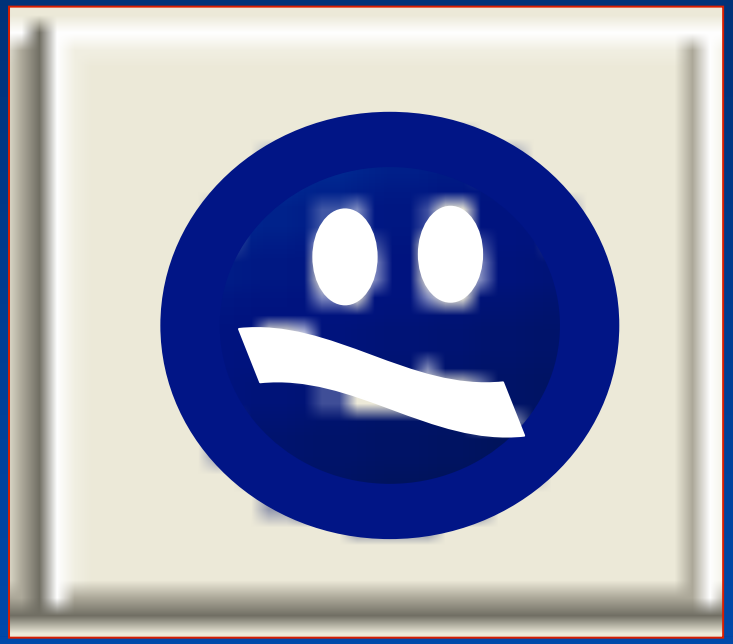
Contractions Timer

- 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

IAOED © 2004-2011

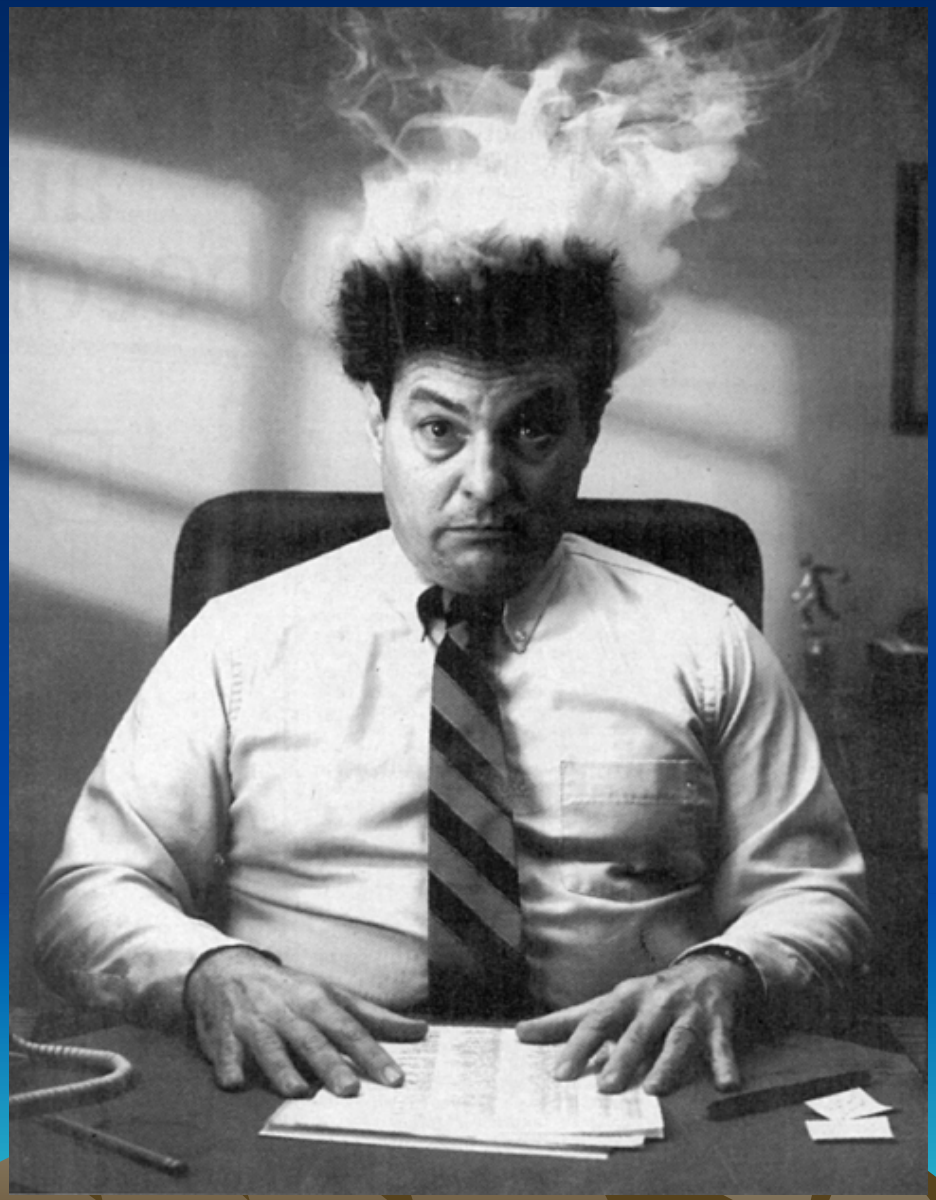

ProQA Diagnostic Tools Version: 3.4.6.9
Abbreviations
Additional Info
Limitations Warning
Contractions Timer
Okay, I want you to tell me every time she starts having a contraction, starting now*.
03:49
Intervals
01:08
*Start Now
3rd Contraction
Urgent Stop
Clear/Recheck
1
2
Select one to calculate:
1st Delivery
2nd+ Delivery
ProQA Entry Recommendations
IMMINENT Delivery
Close
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
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.)
© 2004-2010 Priority Dispatch Corp. Patents pending. All rights reserved.

Stroke Identification Icon



Droopy-Mouth Face

IAOED © 2004-2011



Brain Attack!

This concept has gotten dispatch's attention…

IAOED © 2004-2011

Earliest Point in the System

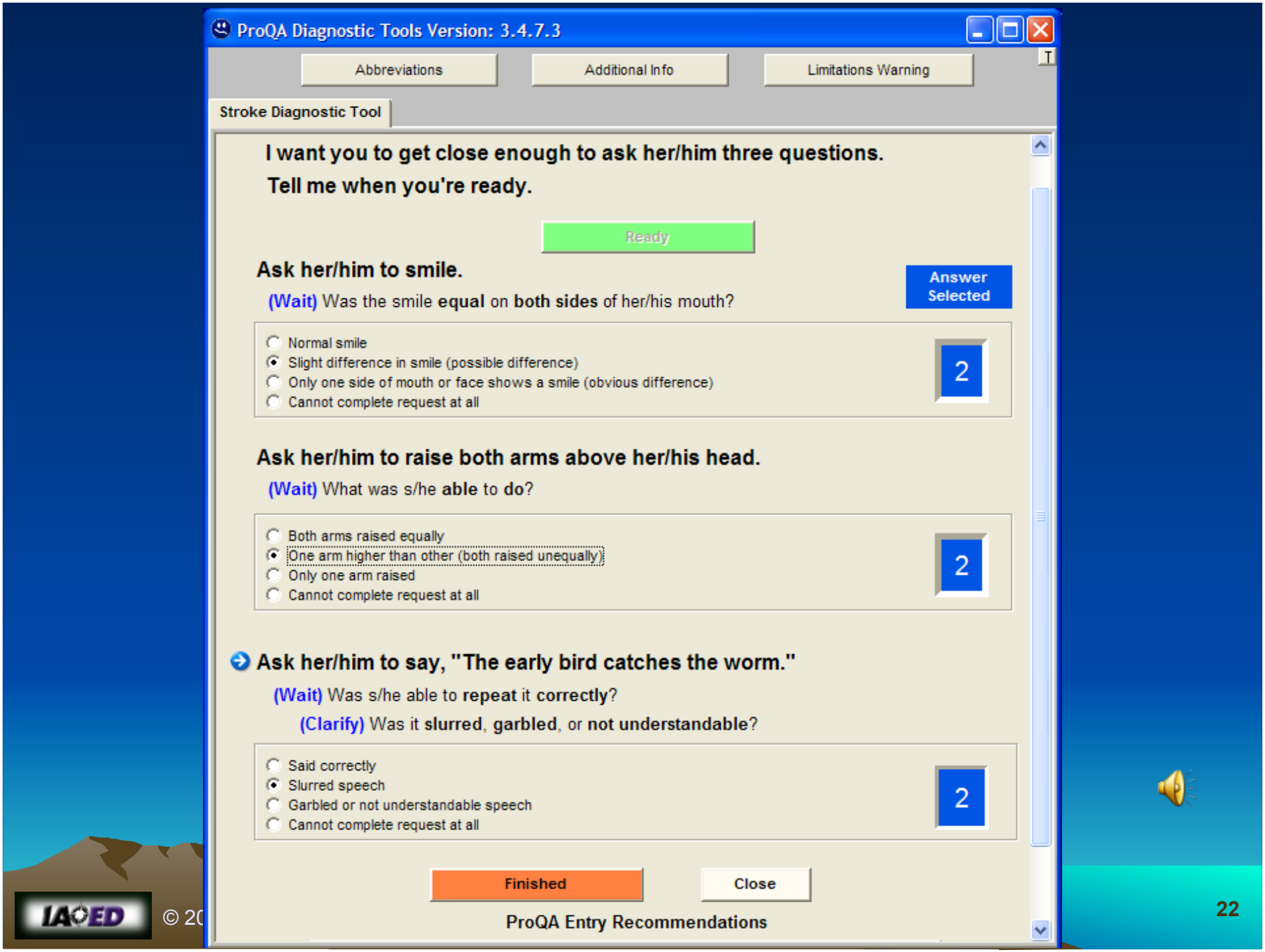
- EMDs are the first, first responders – they are there the second the phone stops ringing – Zero Response Time.
- They are trained to precisely use a protocol to evaluate and give care.
- It's like they are there, just via remote control.
- "Listen, I'll tell you exactly what to do next…"

IAOED © 2004-2011

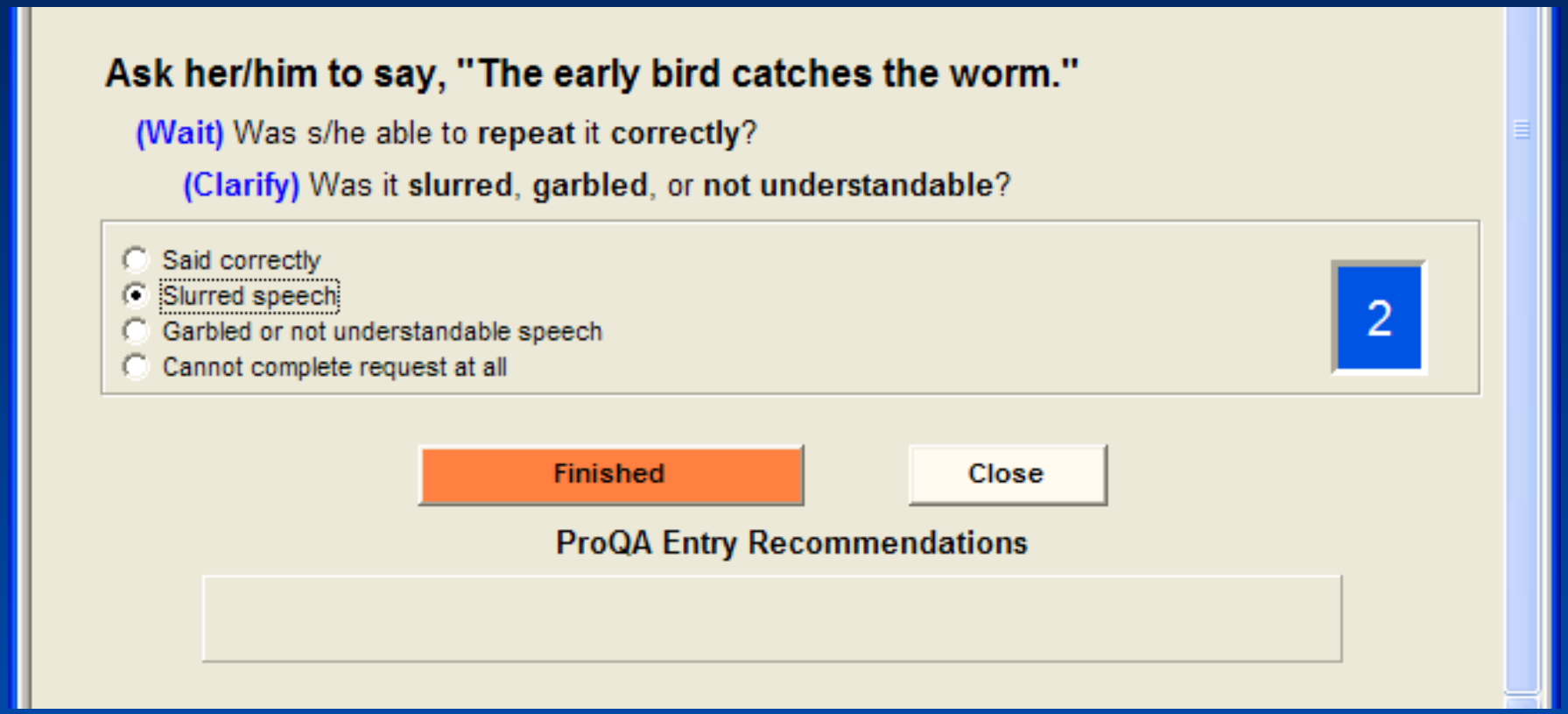
Stroke Diagnostic Tool

- 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

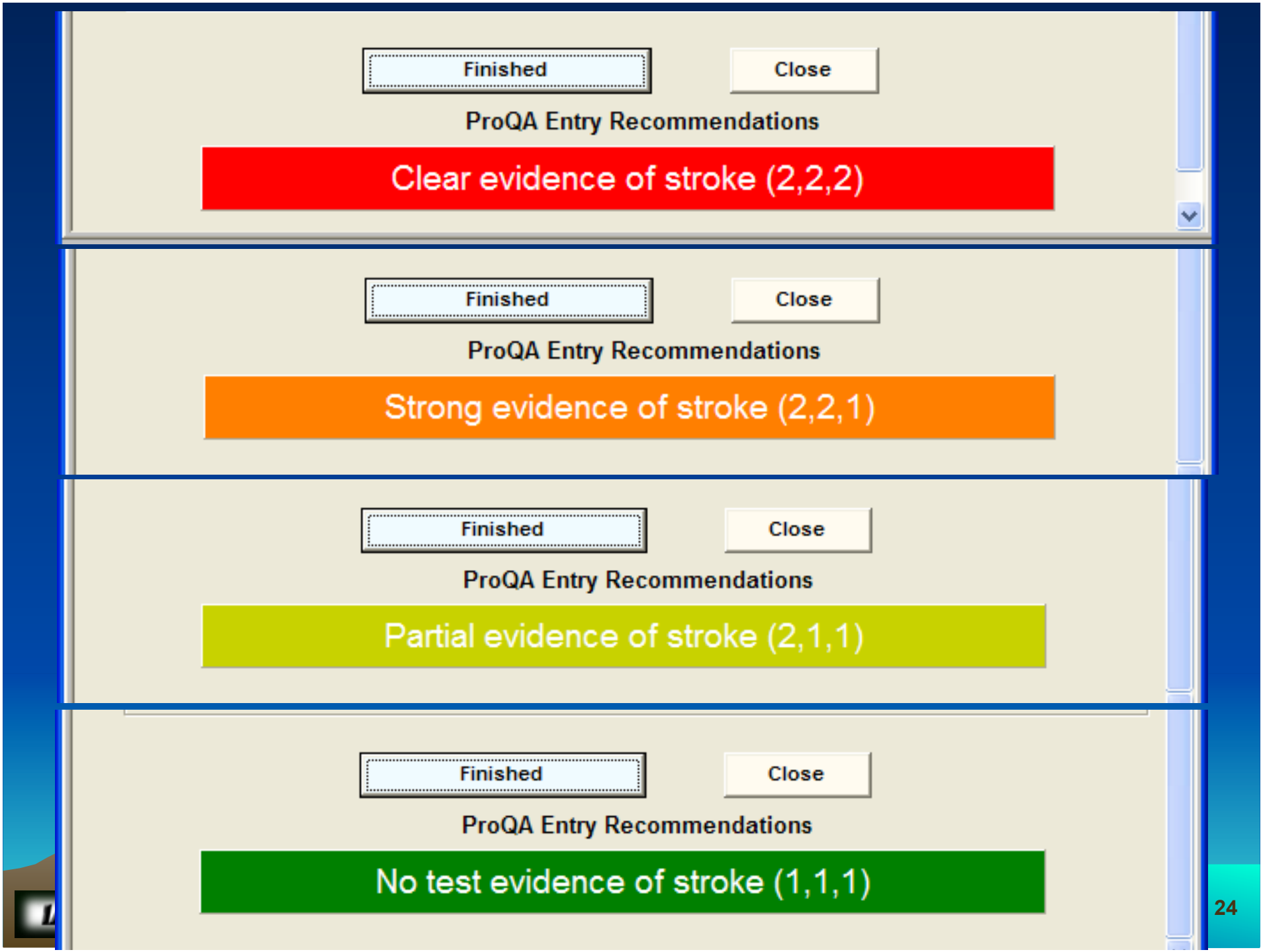
IAOED © 2004-2011


ProQA Diagnostic Tools Version: 3.4.7.3
Abbreviations
Additional Info
Limitations Warning
Stroke Diagnostic Tool
I want you to get close enough to ask her/him three questions.
Tell me when you're ready.
Ready
Ask her/him to smile.
Answer Selected
(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
2
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
2
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
2
Finished
Close
ProQA Entry Recommendations

IAOED © 20


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
2
Finished
Close
ProQA Entry Recommendations

© 2004-2011


Finished
Close
ProQA Entry Recommendations
Clear evidence of stroke (2,2,2)
Finished
Close
ProQA Entry Recommendations
Strong evidence of stroke (2,2,1)
Finished
Close
ProQA Entry Recommendations
Partial evidence of stroke (2,1,1)
Finished
Close
ProQA Entry Recommendations
No test evidence of stroke (1,1,1)

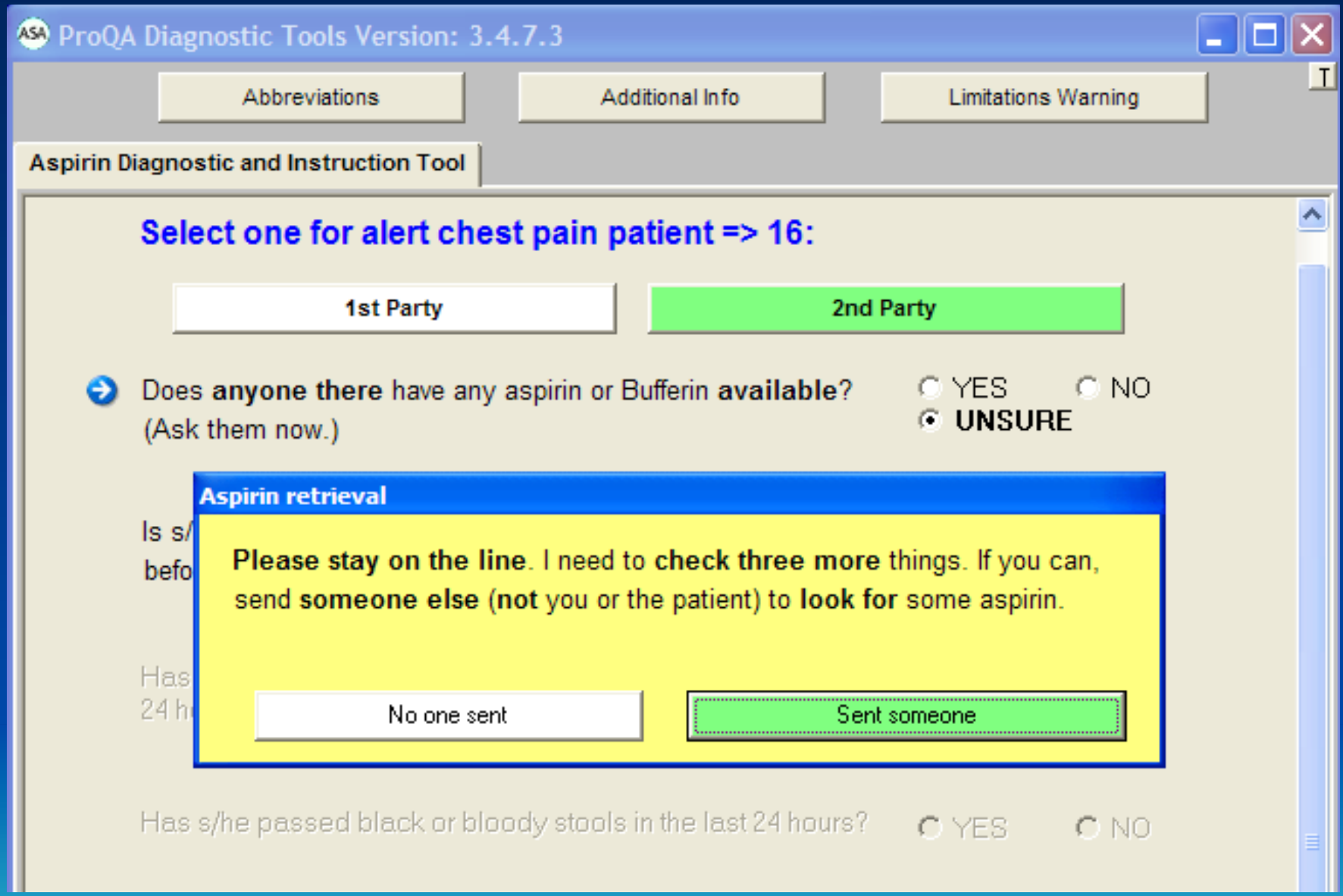
Aspirin Diagnostic & Evaluation Tool Icon

IAOED © 2004-2011

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

IAOED © 2004-2011


ProQA Diagnostic Tools Version: 3.4.7.3
Abbreviations
Additional Info
Limitations Warning
Aspirin Diagnostic and Instruction Tool
Select one for alert chest pain patient => 16:
1st Party
2nd Party
Does anyone there have any aspirin or Bufferin available?
(Ask them now.)
YES
NO
UNSURE
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.
No one sent
Sent someone
Has s/he passed black or bloody stools in the last 24 hours?
YES
NO

© 2004-2011

Is s/he **allergic** to aspirin, or ever had a **bad reaction** to it before? (•) YES ( ) NO

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? ( ) YES ( ) NO

Has s/he passed black or bloody stools in the last 24 hours? ( ) YES ( ) NO

Recommendations

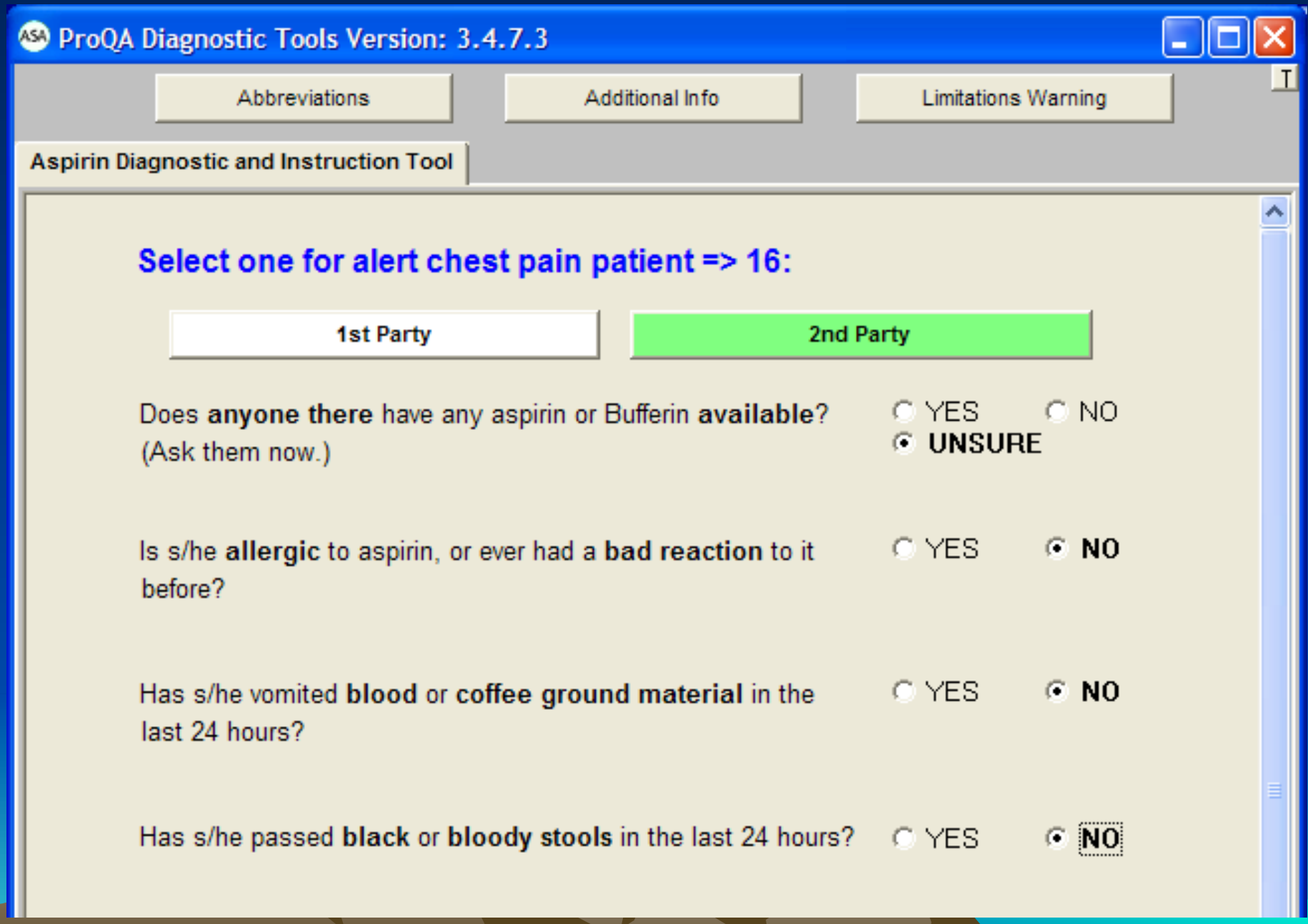
Get one adult aspirin/Bufferin or four baby (low-dose) aspirins and tell me when you have them.

(Which type do you have?) ( ) ADULT (325mg) ( ) BABY or LOW-DOSE (81mg)

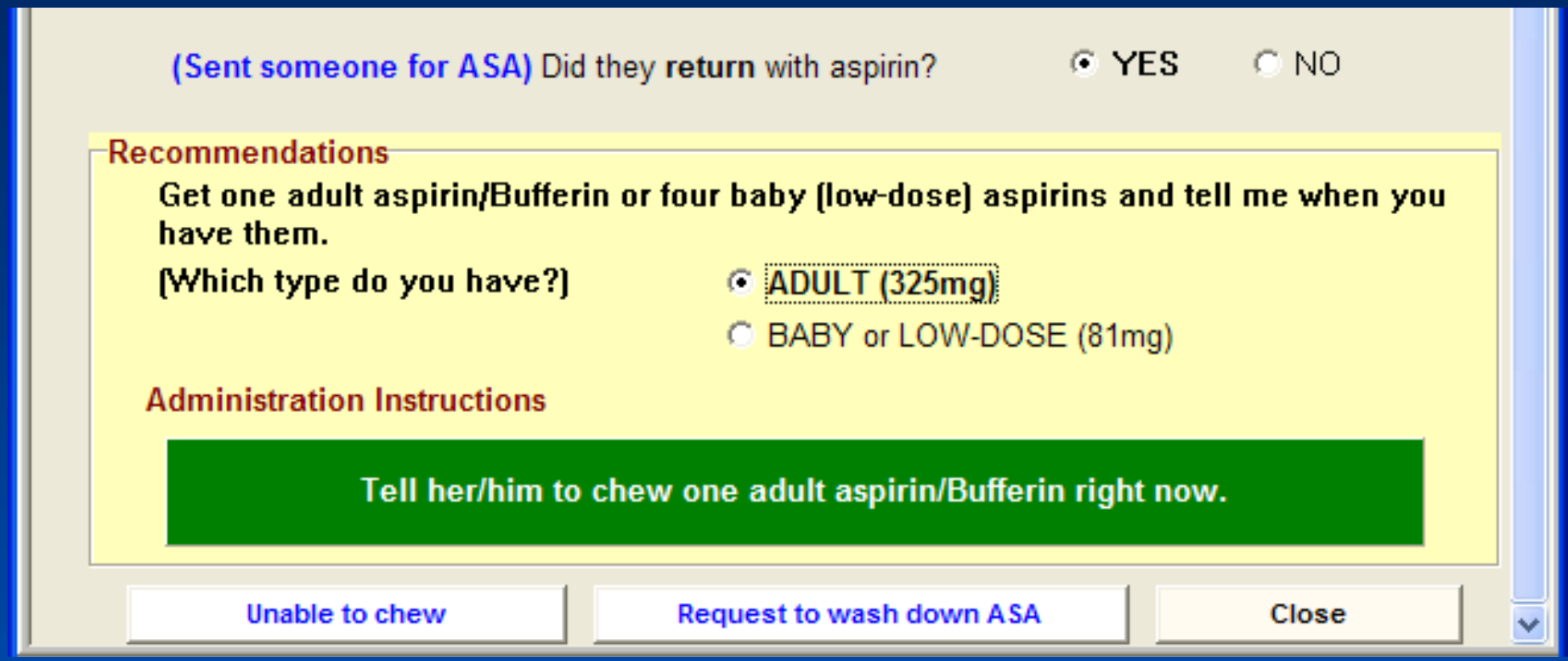
Administration Instructions

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

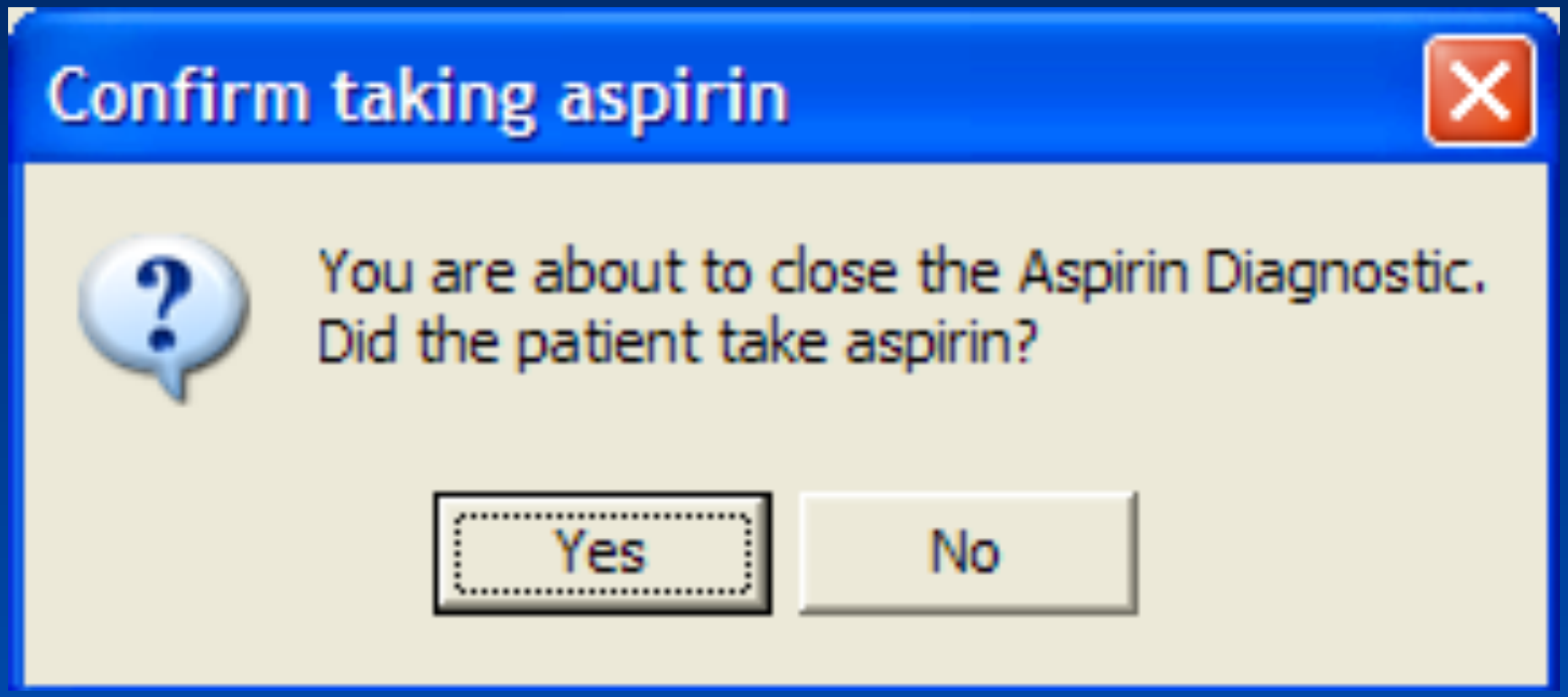
IAOED © 2004-2011



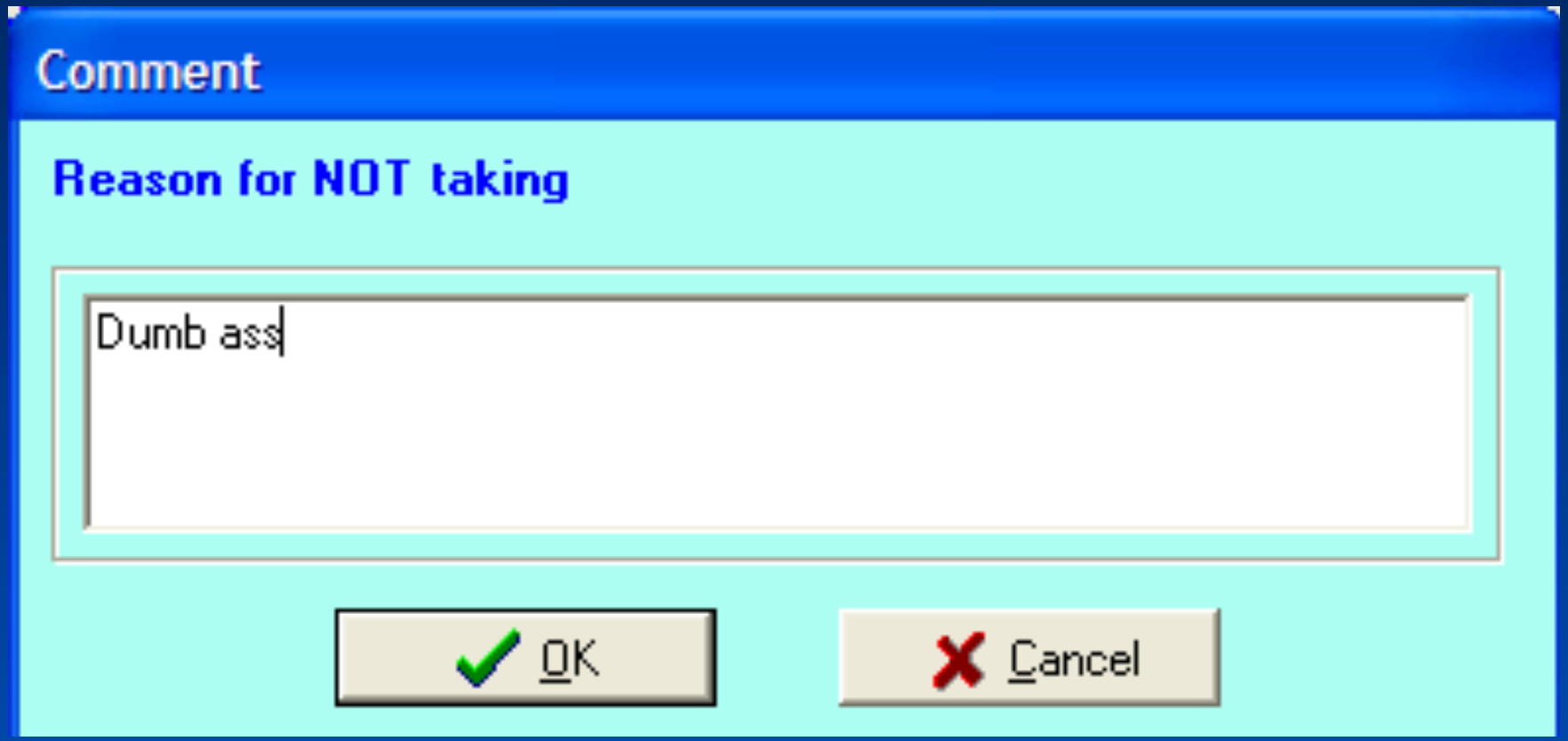
IAOED © 2004-2011


(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.
Unable to chew
Request to wash down ASA
Close

© 2004-2011



IAOED © 2004-2011



IAOED © 2004-2011

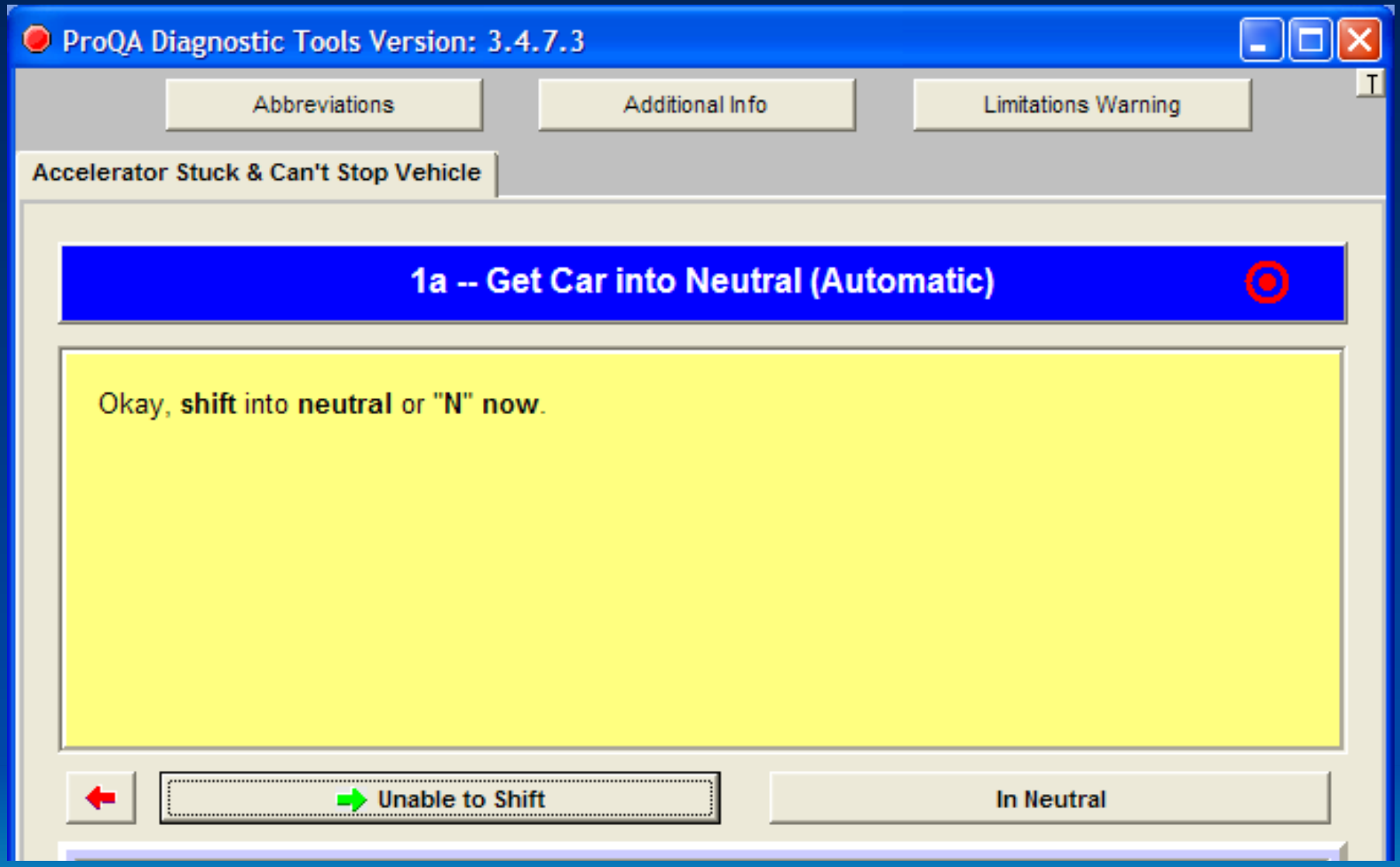
Accelerator Stuck Tool

- 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

IAOED © 2004-2011

IAOED © 2004-2011

© 2004-2011



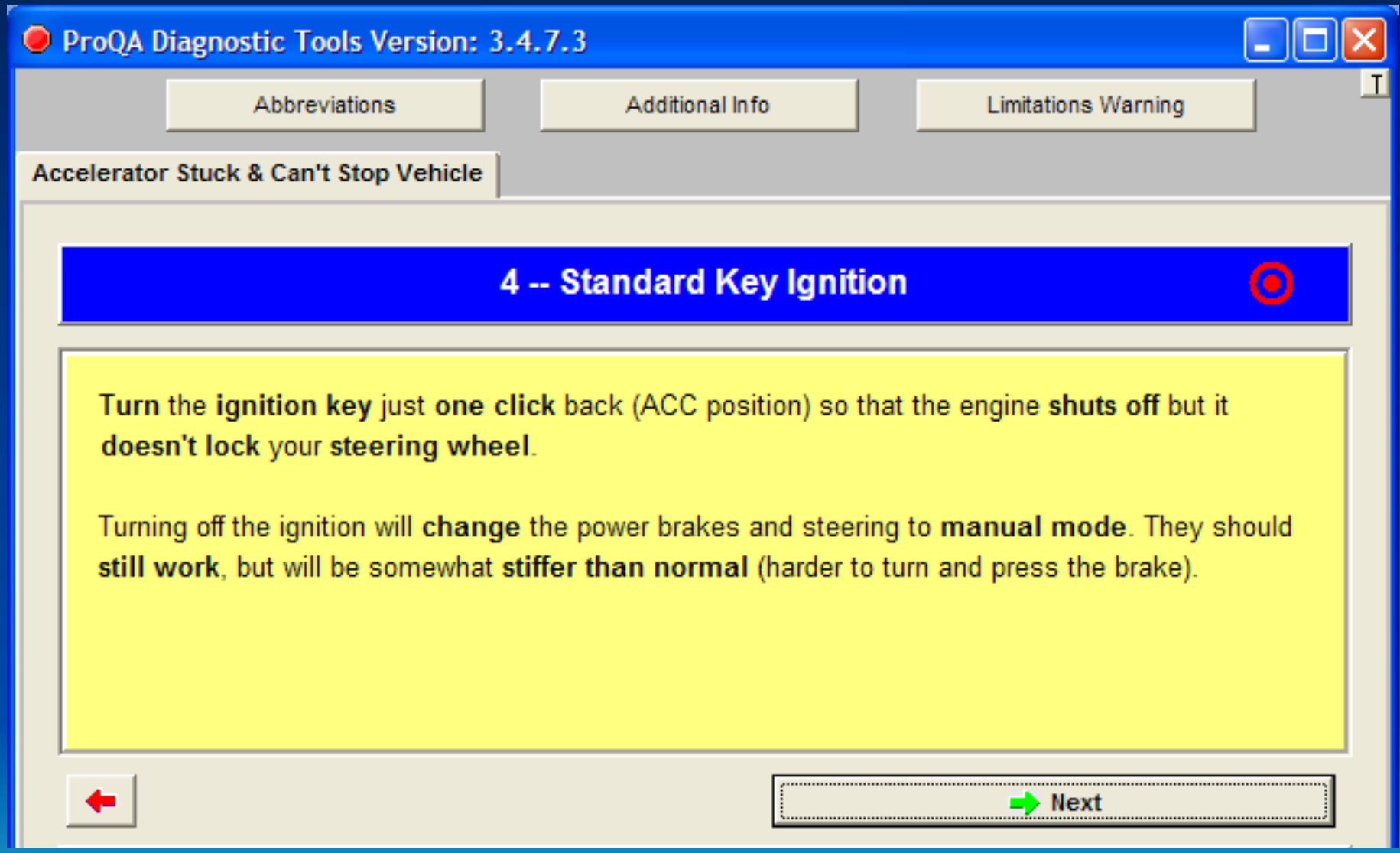
IAOED © 2004-2011

Unable to Shift | In Neutral

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.

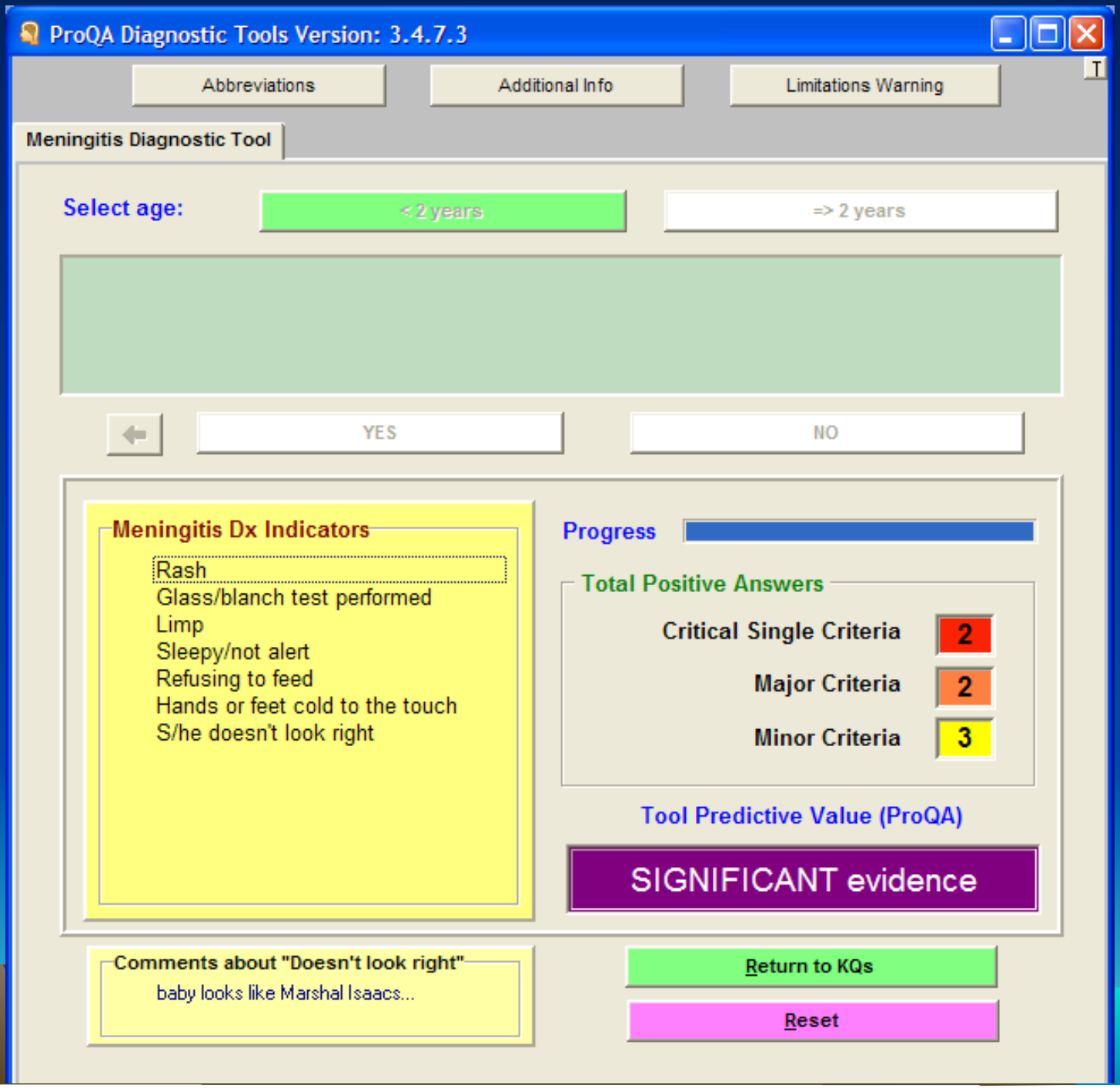
IAOED © 2004-2011


ProQA Diagnostic Tools Version: 3.4.7.3
Abbreviations
Additional Info
Limitations Warning
Accelerator Stuck & Can't Stop Vehicle
4 -- Standard Key Ignition
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).
Next

© 2004-2011

Meningitis Diagnostic & Evaluation Tool Icon

IAOED © 2004-2011


ProQA Diagnostic Tools Version: 3.4.7.3
Abbreviations
Additional Info
Limitations Warning
Meningitis Diagnostic Tool
Select age:
< 2 years
=> 2 years
YES
NO
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
Progress
Total Positive Answers
Critical Single Criteria
2
Major Criteria
2
Minor Criteria
3
Tool Predictive Value (ProQA)
SIGNIFICANT evidence
Comments about "Doesn't look right"
baby looks like Marshal Isaacs...
Return to KQs
Reset

Suspect Info for Police

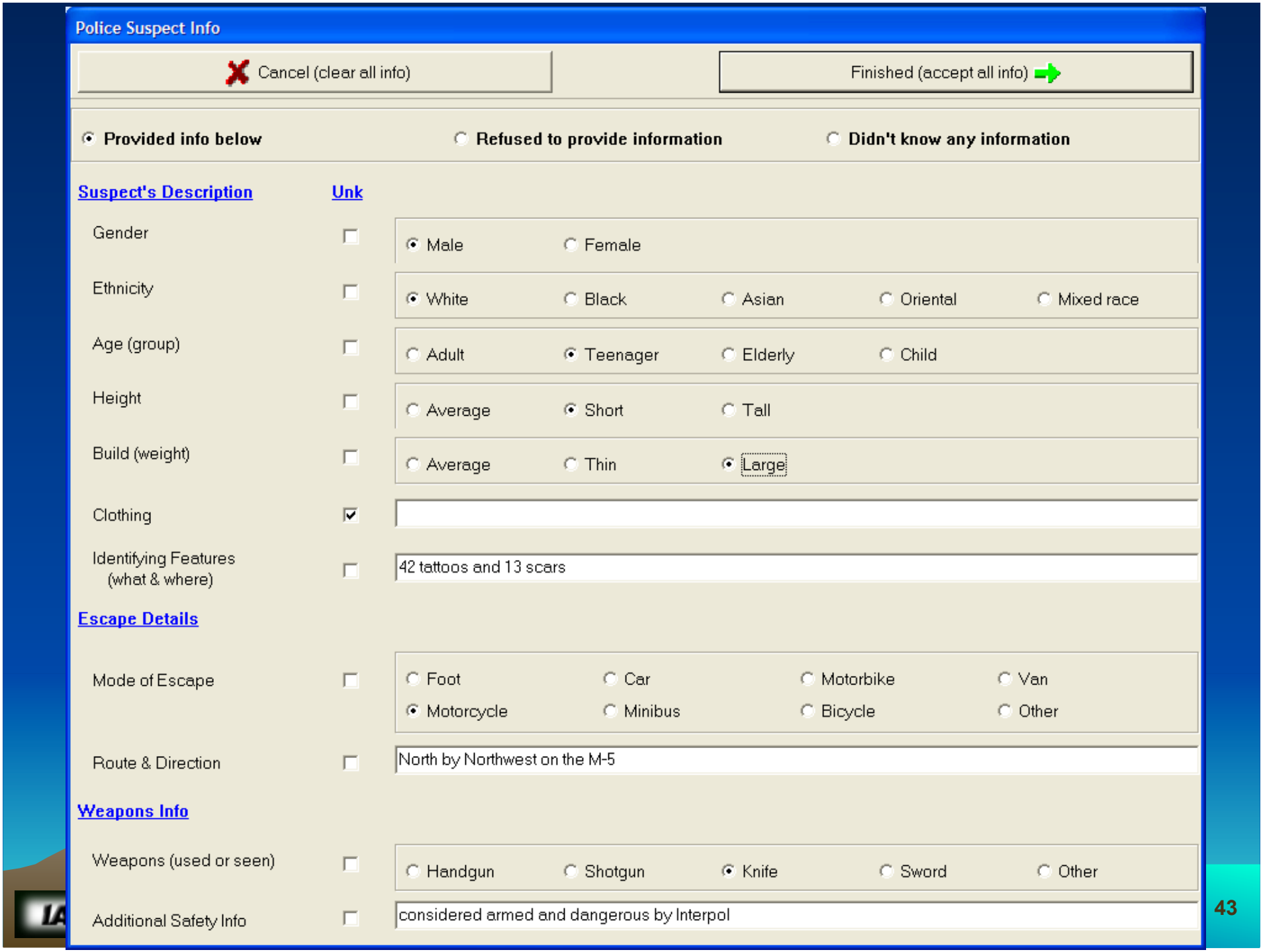
Originally requested by Scotland Yard from London Ambulance Service:
Suspect Data is Transferred from Protocol to Ambulance CAD to Police CAD

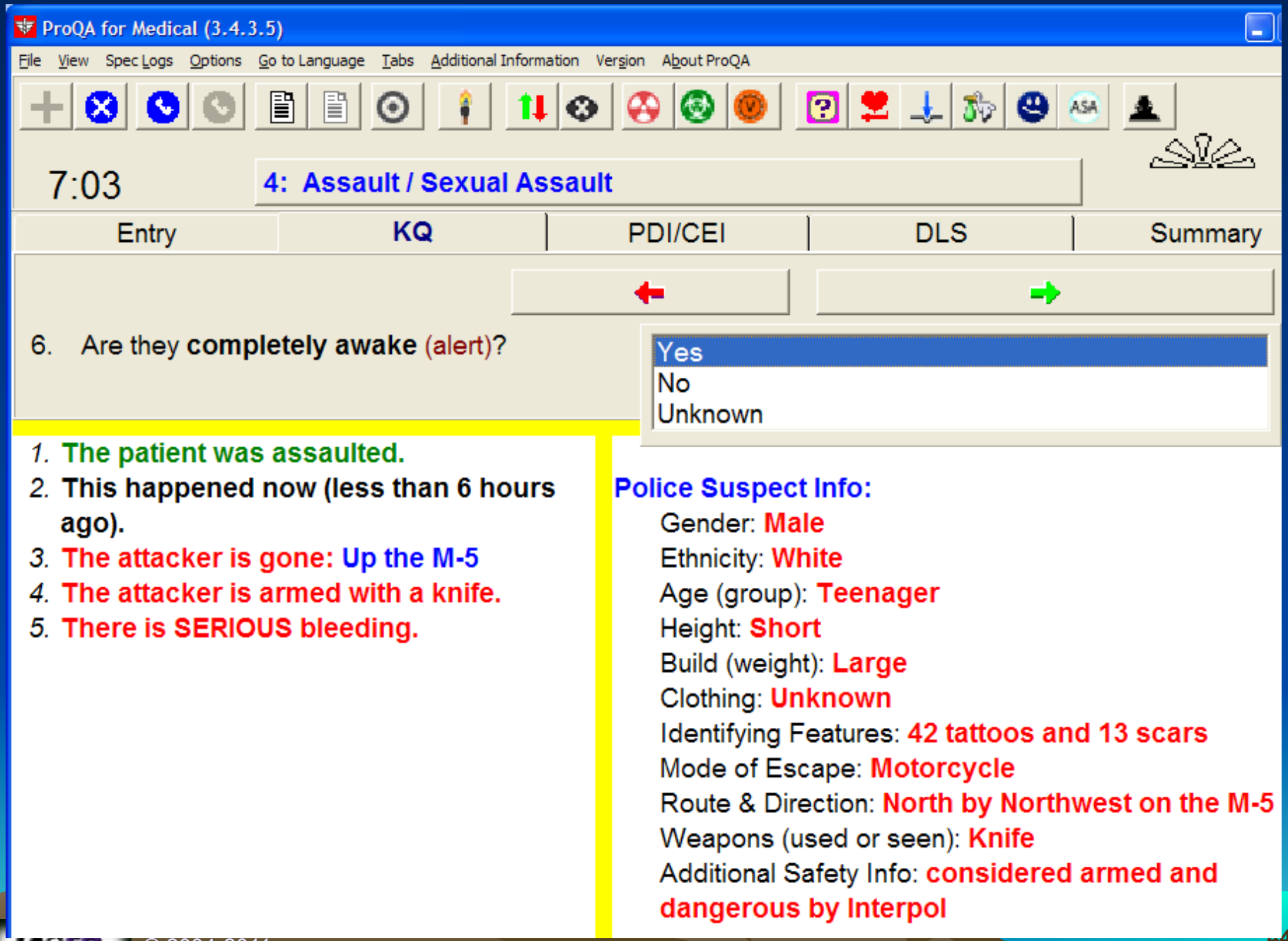
IAOED © 2004-2011

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^{o} PSAP
- Suspect's Description
- Escape Details
- Weapons/Safety Info

IAOED © 2004-2011


Police Suspect Info
Cancel (clear all info)
Finished (accept all info)
Provided info below
Refused to provide information
Didn't know any information
Suspect's Description
Unk
Gender
Male
Female
Ethnicity
White
Black
Asian
Oriental
Mixed race
Age (group)
Adult
Teenager
Elderly
Child
Height
Average
Short
Tall
Build (weight)
Average
Thin
Large
Clothing
Identifying Features (what & where)
42 tattoos and 13 scars
Escape Details
Mode of Escape
Foot
Car
Motorbike
Van
Motorcycle
Minibus
Bicycle
Other
Route & Direction
North by Northwest on the M-5
Weapons Info
Weapons (used or seen)
Handgun
Shotgun
Knife
Sword
Other
Additional Safety Info
considered armed and dangerous by Interpol


ProQA for Medical (3.4.3.5)
File View Spec Logs Options Go to Language Tabs Additional Information Version About ProQA
7:03
4: Assault / Sexual Assault
Entry
KQ
PDI/CEI
DLS
Summary
6. Are they completely awake (alert)?
Yes
No
Unknown
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

© 2004-2011

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.

IAOED © 2004-2011

Through retroactive Dispatch Diag Science, we have determined that Paul Pepe's indefatigable persona is due to…

IAOED © 2004-2011

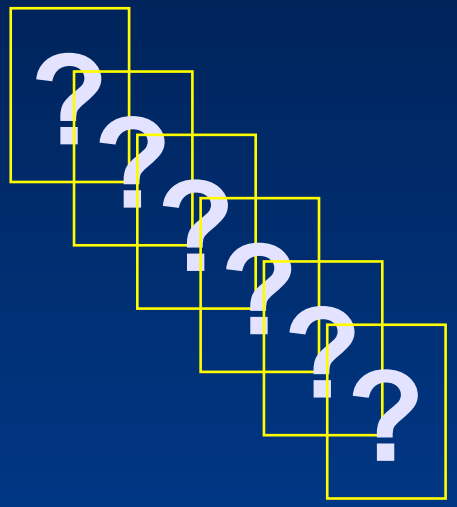
Onward Eagles, through the dispatch fog...

jeff.clawson@emerg-encydispatch.org

IAED © 2004-2011

© 2004-2011

IAOED © 2004-2011



Questions…

…and (a few) Answers

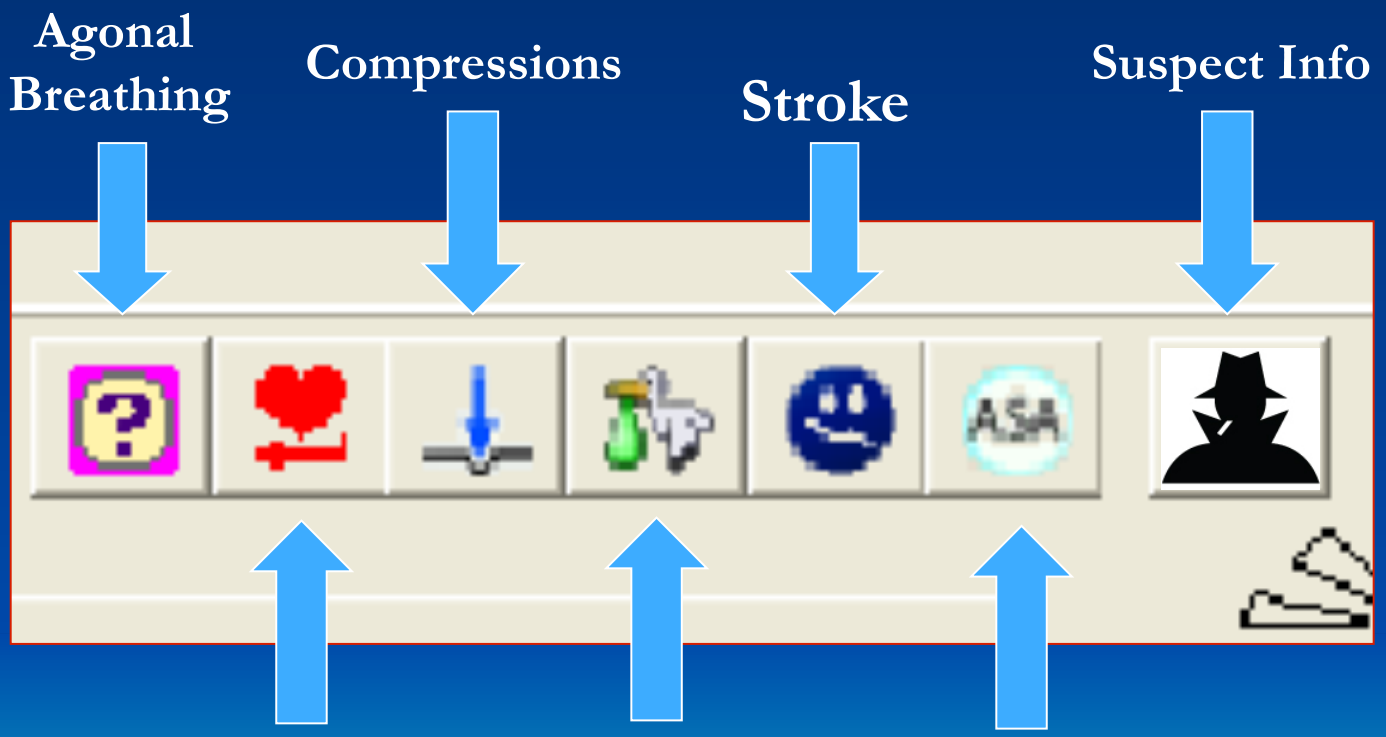
jeffclawson@emergencydispatch.org

IAOED © 2004-2011

IACED © 2004-2011

© 2004-2011

Diagnostic Tools Icons



IAOED © 2004-2011

© 2004-2011

Severe Respiratory Infection Tool

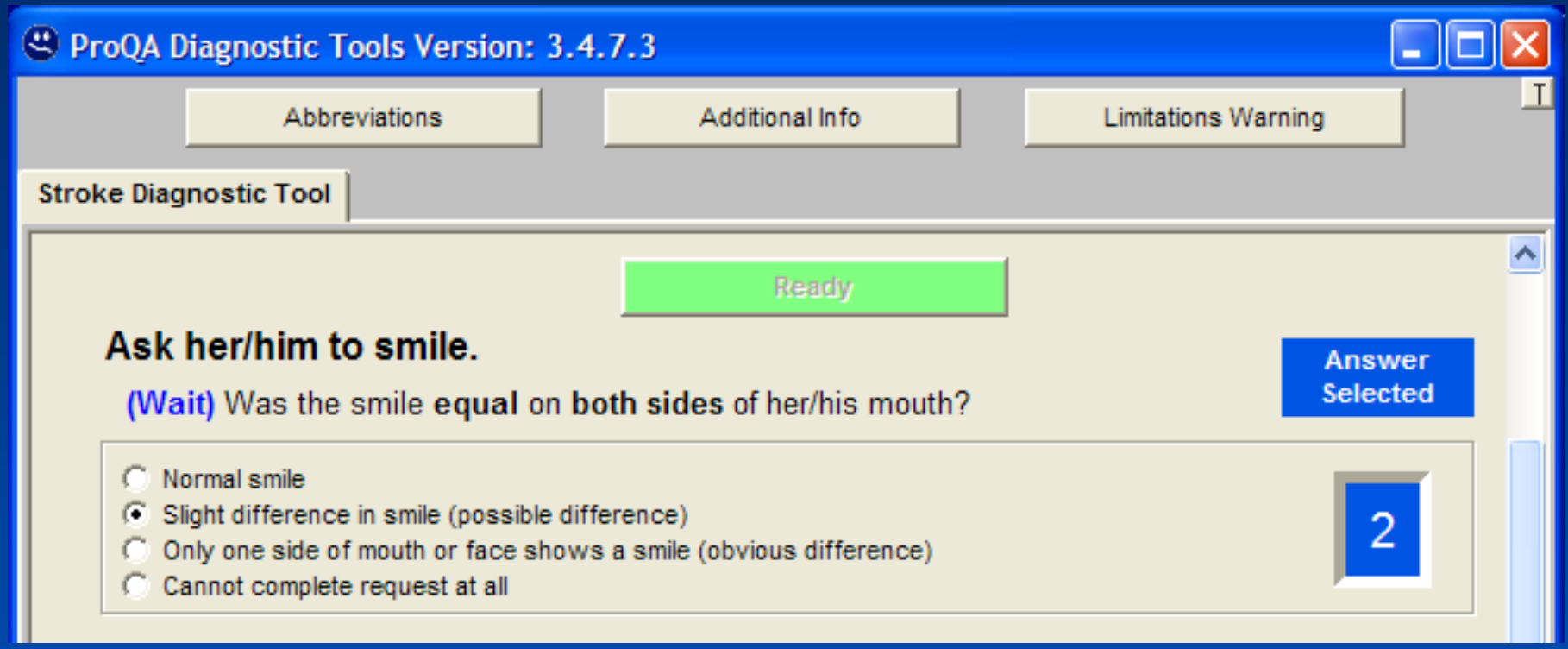
- Used to identify patients with flu
- Used to inform responders of these patients
- Under new construction to create two different modes of SRI:
  - Long format
  - Short format
- New Protocol 36 – Surveillance Only level

IAOED © 2004-2011

Severe Respiratory Infection Tool

IAOED © 2004-2011

1st Stroke Evaluative Question



IAOED © 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

2

IAOED © 2004-2011