In it for the LONG RUN: Boston Marathon and EMS

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History of Marathons
Setting the Stage

Persian and Greek wars

The Battle of Marathon

- Phidippides ordered to run to Athens (no texting)
- End Result ?
- Over half a million per year
- They are coming to your community

The Boston Marathon

“ A Planned Mass Casualty Event”

- 2013-117th Running of the Boston Marathon
- Longest running marathon race
- Testing ground for interagency, hospital preparedness and disaster planning

The Statistics

- 26, 735 entered the race
- 23, 126 started the race
- 22, 645 finished the race
- 97.9% finished

- Last runner completed the race at 10 hours
- Representing all 50 states and 81 countries

EMS as the lead runner

- Interagency coordination
- Medical Protocols
- Consequence Management

Marathon Response

- EMS agencies have a voice
- Become the source of information
- If you don't, you will suffer the consequences
- Marathon Med Team- Sports Med, EMS Med Director, EMS Operations Managers

Race Day Medical Objectives

- Everyone goes home!
- Avoid flooding local hospitals
- Excellent medical care
- 1000 medical volunteers
- 1 million spectators
- The stakes--
- Over 5 million $ in charity funds generated
- 70 million for the local economy

Medical Components

- Medical Staff: physician, RN
- Podiatry Team
- Physical Therapy Team
- Medical Security
- Massage Therapy Team
- Medical Record Team
- Patient tracking Team (Boston EMS in cooperation with BAA)
- Medical Supplies (BAA warehouse)
- Wheelchair Team (including Rehab Medicine MD)
- AND---A Psychologist!

Injury/Casualty Rates
26,000/weather a major factor

- 3% of field 785 Light day
- 5% of field 1350 Moderate day
- 8% of field 1700 Heavy day
- 10% of field 2200 WOW!

Medical Statistics: The Finish Line-Avoiding Hospital Overload

- Tent A: 700 patients
- Tent B: 389 patients
- Including treatment
  - PO fluid and a little rest
  - IV placement and IV fluid, no IVF without serum Na level
  - Zofran
  - Podiatry
  - Chest pain (STEMI) and Asthma treatment
  - Hyperthermia treatment
  - PT evaluations

This runner's patient tracking ID would be 10298; which can be scanned into the system using the bar code (circled).

Patient Tracking

Runner/Bandit/Volunteer/Spectator
ED's/Medical Tents – primary data points
EMS triage levels used
Bar codes used on runner bibs
BAA data downloaded into system
Triage tags
Used system since 2007
98% accuracy rate

Handheld PDA used in the field to collect patient tracking data.

Help me, Help you!

Getting the Info

Back side of Race Bib:

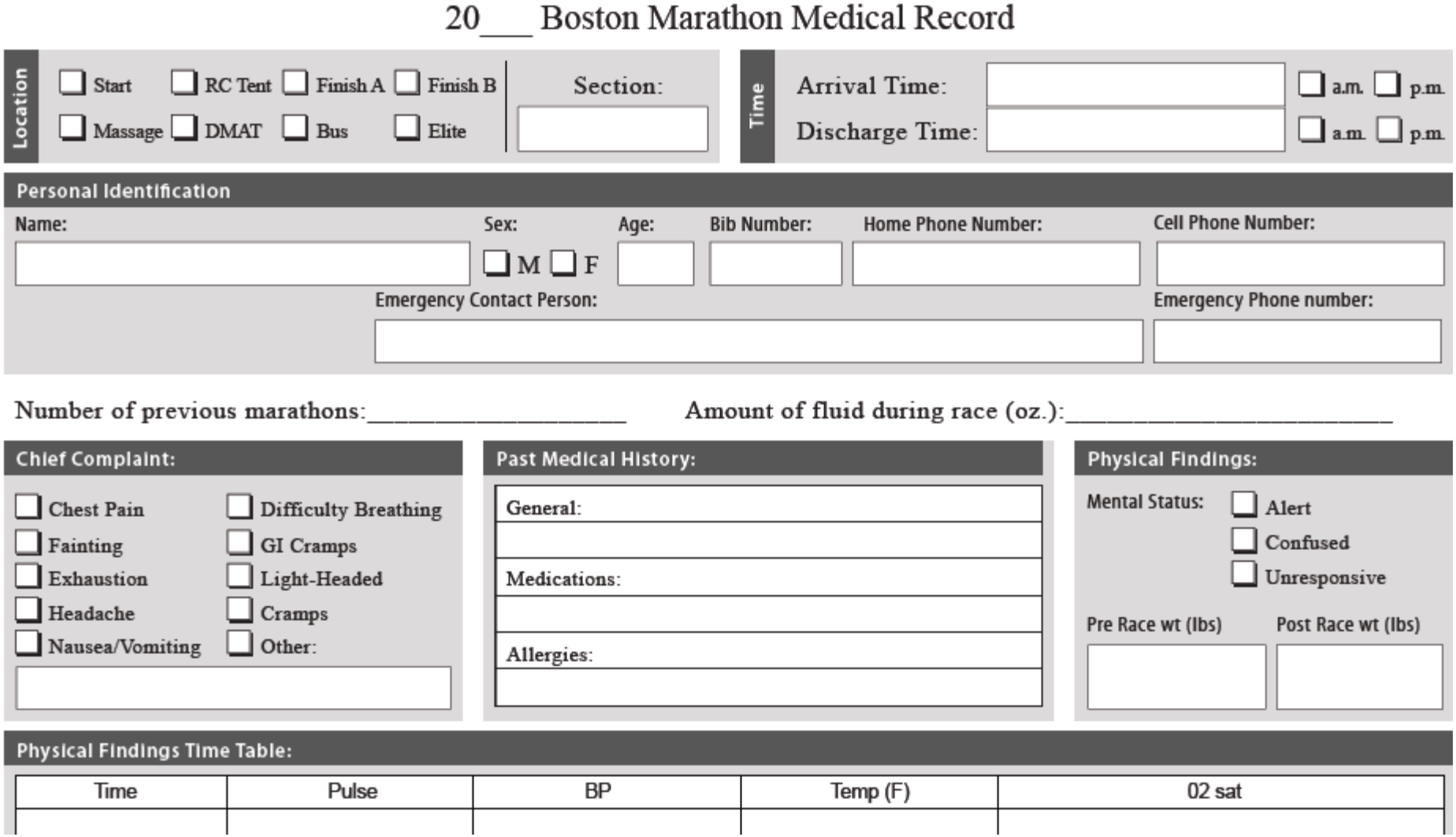
- Name, age, DOB
- Emergency contact with phone number

PMH

Meds

Allergies

Print and Electronic Medical Records



20___ Boston Marathon Medical Record

Location: ☐ Start ☐ RC Tent ☐ Finish A ☐ Finish B ☐ Massage ☐ DMAT ☐ Bus ☐ Elite — Section:

Time: Arrival Time: ☐ a.m. ☐ p.m. — Discharge Time: ☐ a.m. ☐ p.m.

Personal Identification

Name: | Sex: ☐ M ☐ F | Age: | Bib Number: | Home Phone Number: | Cell Phone Number:

Emergency Contact Person: | Emergency Phone number:

Number of previous marathons:_____ Amount of fluid during race (oz.):_____

Chief Complaint:

☐ Chest Pain ☐ Difficulty Breathing
☐ Fainting ☐ GI Cramps
☐ Exhaustion ☐ Light-Headed
☐ Headache ☐ Cramps
☐ Nausea/Vomiting ☐ Other:

Past Medical History:

General:

Medications:

Allergies:

Physical Findings:

Mental Status: ☐ Alert ☐ Confused ☐ Unresponsive

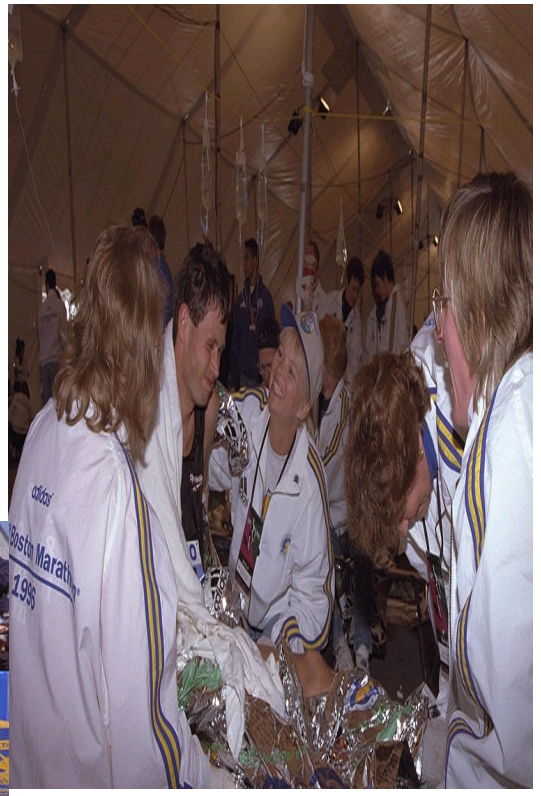
Pre Race wt (lbs) | Post Race wt (lbs)

Physical Findings Time Table:

Time	Pulse	BP	Temp (F)	02 sat

3 “H” of Marathon Morbidity for every EMS providers

- Heart—Sudden cardiac arrest and STEMI
- Hyponatremia
- Hyperthermia



Prehospital Lesson #1-Heart

Prehospital Lesson #1

- Sudden Cardiac arrest and STEMI
- Educate runners
- AEDs

The NEW ENGLAND JOURNAL *of* MEDICINE

ORIGINAL ARTICLE

Cardiac Arrest during Long-Distance Running Races

Jonathan H. Kim, M.D., Rajeev Malhotra, M.D., George Chiampas, D.O., Pierre d'Hemecourt, M.D., Chris Troyanos, A.T.C., John Cianca, M.D., Rex N. Smith, M.D., Thomas J. Wang, M.D., William O. Roberts, M.D., Paul D. Thompson, M.D., and Aaron L. Baggish, M.D., for the Race Associated Cardiac Arrest Event Registry (RACER) Study Group

Heart

Prevention

- Email blasts on training and cardiac symptoms in runners
- Encouraging runners to seek cardiac evaluation

Consequence Management

- Race day education that runners still get STEMIs!
- AED all over the course
- Encourage providers to obtain 12 lead ecg
- Cardiologist at finish line tent

Prehospital Lesson # 2:Hyponatremia

The Boston Globe

- Measured weight gain
- Seizure
- CNS changes
- Category (1) Na+ 135-130 mEq/L
  - dizziness, nausea, vomiting, *headache*
- Category (2) Na+130-125 mEq/L
  - mild *mental status changes* (confusion, disorientation)
- Category (3) Na+ <125 mq/L: *altered*
- ***Marathon Med-no IVF before serum Na in the field***

Hyponatremia 'Package'

- Aggressive email blasts with education on risks of hyponatremia
- Pre-race weight documentation encouraged
- Serum Na+ measurements prior to IVF at medical tents
- NS only IVF, medical providers watch for CNS changes, broth and salty snacks

Prehospital Lesson #3: Hyperthermia

- Change in mental status
- Seizures, clonic movements
- Agitation
- Can't find a fever unless you take a temperature
- PS—it has to be rectal
- Cool it! Tub, Marine Corp or Taco method

Take Home Summary

- Get involved between race agencies and EMS
- Use it as MCI practice
- Communications, patient tracking, hospital coordination, document the impact on your system
- Remember the 3 'H's