

Prevalence of Safe Medication Practices in Small Rural Hospitals

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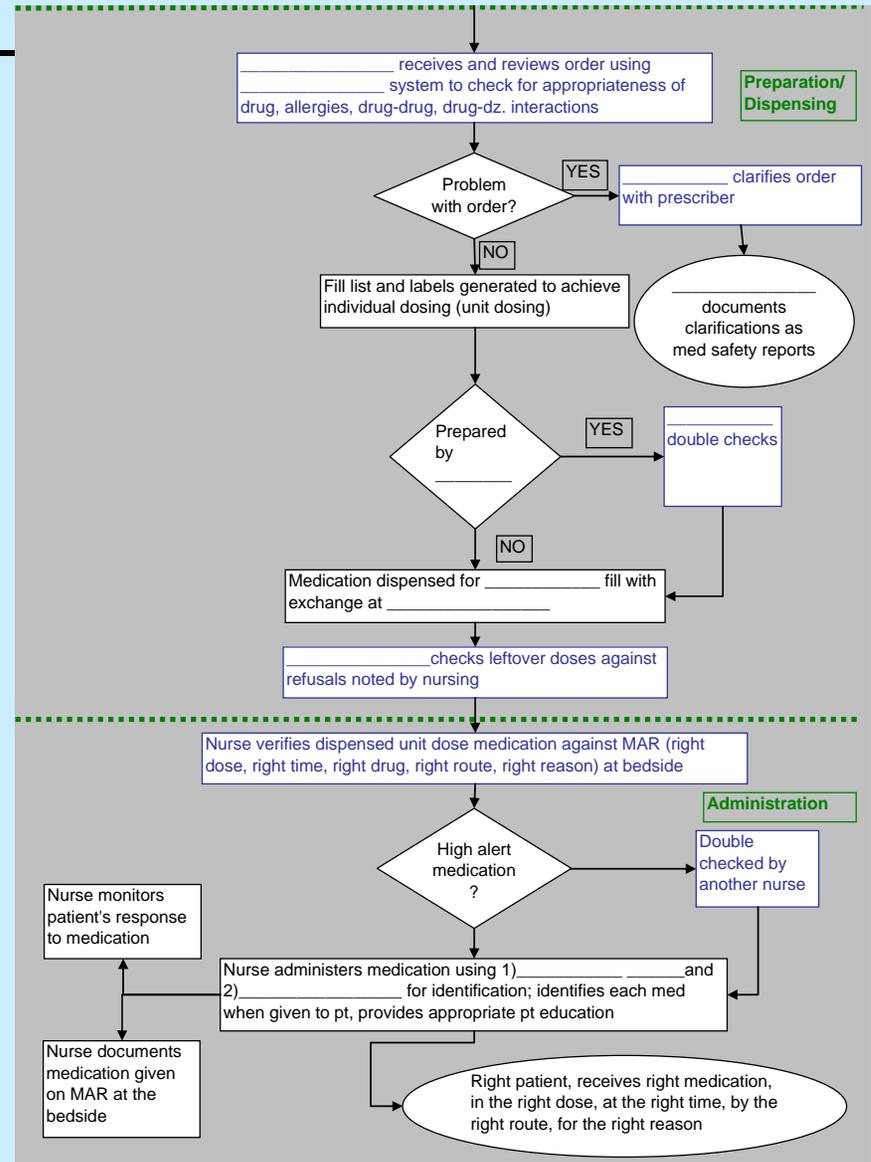
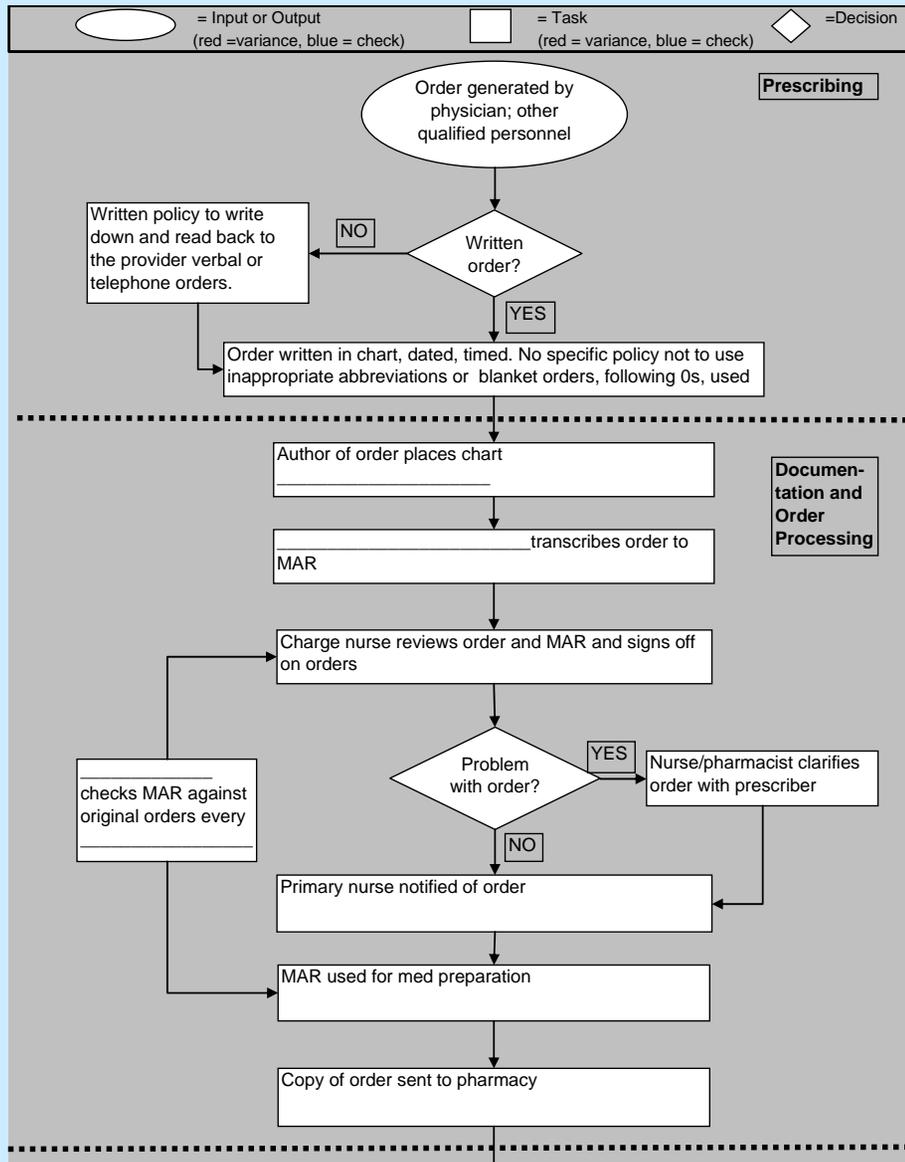
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Background

- Despite evidence-based safe medication practices...
 - Adverse drug events most common adverse event
 - Medication errors widespread
- Field work in 25 Critical Access Hospitals (CAHs) revealed variation from best practices in medication use and medication error reporting
- Previous research: positive relationship between pharmacy support and reporting near misses
- ASHP national survey of pharmacy practice—
floor effect of small hospitals < 50 beds

Sample Map of Medication Use



Research Questions

- To what extent have hospitals with fewer than 50 beds implemented evidence-based safe medication practices and systematic voluntary medication error reporting?
- Hypotheses: Average daily census related to implementation of safe medication practices, extent of voluntary medication error reporting, pharmacy support, and accreditation by JCAHO

Instrument Development

- Review of literature
- Collaboration with ASHP
- Pilot tested among sample of 5 DONS
- Domains
 - Medication use
 - Medication error reporting
 - Practices reflecting culture of safety
 - Pharmacy support

Methodology

- Combined...
 - List of CAHs from Flex Monitoring Team
 - List of hospitals on ORHP web site eligible for small rural hospital (SRH) improvement grants
 - AHA database to obtain hospital characteristics
- Generated random sample of 474 CAHs and 312 small SRHs with 26 – 49 beds
- Mail survey using Dillman method Aug – Oct '05
- Target respondent—Director of Nursing
- Compare results to ASHP national sample (all or large ≥ 400 beds)

Methodology

- Overall response rate 53%
(408/775)
- CAH response rate 55%
(261/472)
- SRH response rate 49%
(147/303)
- Compare to ASHP response rate of 43.5%



Katrina Effect: 9 SRHs and
2 CAHs across MS and AL
removed from sample

Nonresponse Bias?

Factor	Respondents	Nonrespondents
Accredited by JCAHO*	24%	33%
Not for Profit*	97%	93%
Contract Managed	30%	31%
Medicare Inpatient DCs	464	508
FTE RNs	31	32
Average Daily Census*	24	29

*Statistically significant difference at $p < 0.05$

Sample Characteristics

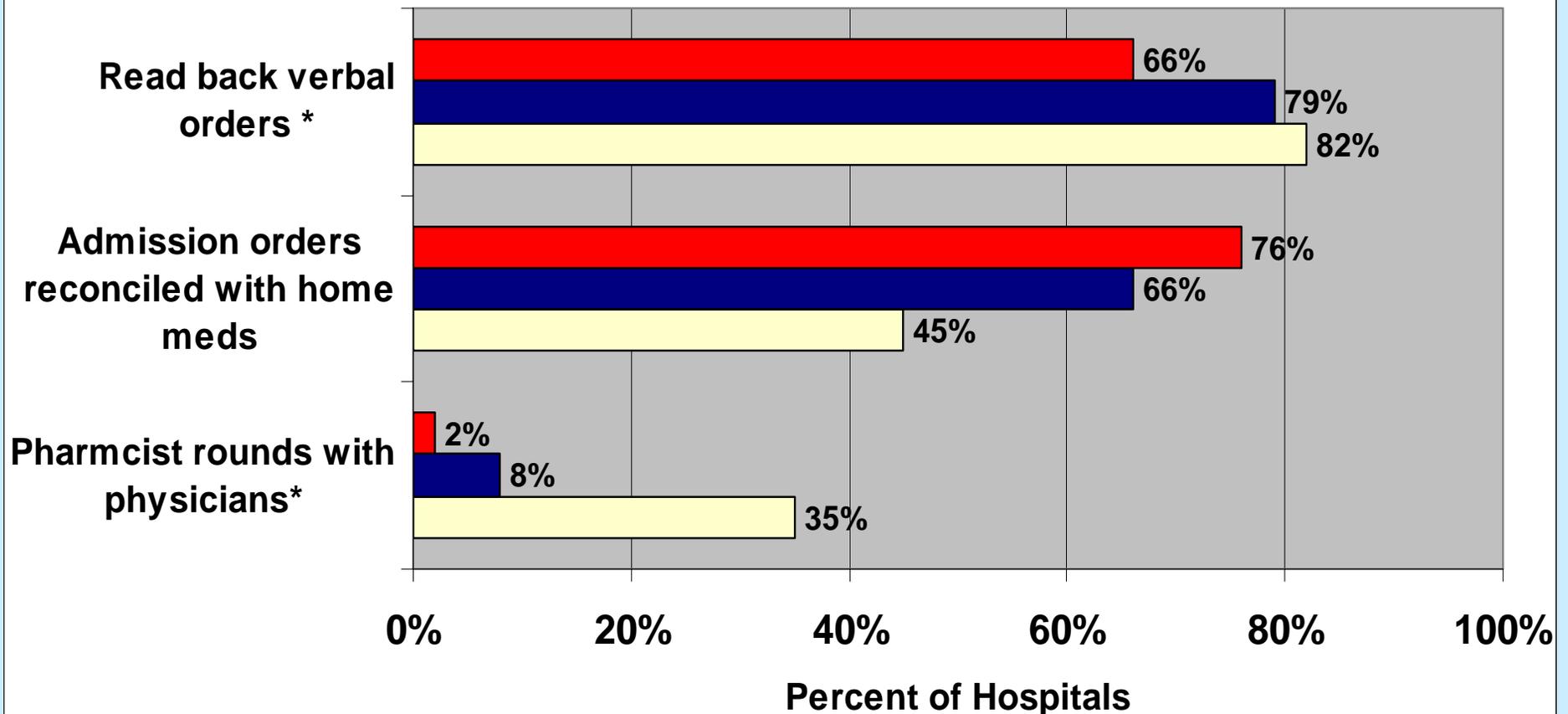
- Size
 - 24% reported avg daily census 0-5
 - 26% reported avg daily census 6 – 10
 - 50% reported avg daily census ≥ 11
- Type—64% Critical Access Hospital
- Ownership—95% not for profit
- JCAHO accreditation—28%

Medication Use/Prescribing

*Statistically significant difference between smaller hospitals

Comparison of Prescribing Practices by Census

■ ASHP All Hospitals
 ■ Avg Census 6 - 49 (n=296)
 ■ Avg Census ≤ 5 (n=94)

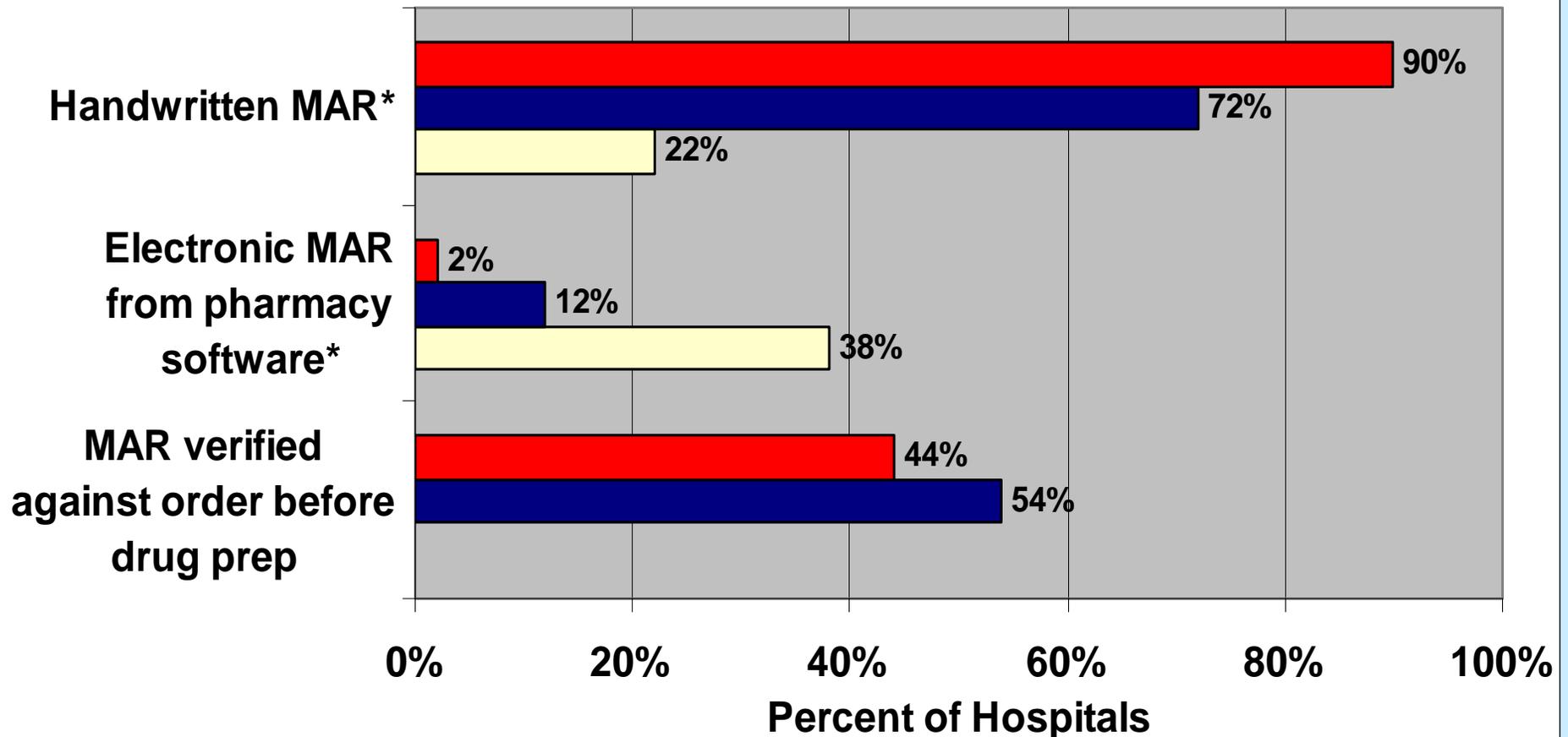


Medication Use/Documenting

*Statistically significant difference between smaller hospitals

Comparison of Documenting Practices by Census

■ ASHP \geq 400 beds ■ Avg Census 6 - 49 (n=296) ■ Avg Census \leq 5 (n=94)

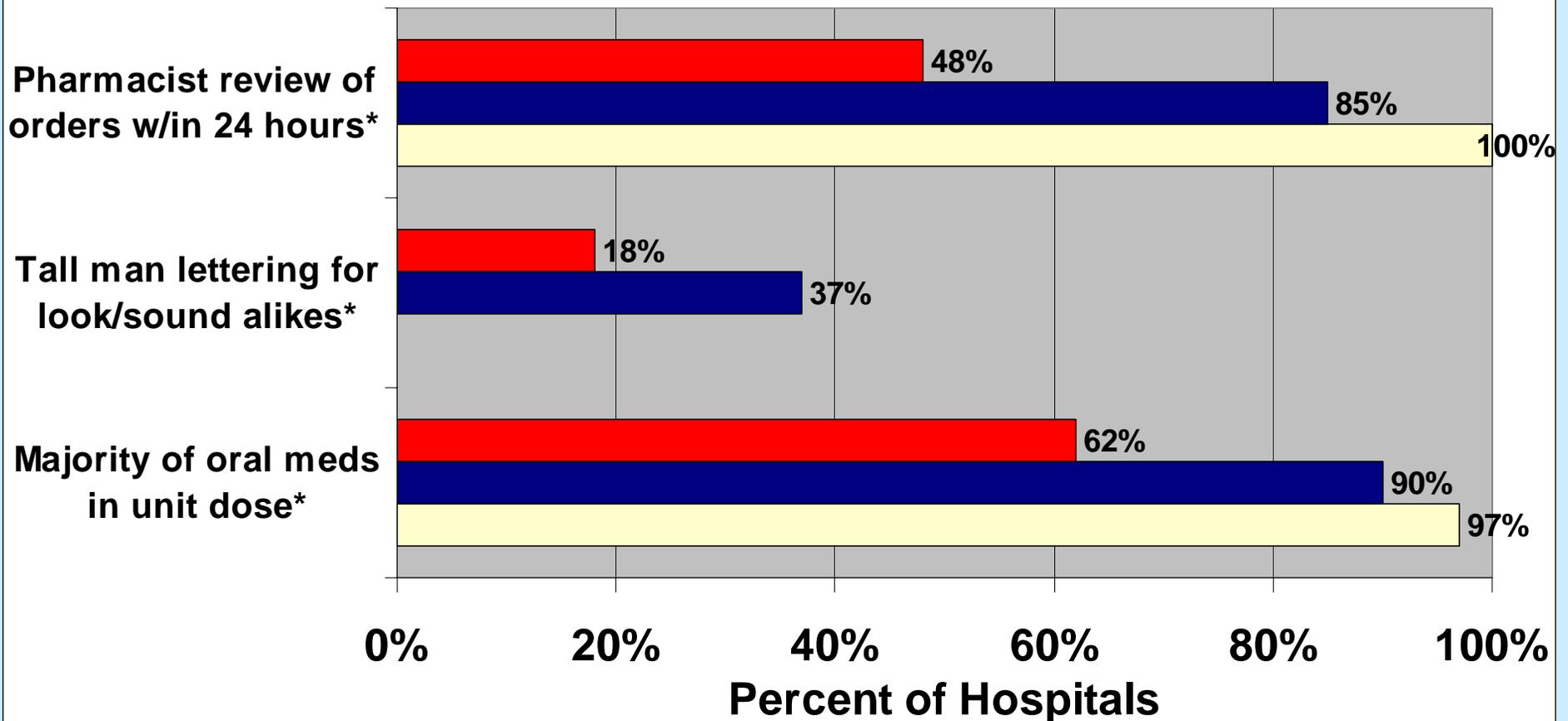


Medication Use/Dispensing

***Statistically significant difference between smaller hospitals**

Comparison of Dispensing Practices by Census

■ ASHP \geq 400 beds
 ■ Avg Census 6 - 49 (n=296)
 ■ Avg Census \leq 5 (n=94)



Tall Man Lettering

Zyprexa

Zebeta

zYPReXa

zEBeTa

Unit Dose or Bulk Stock

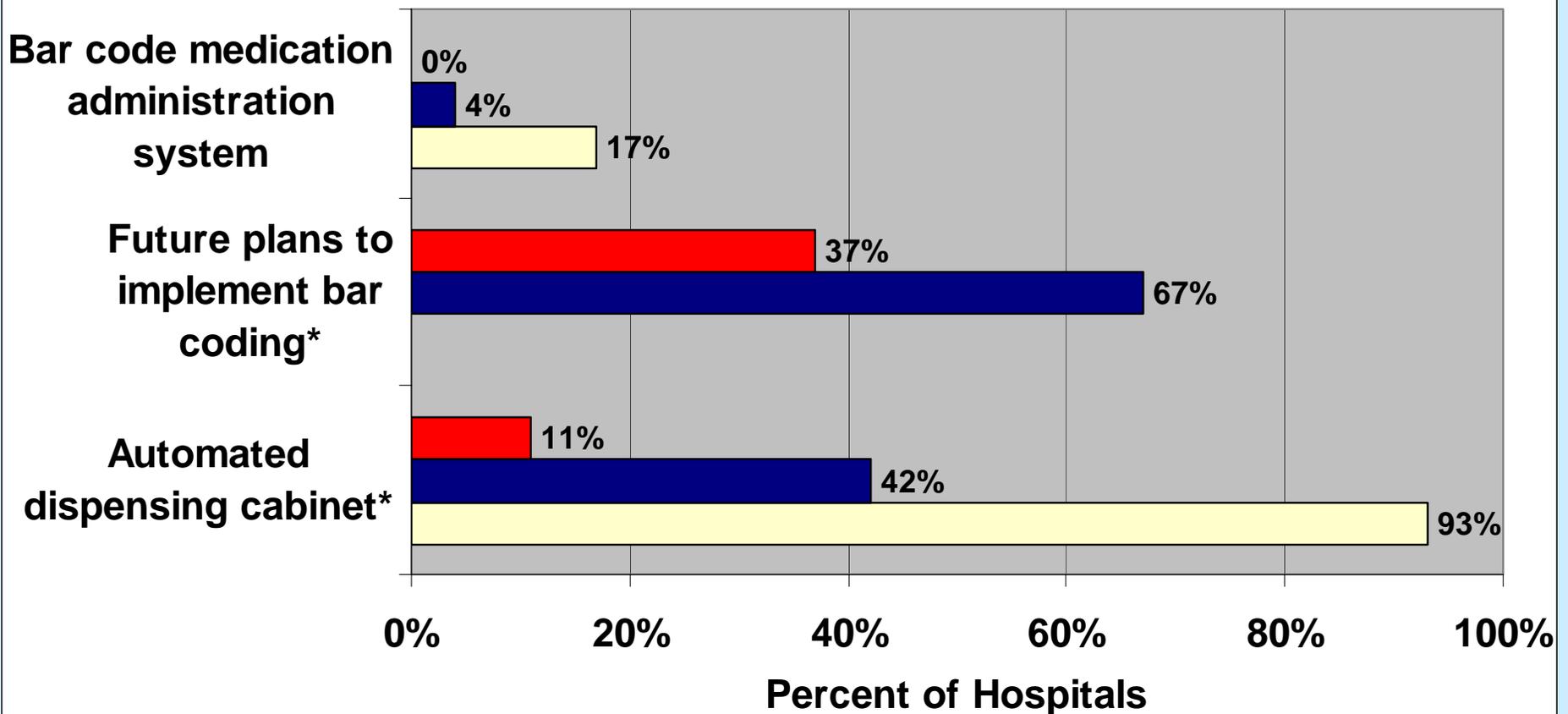


Medication Use/Dispensing

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Comparison of Dispensing Practices by Census

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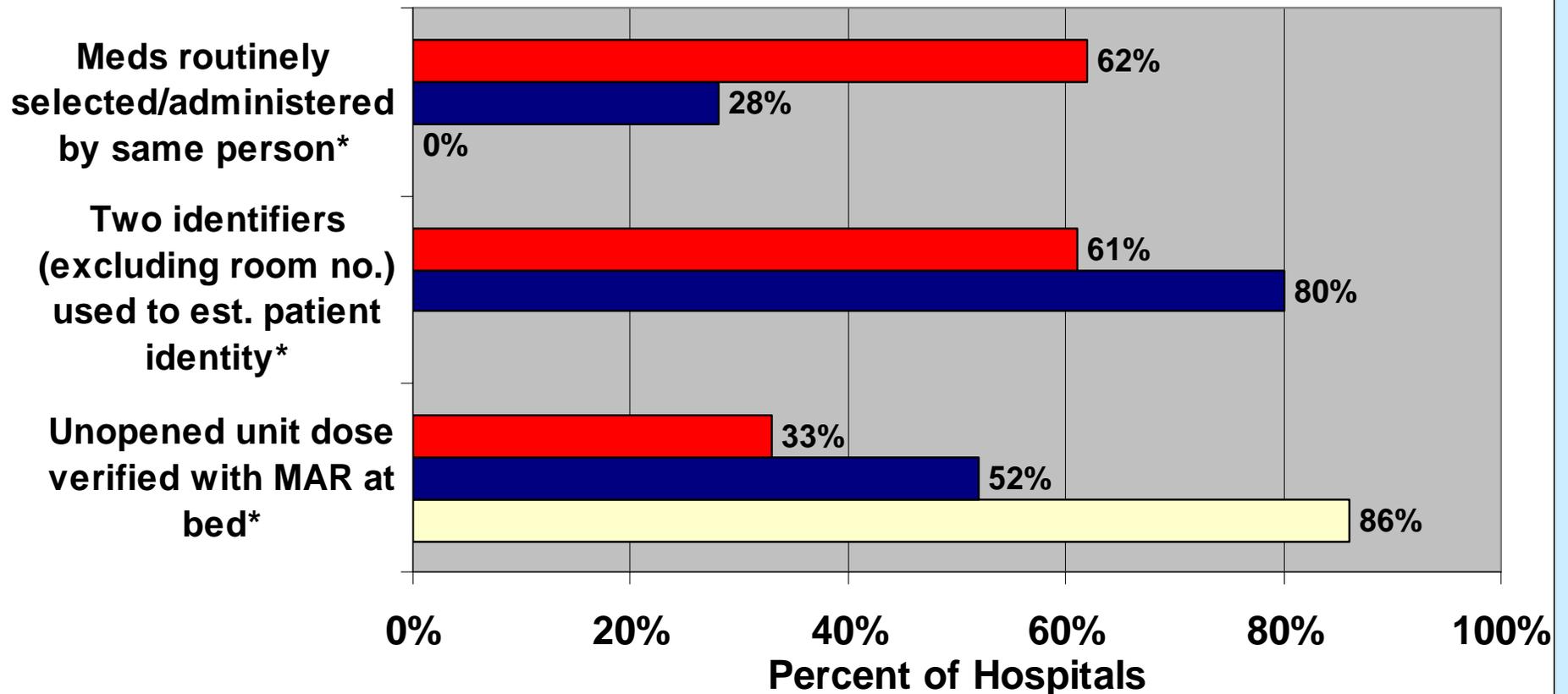


Medication Use/Administering

*Statistically significant difference between smaller hospitals

Comparison of Administering Practices by Census

■ ASHP All Hospitals
 ■ Avg Census 6 - 49 (n=296)
 ■ Avg Census <= 5 (n=94)

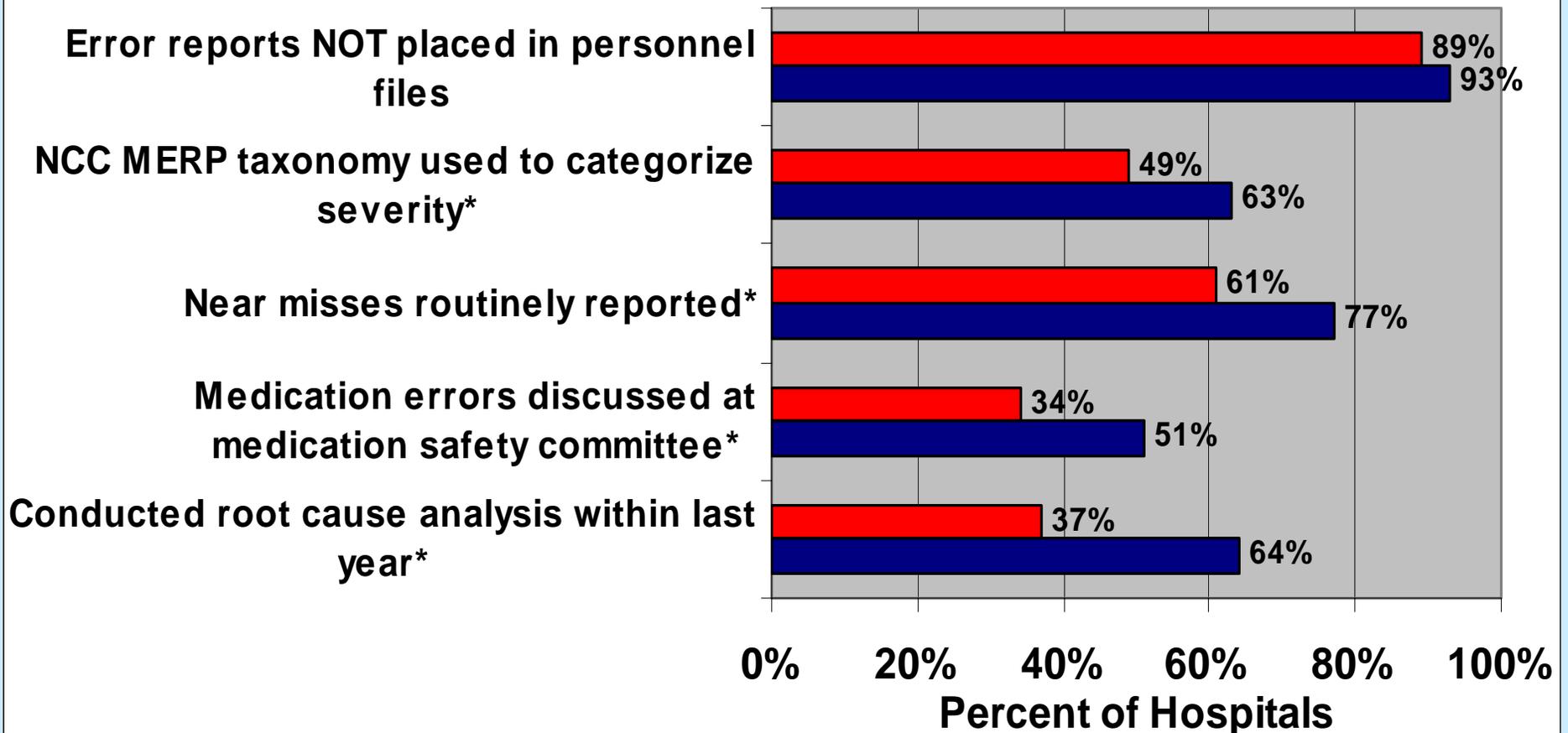


Medication Error Reporting

***Statistically significant difference between smaller hospitals**

Comparison of Medication Error Reporting by Census

■ Avg Census 6 - 49 (n=296) ■ Avg Census <= 5 (n=94)

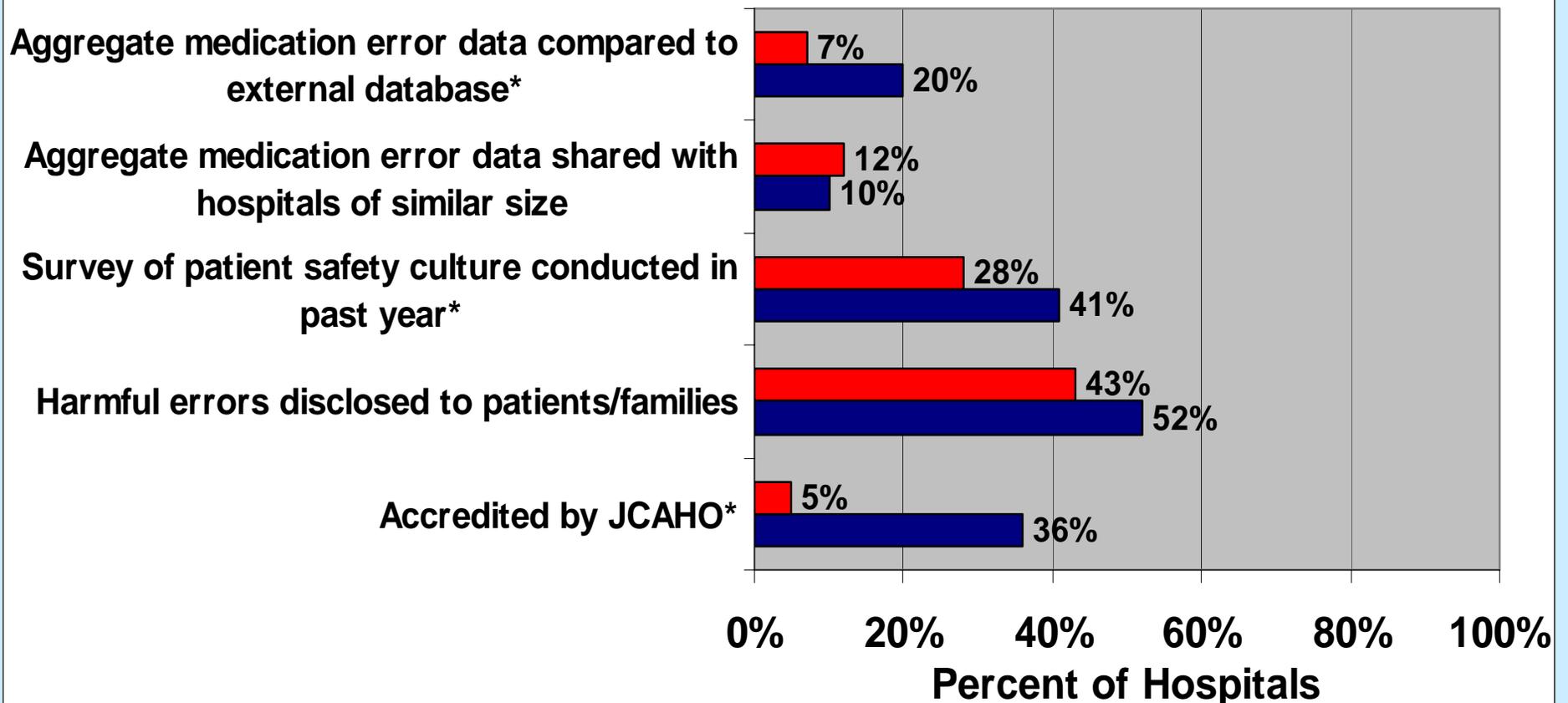


Safe Culture Practices

***Statistically significant difference between smaller hospitals**

Comparison of Safe Culture Practices by Census

■ Avg Census 6 - 49 (n=296) ■ Avg Census ≤ 5 (n=94)

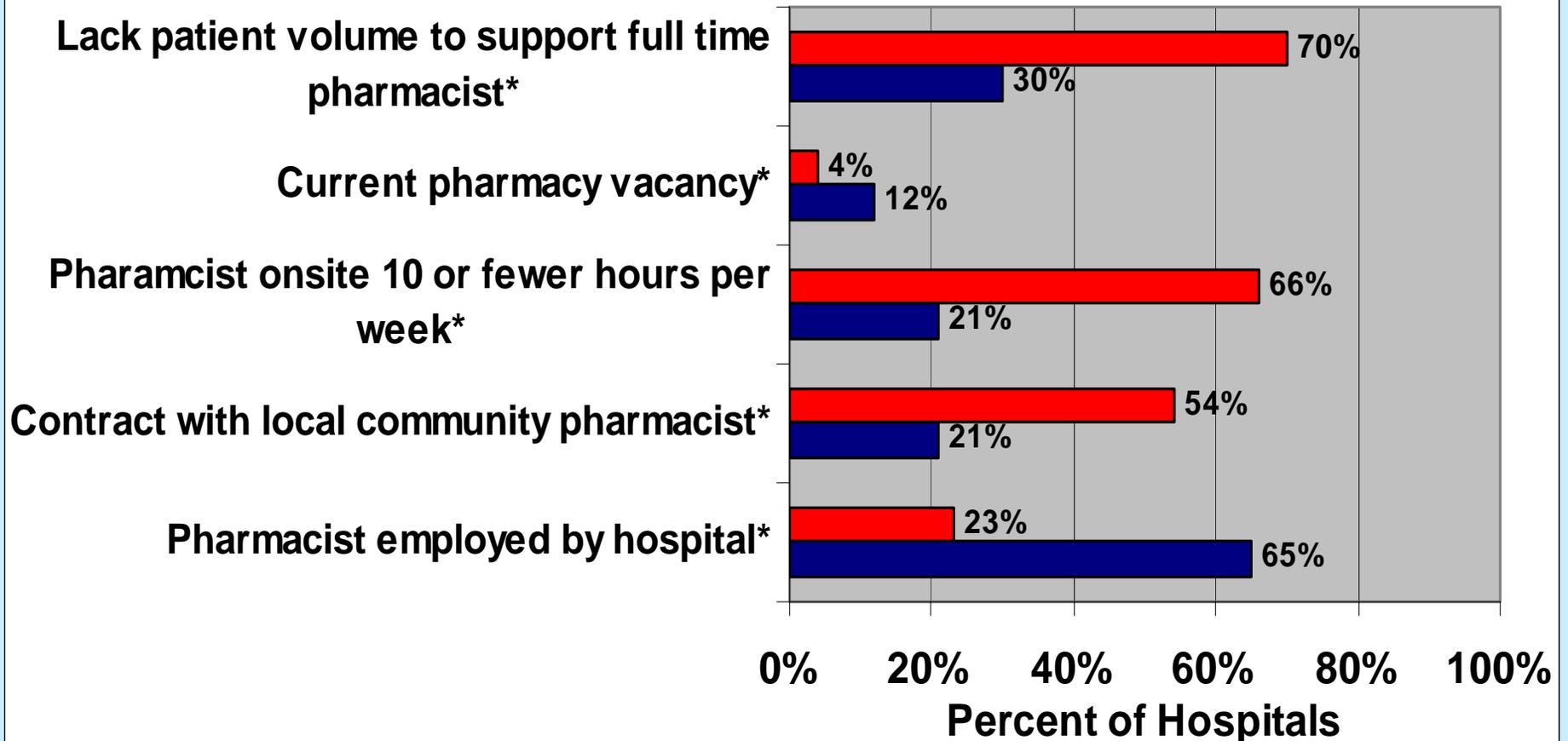


Pharmacy Support

***Statistically significant difference between smaller hospitals**

Comparison of Pharmacy Support by Census

■ Avg Census 6 - 49 (n=296) ■ Avg Census ≤ 5 (n=94)



All or None Measurement

Nolan & Berwick. JAMA, 295 (10): 1168-1170)

- Multiple discrete measures define quality
- Determine the “indisputable basics” that determine the standard of care
- Numerator
 - “0” if any one element of care missing
 - “1” if all of care provided
- Denominator
 - Patients eligible for care
 - Organizations providing care

All or None Measurement

- Advantages
 - Patient-centered
 - System perspective
 - Sensitive scale for assessment of improvements

“The indisputable basics”



*Donald Berwick, M.D.
President and CEO, Institute for
Healthcare Improvement*

“The Indisputable Basics”

- Ordering
 - Pharmacist review within 24 hours
- Documenting
 - Transcription to MAR double-checked before drug obtained
- “Dispensing”
 - Selection of medication independently double-checked within pharmacy or med room
- Administering
 - Nurse verifies unopened unit dose at bedside with MAR

Overall All or None = 18%

	All or None = 1	p value
Census 0 - 5	10%	0.015
Census >= 6	21%	
Not accredited by JCAHO	13%	<0.001
JCAHO accredited	31%	
CAH	18%	0.929
SRH	18%	
<= 5 hrs pharmacy support/week	1%	<0.001
> 5 hours pharmacy support/week	22%	

Multivariate Logistic Regression

Dependent Variable =
Achievement of all or none measure

Factor	Odds Ratio	95% CI
Accredited by JCAHO	2.3	1.3 – 3.9
More than 5 hours of pharmacy support per week	14.9	2.0 - 110.5

Conclusions

- The majority of the nation's smallest hospitals can make significant improvements
 - Use of knowledge-based safe medication practices across all phases
 - Development of a systematic approach to reporting and learning from medication errors
 - Measuring and achieving a culture of safety
- The greatest room for improvement is in those hospitals with avg daily census of 5 or fewer

Conclusions

- 18% of the nation's smallest hospitals have knowledge-based processes in place that can consistently achieve the indisputable basics of medication use across all phases
- Consistency of knowledge-based practices should be determined prior to implementation of technology-based interventions
- Accreditation by JCAHO and the professional driver of a minimal amount of pharmacy support are predictors of consistency in small rural hospital medication use

Conclusions

- Further adoption of safe medication practices, systematic medication error reporting, and building a culture of safety in the nation's smallest hospitals may require a combination of regulatory, professional, and market drivers

Conclusions

- Regulatory...changes in Medicare COP to require review of orders, use of unit dose?
- Professional...
 - achievement of true multidisciplinary approach to medication use with access to pharmacist judgment in all hospitals
 - IOM: “Quality through Collaboration” ...QIOs, universities, state associations, network hospitals to obtain tools & improve knowledge of systems approach to error prevention
- Market...transparency in event reporting

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