

POCT: The ER Doc's Perspective

W. Frank Peacock, MD, FACEP
Vice Chief, Emergency Medicine
The Cleveland Clinic

Time

The Use of a Quantitative POC System Greatly Reduces the Turn Around Time of Cardiac Marker Determination

Gaze D, Collinson PO, Haass M, Derhaschnig U, Hirschl MM, Katus HA, et al for the CARMYT Multicentre Study Group

- **5 hospitals**
- **4609 Tn POC samples**
 - **3447 split and sent to lab for CKMB**

| Locale | Hosp Type | Transp | POC Tn | CL CKMB | Diff (mins) |
|---------------|------------------|--------------------|---------------------------|----------------------------|--------------------|
| ED | Univ | Pneumo tube | 21±0.2 (n=1879) | 107±2.3 (n=1744) | 86±2.3 |
| ED | Univ | Courier | 22±0.5 (n=855) | 72±1.7 (n=689) | 50±1.5 |
| CCU | Rural | Nurses | 12±0.5 (n=471) | 147±64.1 (n=150) | 135±64.1 |
| ED | Muni | Pneumo tube | 22±0.8 (n=706) | 90±0.5 (n=185) | 68±1.1 |
| ED | Univ | Pneumo tube | 18±0.5 (n=698) | 52±1.4 (n=679) | 34±1.4 |
| All | | | 20±0.2 (n=4609) | 85±1.5 (n=3447) | 65±1.5 |

Door to Brain Time

- Prospectively collected Tn TAT data during all ED shifts
- From patient ED arrival until Emergency Physician aware of result



Peacock WF et al. *Acad Emerg Med.* 2004;11(5):569–570.



Direct correlation between better guideline adherence and fewer adverse outcomes

Peterson ED et al. *JACC.* 2003;41:53A.

Results

25 participating hospitals

N=1,360 patients

Overall

Mean DTBT 115.7 ± 70.1 minutes

Median 100; IQR=73,138

Central lab

Mean DTBT 119.2 ± 70.5 minutes

Median 103; IQR=76,141

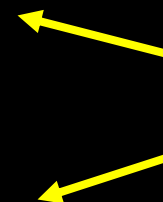
Point of Care

Mean DTBT 68.2 ± 40.8 minutes

Median 62.5, IQR=43,83.5



**Saves about
1 hour**



Risk

Liability Perspective

*American College of Cardiology
American Heart Association*

Guidelines on the Treatment of NSTEMI

Biomarker data be available to the physician within **30–60 minutes** following the patient's arrival in the ED



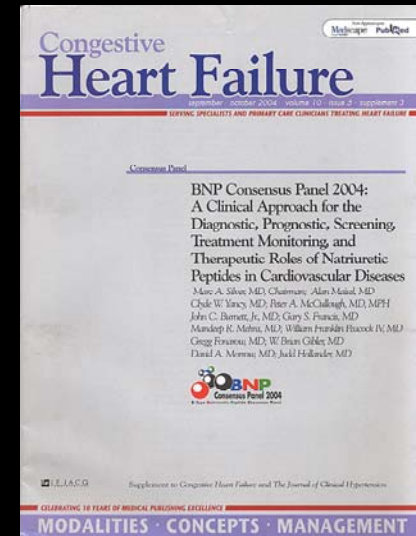
9 Cardiologists and 3 Emergency Physicians

4 month Internet writing

- Followed by a consensus panel meeting
- Further refinements and publication ready
- Topical
- 153 references

Consensus Statement 1.1

- The laboratory should perform BNP testing on a continuous 24-hour basis with a **turn-around-time (TAT) of 60 minutes or less**
- The TAT is defined as the **time from blood collection to notification of test result to physician or caregiver**
- Either central laboratory instrumentation or point-of-care testing systems are acceptable



Can't figure out the liability perspective



Money

Integrated Health Perspective

- Ambulatory surgery unit redesign.
- Preop lab testing revised to eliminate unnecessary tests;
 - Remaining blood tests could be done using POC instruments
 - Eliminated the need to
 - transport the specimens to the lab
 - communicate the results back to the unit
 - New streamlined process cut 30-45 mins from preoperative LOS
- If the POC decision had been based only the cost/test, the new process would not have been implemented.
 - POC was about 5 times greater than if done in the lab
- However, savings and efficiencies gained by reducing preoperative LOS far outweighed the few dollars' difference in the cost/lab test

Operational Perspective

Sunday in the ER



Economic Perspective

- **Average billing x collection rate**
 - ~\$250 per patient
 - 10–90%
- **Opportunity costs**
 - Delayed = LWOBS/Elope/AMA
 - Patients waiting to be seen?
- **Financial cost**
- **Environment cost**
 - Detroit vs S. Japip



Cleveland Clinic ED

32 beds

- 18 critical care
- 14 fast track
- Most get marker testing
- Rare marker testing

Average LOS ~4 hours = can handle 152 pts/day

If decrease LOS ~3 hours = can handle 228 pts/day

An additional 76 pts/day

- @ mean billing of \$250/pt = ↑ in gross billables \$19,000/day
- If only get an extra 30 pts/day (40% of 76) = \$7,500/day
- If only 30% (n=10) of these get marker testing = \$2,500/day
- If only 50% (n=5) of these get out 1 hour early = \$1,250/day
- If collection rate is 30% = \$375/ day..... **\$136,875/yr**

**Lets talk about
reality...**

Time, Risk & Money

**They dont' really matter
if its your family**

Got a daughter?



**Put your
money where
your mouth is**



NDC 0363-4013-48

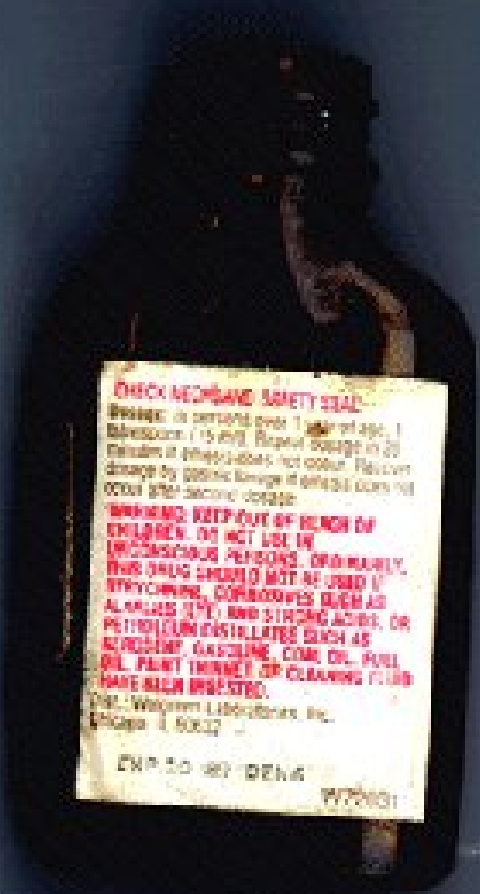
Wadgreen's
ipecac syrup
U.S.P.

For emergency use to cause vomiting in poisoning. Before using, call physician, the poison control center, or hospital emergency room immediately for advice.

Alcohol 2% by Volume

1 FL OZ (30 mL)

447209



CHECK MEDICINE SAFETY SEAL

Ipecac is intended only for use in children 15 years of age. Repeat dosage in 20 minutes if vomiting does not occur. This over dosage by giving dosage if emesis does not occur after second dosage.

WARNING: KEEP OUT OF REACH OF CHILDREN. DO NOT USE IN UNCONSCIOUS PERSONS. ORIGINALLY, THIS DRUG SHOULD NOT BE USED IN HYPOKALEMIA, CORROSIVES SUCH AS ALCOHOLS (70% AND STRONG ACIDS, OR PETROLEUM DISTILLATES SUCH AS KEROSENE, GASOLINE, COAL OIL, FUEL OIL, FLINT TRIMMER OR CLEANING FLUIDS) HAVE ALSO BEEN REPORTED.

Wadgreen Laboratories, Inc.
Chicago, Illinois

EXP 10-80 10264

W72001

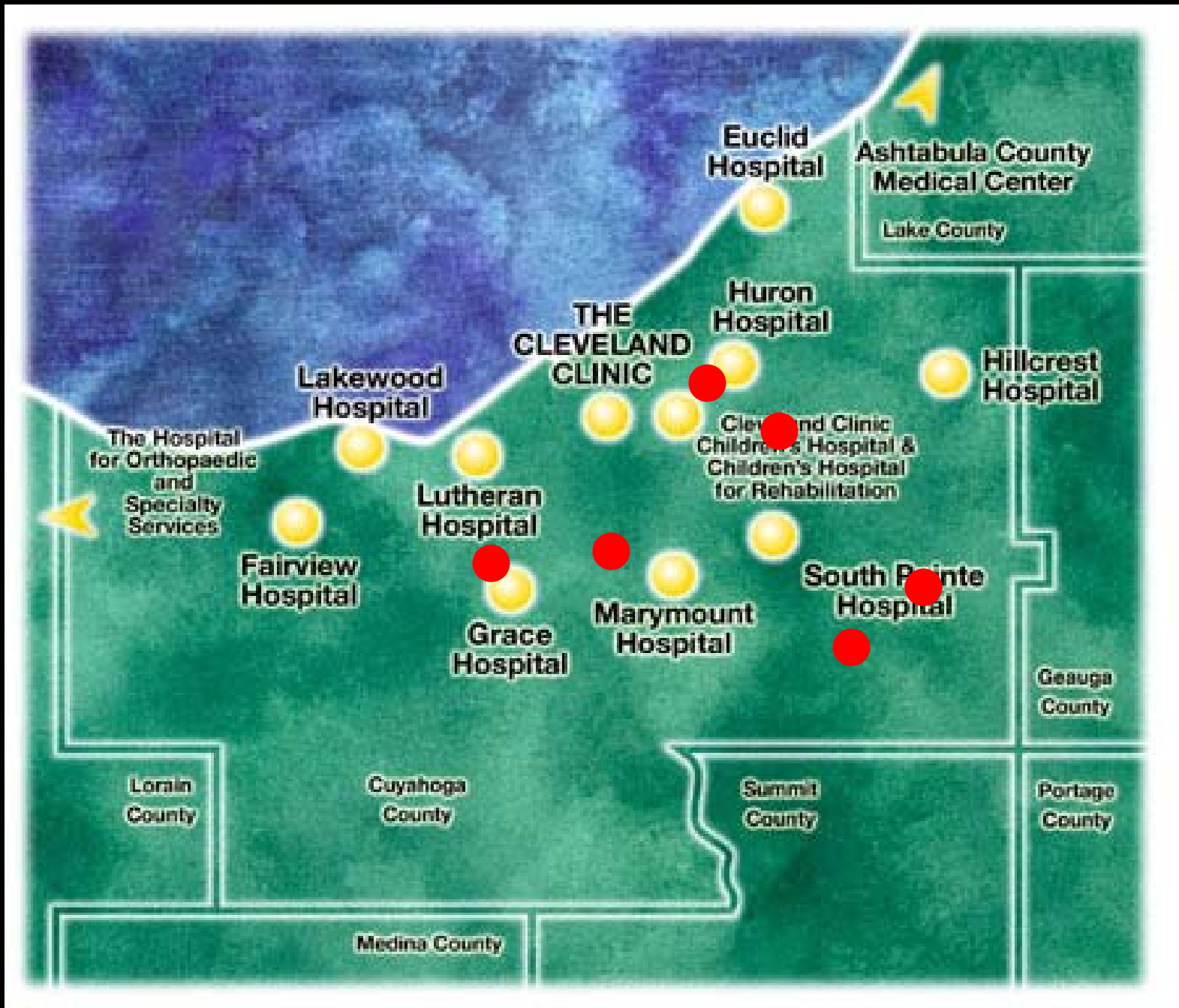
1994

Frank gets a job offer

1990 to 2002

AHA Hospital Statistics

- The number of short term, acute-care hospital beds declined by 11.1%
- Inpatient days declined by 14.8%
- Average length of stay declined by 19.4%
- Surgical operations increased by 19.2%
- ER visits increased by 18.9%
- Outpatients visits increased by 73.5%





The Business of Business

Mount Sinai

- The Mt. Sinai Medical Center is located in the University Circle area among the city's educational, scientific, and cultural institutions
- Mt. Sinai
- 450 beds, 32 bassinets
- 600 physicians and dentists.
 - > 100 are faculty positions at the School of Medicine
- Residency programs
 - Dentistry and oral surgery, EM, IM, OB-GYN, Ortho, Sx, Path, Radiology, Podiatry, and Transitional medicine.
- The Mt. Sinai Medical Center conducts extensive research in
 - HTN, CVD, Renal ds, DM and metabolic disorders, OB-GYN, Cancer, Pulmonology, Ophthalmology, Neuro, and nutrition
- In addition to extensive modernization of the present complex, the program's new structures include a six-story Acute Care Pavilion and an Emergency Medical Services Building

Mount Sinai



Saint Alexis Hospital

- About 300 beds
- Vibrant ED
- Mature community
 - High employment rate
 - Strong payor mix (mostly insured)

Saint Alexis Hospital



Guess who is driving away???



There goes a
Citroen.....

The BORG



**How's your
shop?**

Please don't do POC

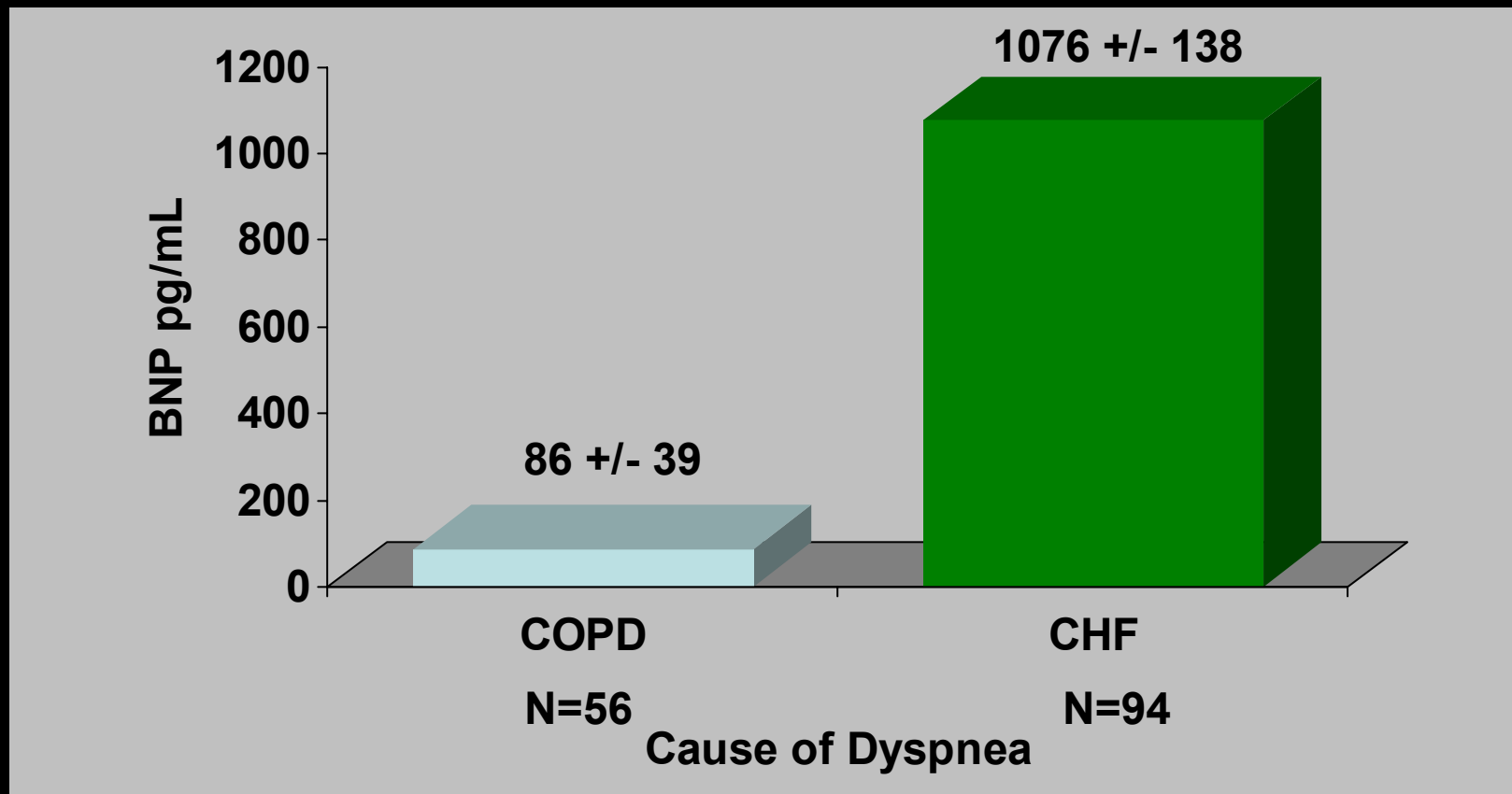
Do you know how's your ER is doing?



What's the mean and range of time to Dr?
Do you know your LWOBBS rate?

Future of POC

BNP in Dyspnea Secondary to CHF or COPD



Prehospital

- 8,315 EMS runs
 - **499 HF**
 - Overall Mort = 10.9%
- Excluded BP < 100
- Tx= ntg, ms, lasix
- Linear rln btwn high BP & tx
- Treated n=241
- Untx'd n=252
- If EMS tx: 36 min sooner
- Scene time: 1.9 mins longer



If treated,
OR of survival 2.51
(1.37-4.55) $p < 0.01$

Early treatment works

Wuerz R. Ann EM.
21:6, 669-74, 1992,

Prehospital Effects

The scary part



- 106 non-HF final dx...BUT tx'd for HF by EMS
 - Asthma, COPD, pneumonia, bronchitis
 - Represented 15% of dyspneic patients

Wuerz R. Ann EM.
21:6, 669-74, 1992,

Mortality (p<0.05)

| | |
|------------------------------|-------|
| Non-HF treated for HF | 13.6% |
| No treatment | 8.2% |
| Treated with bronchodilators | 3.8% |

↑ 357%

Fini'