Hospital-Based Point-of-Care Testing For Prothrombin Time: Survey of US Hospital Laboratories

A. K. Stankovic, S. Shahangian,
I. M. Lubin, J.H. Handsfield and
M .D. White

Centers for Disease Control and Prevention
Public Health Practice Program Office
Division of Laboratory Systems

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Aim of the study

- To investigate the use of point-of-care testing for prothrombin time (POCT-PT) in US hospitals
- To survey practices that relate to POCT-PT
- To identify statistically significant differences in POCT-PT testing practices between large and small US hospitals

Methods

- **Data**: "National Survey of Hospital Coagulation Laboratories", CDC 2001
- **Purpose of the survey**: to assess the variability in coagulation testing practices.
- **Survey sample**:
  - 800 hospital laboratories that were randomly selected from the 1999 directory of the American Hospital Association (AHA) and further stratified as to belonging to large (≥200 beds) or small (<200 beds) hospitals;
  - Comprised 14% of the targeted hospital population
- **Survey response rate**: 79% (n=632).

Availability and oversight of POCT-PT

POCT PT	Hospitals			p
	All	Large	Small	
Availability:	55 (9%)[a]	46 (15%)[a]	9 (3%)[a]	<0.001
Oversight:				
Laboratory	51 (8%)[a]	45 (98%)[b]	6 (67%)[b]	0.001
Other	4 (1%)[a]	1 (2%)[b]	3 (33%)[b]	

[a] Percentage of all large/small hospitals in the study
[b] Percentage of large/small hospitals that had POCT-PT

Location of POCT-PT

Location of POCT-PT	Number (%)
Coagulation clinic	36 (64%)
Cardiac catheterization laboratory	15 (27%)
Satellite laboratory	13 (23%)
Operating rooms	12 (21%)
Bedside	10 (18%)
Dialysis clinic	7 (13%)
None of the above	1 (2%)

Number of locations for POCT-PT testing (1)

- In 64% of the hospitals (n=36), POCT-PT testing was performed in only one location, including all 9 small hospitals that performed POCT-PT.
  - Coagulation clinic 58%
  - Satellite laboratory 14%
  - Bedside 8%
  - Cardiac catheterization laboratory 8%
  - Other 11%

Number of locations for POCT-PT testing (2)

- 20 large hospitals had multiple testing sites:
  - **2 sites 55%** **4 sites 15%**
  - **3 sites 15%** **5 sites 15%**
- 14 combinations of multiple testing sites were reported; 4 combinations comprised 50% of all such responses:
  - Coagulation clinic and satellite laboratory (15%)
  - Coagulation clinic and bedside (10%)
  - Coagulation clinic and cardiac catheterization laboratory (10%)
  - Coagulation clinic, cardiac catheterization laboratory and operating rooms (15%)

Integration of POCT Results

- 40% of respondents stated that POCT-PT results were integrated into the laboratory's results reporting system.
- Of these, 95% had their POCT results integrated in the order of collection time.

Reference intervals for POCT and conventional PT testing (1)

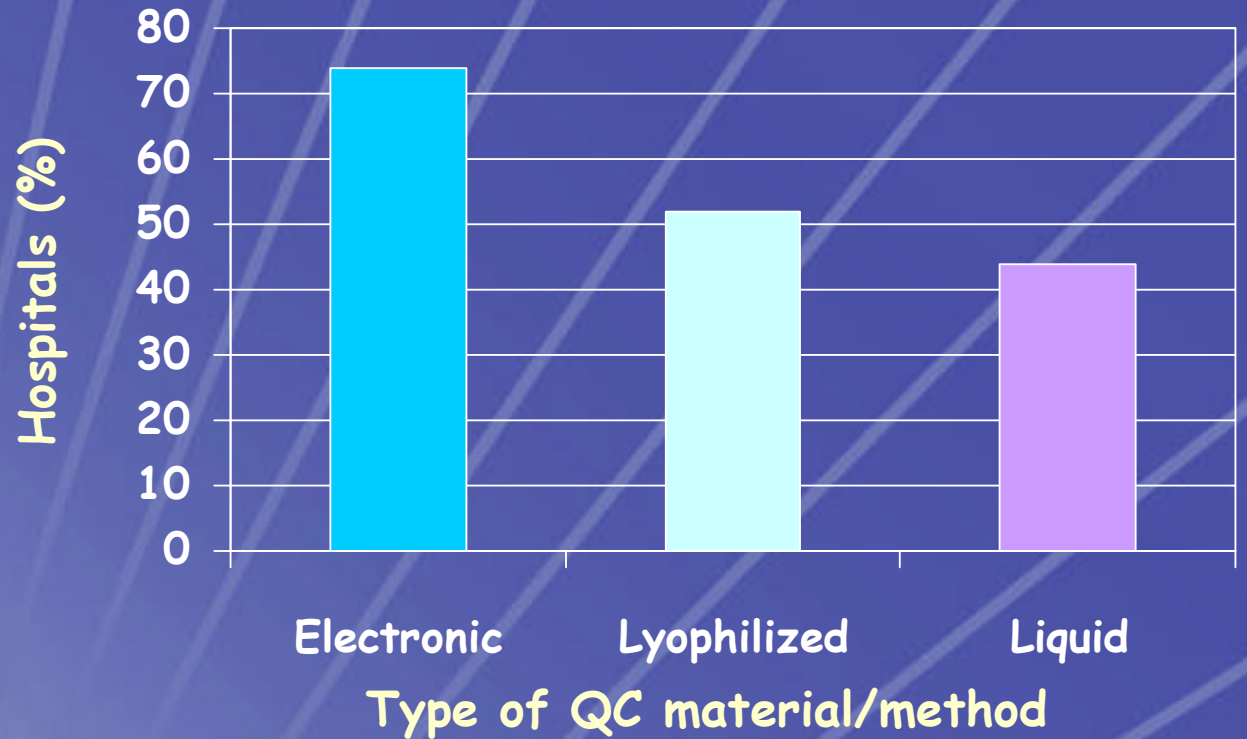
Reference intervals are same	Methods used are same	Proportion of hospitals
Yes	-	45%
No	Yes	16%
No	No	29%

NOTE: The total is less than 100%, since 10% of respondents did not respond to all parts of this question.

Reference intervals for POCT and conventional PT testing (2)

- 18 hospitals had different reference intervals and used different methods for the establishment of reference intervals for PT assays by POCT and conventional testing. These hospitals used the following methods to establish POCT-PT reference intervals:
  - In house testing 11 (61%)
  - Manufacturer's instruction 4 (22%)
  - Published values 4 (22%)
  - Other methods 1 (6%)

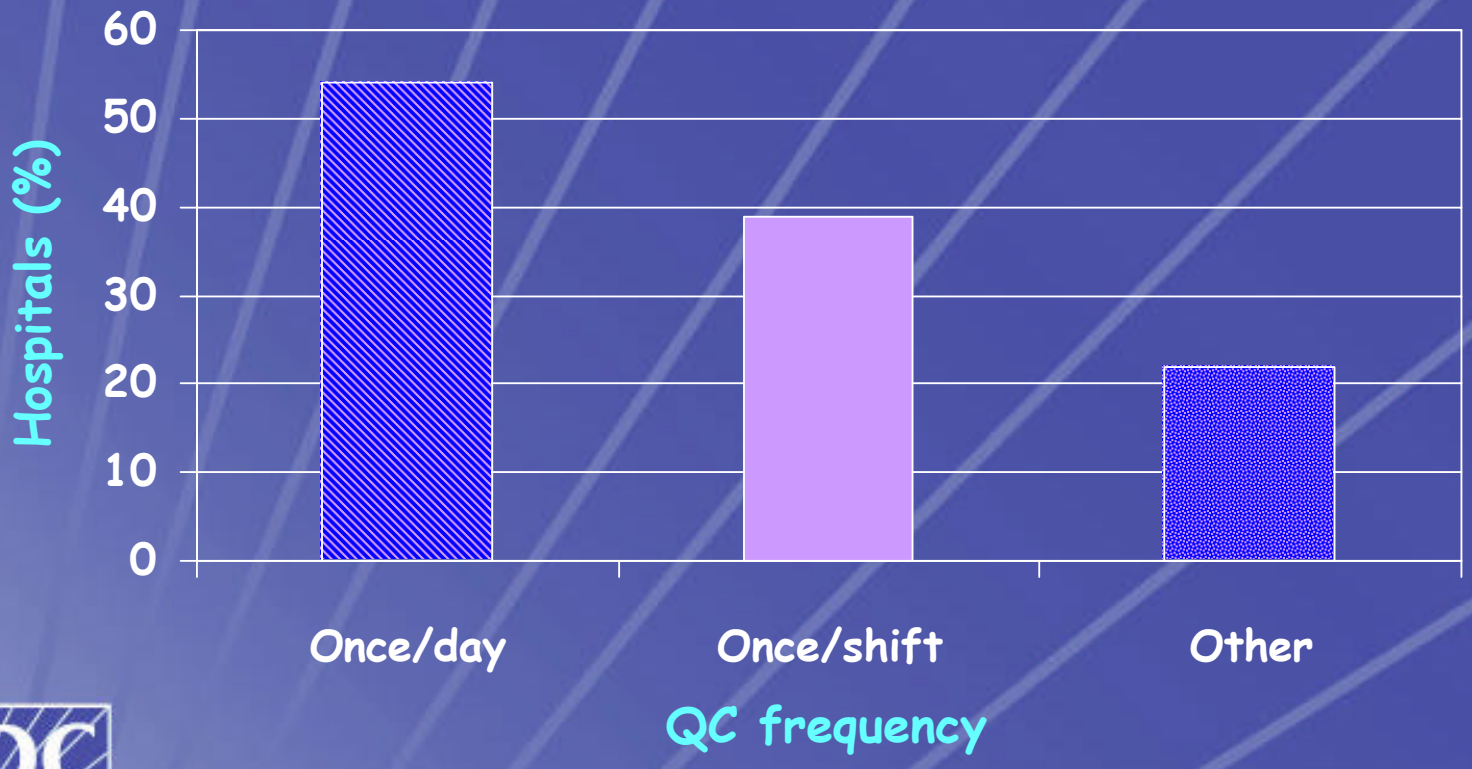
Type of quality control (QC) material/method for POCT-PT



Type of QC material/method for POCT-PT

QC material/method			Proportion of hospitals
Liquid	Lyophilized	Electronic	
X			4 (7%)
	X		10 (19%)
		X	4 (7%)
X		X	18 (33%)
	X	X	16 (30%)
X	X	X	2 (4%)

Frequency of QC performed for POCT-PT instrument



Other QC Frequencies

- Electronic/daily; liquid/weekly*
- Liquid QC- when opening a new box of reagents*
- Lyophilized/biweekly**
- Monthly*
- On clinic days*
- Once/week
- Lyophilized-once/week*
- Once/box; once/operator/week
- Once/each day used
- QC performed only when the clinic is open*
- When testing is performed
- With each sample

*and once/day

** and once/shift

CLIA QC requirements for coagulation testing systems

- Non-manual systems:
  - 2 levels of control each 8 hour operation (once/8 hour shift)
  - each time a change in reagents occurs
- 39% of respondents reported that they ran QC once/shift

Conclusions

- Although the scope of POCT testing is increasing rapidly, at least for PT testing, only a small proportion of hospitals (9%) are reportedly using this testing modality.
- Differences exist between small and large hospitals regarding the use and oversight of POCT-PT.
- Variability of certain testing practices was noted, which could have an effect on the accuracy of results.