

Measurement of Time Synchronization in the Emergency Department

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BACKGROUND

- Documentation of the actual time of clinical activities is important to retrospectively determine the sequence of events in stroke cases.
- Intervals of door to; CT, physician, stroke team and tPA are scrutinized metrics for measuring quality of stroke care. Since there is not synchronization of time keeping across providers and information systems, it is likely that there is inherent discrepancy of recorded times in hospital documentation.

OBJECTIVES

The purpose of this study is to measure the accuracy and concordance of methods used in our Emergency Department (ED) to provide a time record of activities.

METHODS

- This is a convenience sample study carried out in a 65,000-visit academic ED.
- Research Assistants (RAs) approached staff to determine what time-keeping device they would use to record a time in the medical record, in minutes, according to that device.
- This time was simultaneously compared to a time piece synchronized to local time standardized to Greenwich Mean Time (GMT).
- The times were compared and differences in minutes calculated. The likelihood that a staff member's time source would be one minute different than the standardized time relative to GMT ("standardized time") was determined.
- The number of minutes differences from standardized times was determined.

RESULTS

- 101 staff members were approached over a seven day period, selected by convenience. The time sources utilized by staff were; watch=43, wall clock=27, desk phone=16, computer=12, pager=2, guess=1.
- Fifty-nine of the 101 observations were inaccurate by one or more minutes:
 - 33 differed by one minute
 - 19 by two minutes
 - 4 by three minutes
 - 1 by four minutes
 - 2 by five minutes

• Comparison of time keeping devices proved computers to be most accurate with 10 of 12 showing no difference from standardized time. Devices other than computers were 3.8 (95% CI; 1.07, 13.7) times more likely than computers to differ from standardized time.

• Next, RAs looked at ten devices that provide a time-stamp in the ED and might be used as documentation of care delivered. There was a wide range of difference between the standard watch and the time recorded by devices (defibrillators, meds inventory, CT scanner, glucose accu-check, EKG) with the range being 0 to 16 minutes.

TIME DIFFERENCE

Device	Difference (minutes)
Trauma bay space lab	0
Meds inventory	1
Bedside ultrasound	3
Defibrillator #1	3
Supply inventory	4
EKG	5
Defibrillator #2	8
CT scan	10
Defibrillator #3	14
Glucose accuchecks	16

IMPLICATIONS FOR PRACTICE

Precision of time keeping is fundamental in clinical documentation. Our study demonstrated that accuracy, to the minute, may be suspect if recorded from non-synchronized time keeping devices. Computers are generally synchronized and provided the greatest accuracy and consistency in the ED for time keeping.

NEXT STEPS

Next we intend to use a similar methodology to perform Value Stream Mapping of actual stroke patients in our ED and capture the recorded times of the various metrics measured by the American Stroke Association "Get with the Guidelines" in order to better understand how these identified time measuring vulnerabilities may effect our public reported scorecards of Stroke Quality Measures.

