

CPRS and BCMA Through the Rearview Mirror – Retrospectively Evaluating Health IT Implementations

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Objectives of this session

- | Understand how culture affects IT implementation and improvement
- | Recognize how staff view CPRS and BCMA today
- | Identify needs and strategies for improvements in IT systems
- | Learn how to evaluate the success of implementation and ongoing use of these systems



Background...



- | This presentation is based on a three-year study
- | Focus on inpatient care
 - | Quantitative component
 - | Did CPRS and BCMA change the need for nursing staff?
 - | Did CPRS and BCMA reduce adverse events for patients in the VHA?
 - | Qualitative component
 - | What do staff and leaders believe are the strengths and weaknesses of CPRS and BCMA?
 - | What recommendations can be made to the VA and other hospitals as they implement information systems?





Project Organization

- | Core team – UCSF and Palo Alto VA
- | Advisory Committee
 - | Oyweda Moorer
 - | Cathy Rick
 - | Ginny Creasman (Cincinnati)
 - | Geri Coyle (Martinsburg)
 - | Bryan Volpp (Martinez)
- | Non-VA Funding
 - | Robert Wood Johnson Foundation
 - | Gordon & Betty Moore Foundation

Methods



- | Surveyed CNOs for implementation dates for CPRS and BCMA
- | Analysis of PTF & administrative data on patient outcomes, staffing
- | Key informant interviews at 7 sites
 - | Range of “early” and “late” implementers
 - | Range of sites with high and low staff satisfaction & turnover
 - | Geographic diversity
- | 118 interviews
 - | Nursing managers and staff
 - | Clinical Applications Coordinators, IT staff
 - | Pharmacy leaders and staff
 - | Top site leadership (CNO, CMO)

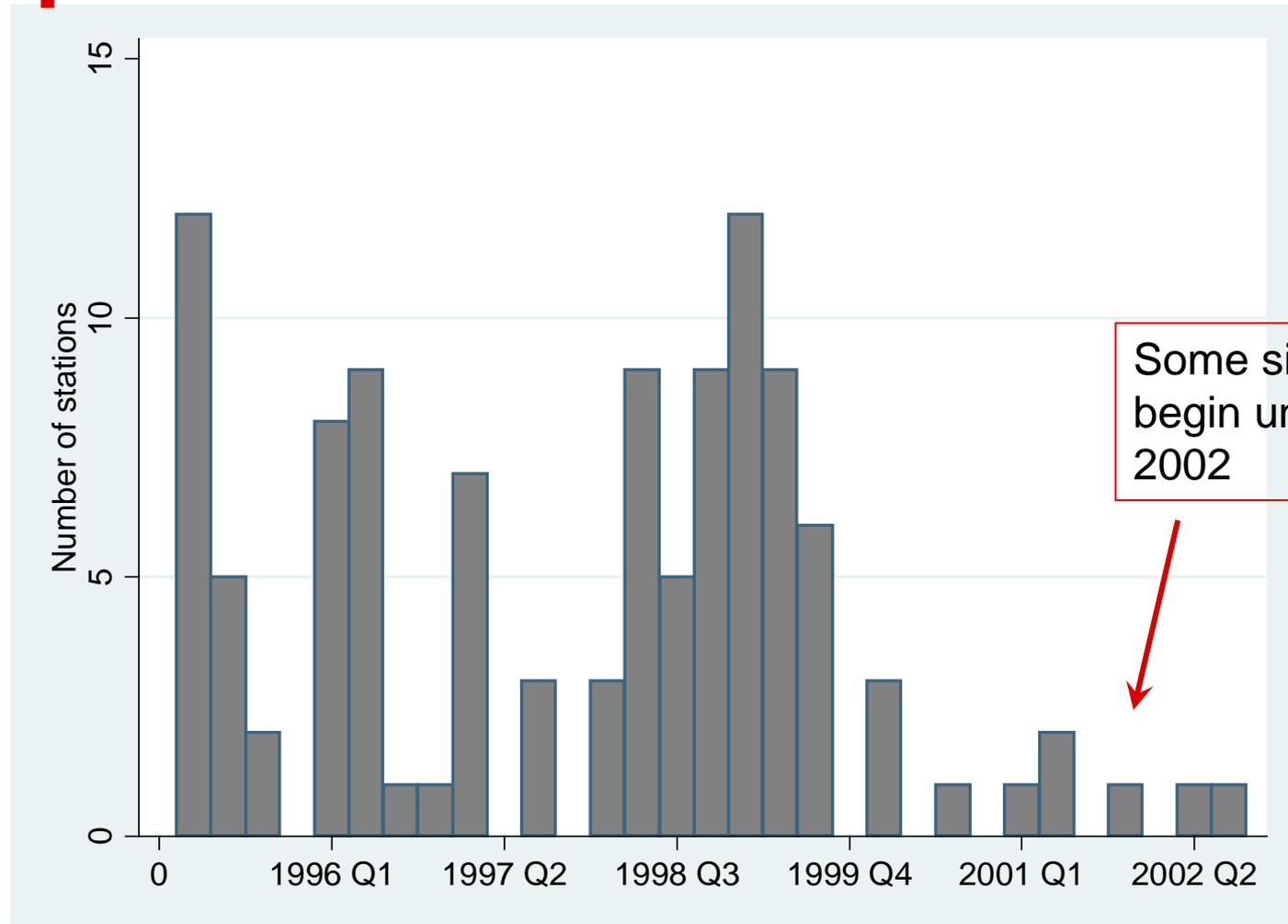




Interview strategies

- | No focus groups
- | Interviews in private rooms
- | Non-VA interviewer, or VA interviewer from a different site
- | Informed consent emphasizing confidentiality
- | Have an interview guide but adapt the interview
- | Ask about the “easier” topics first

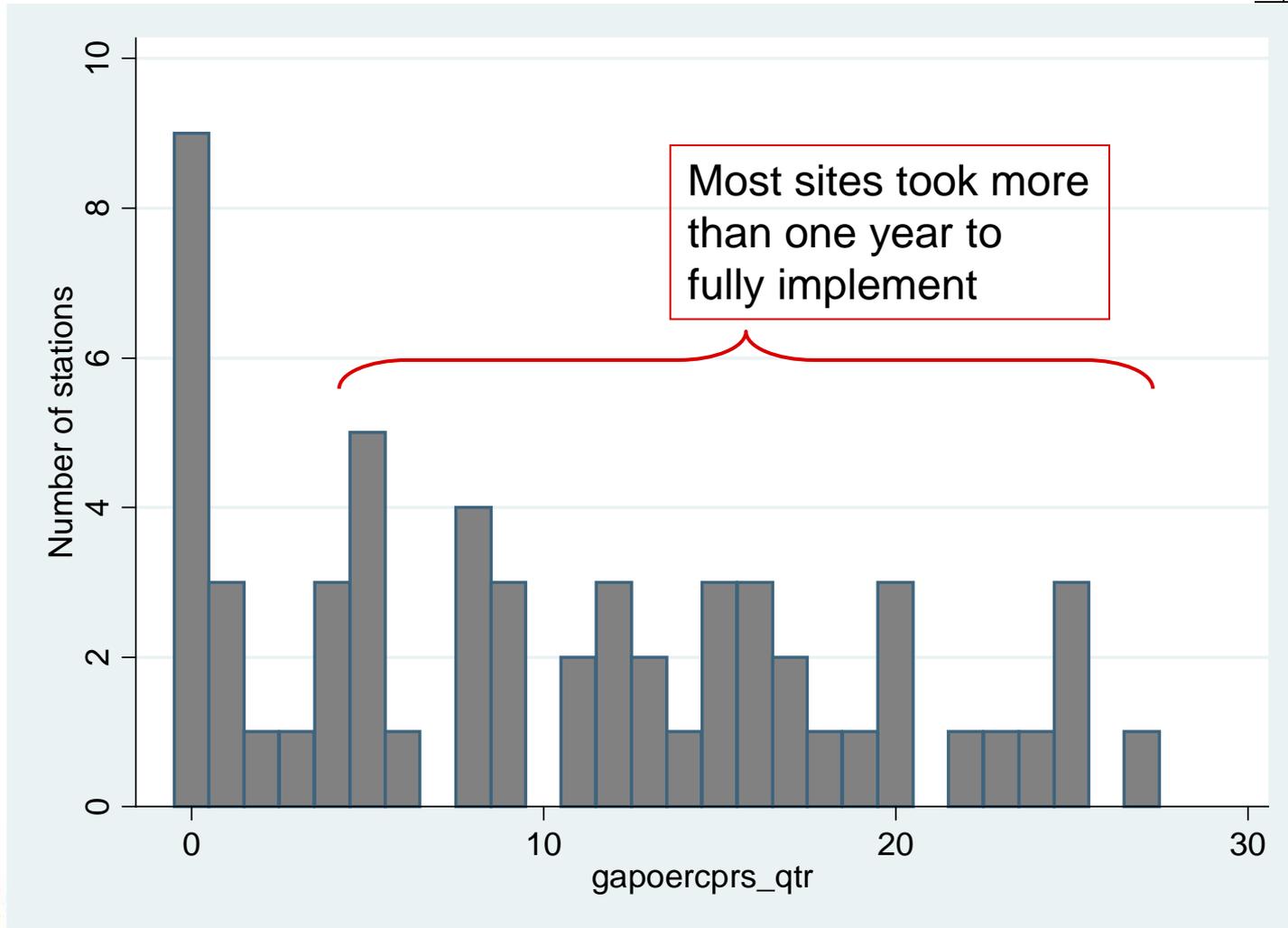
Variation in OERR/CPRS implementation initiation



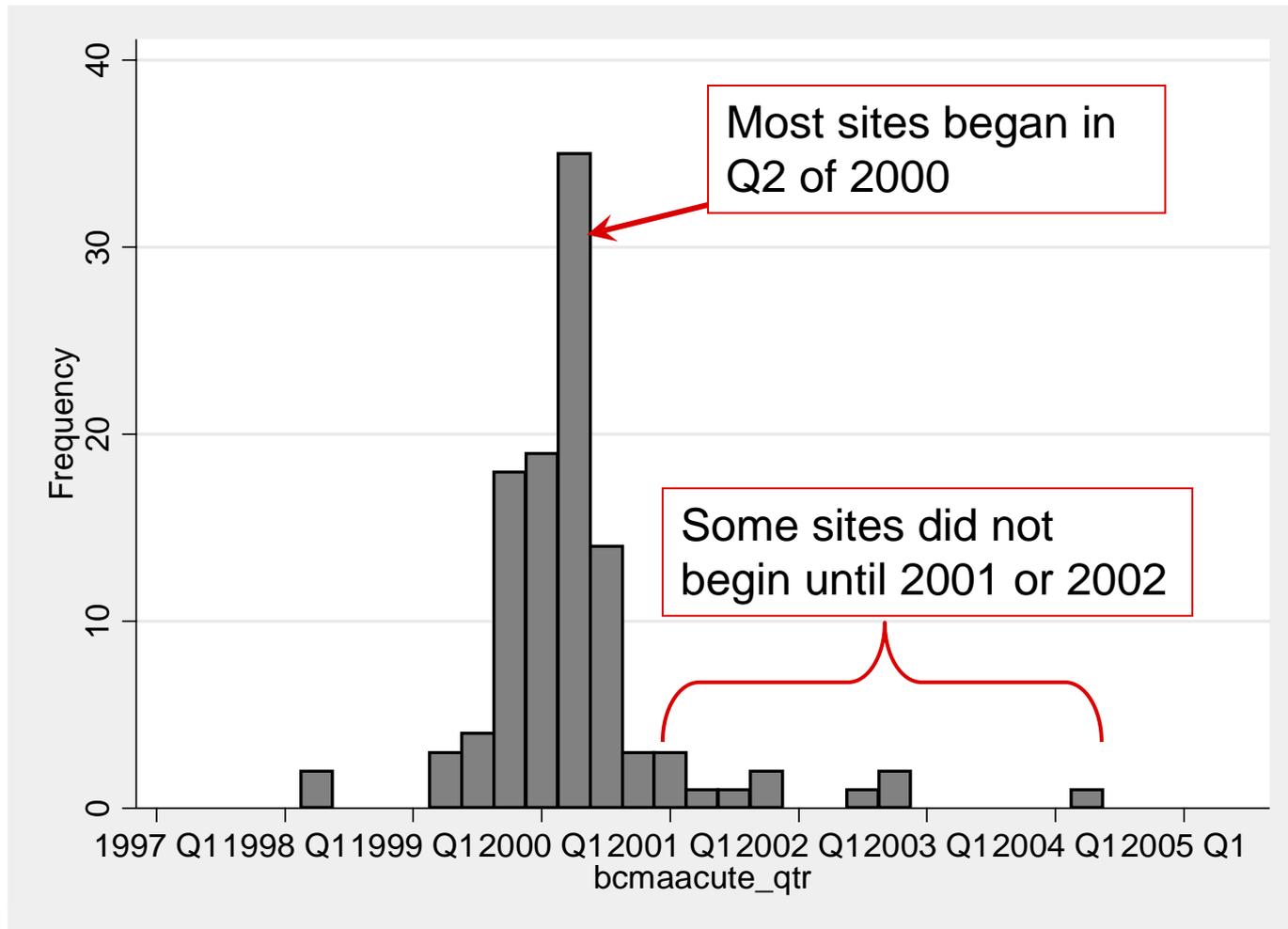
Some sites did not begin until 2001 or 2002



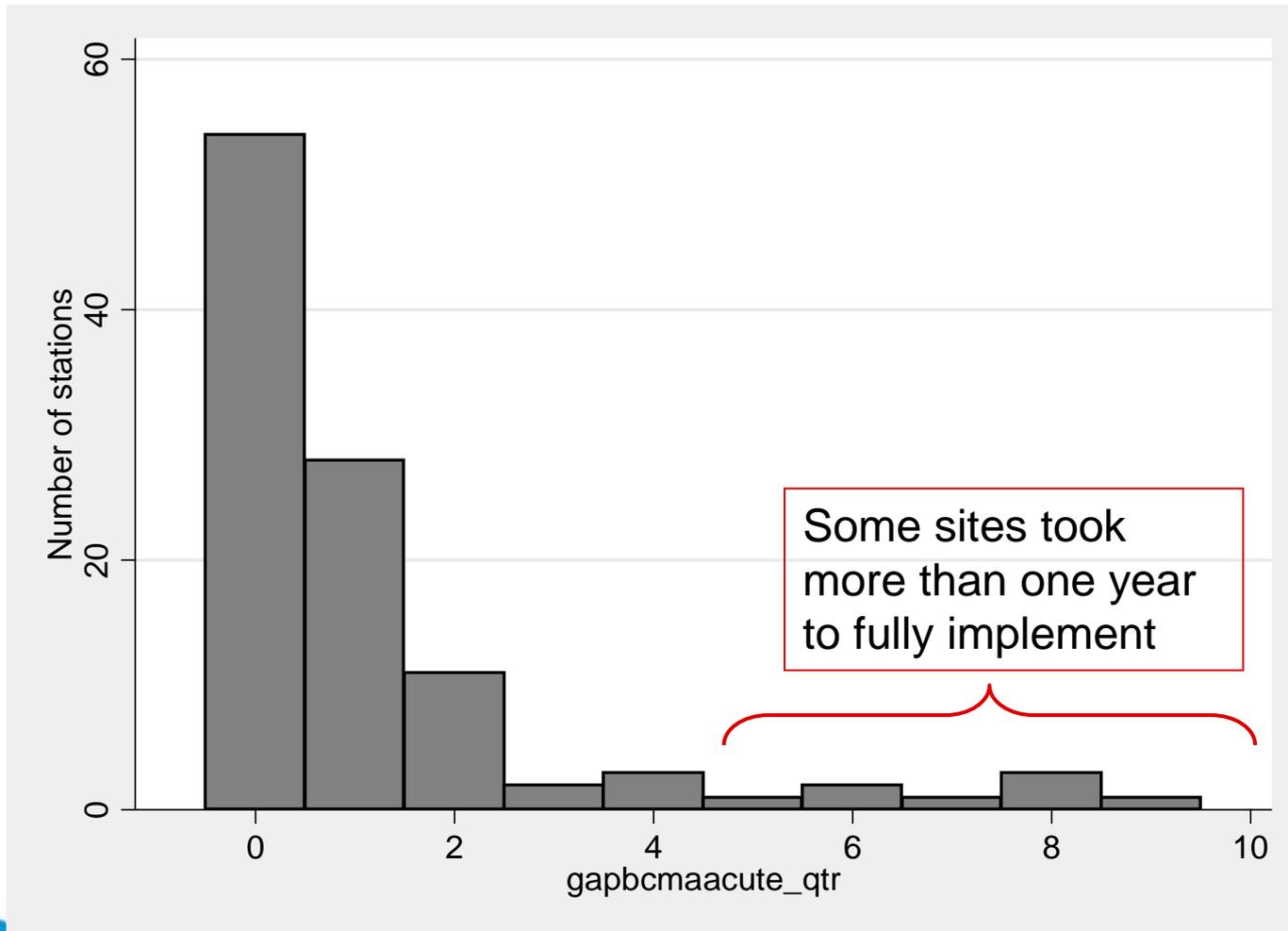
Variation in time to fully implement CPRS



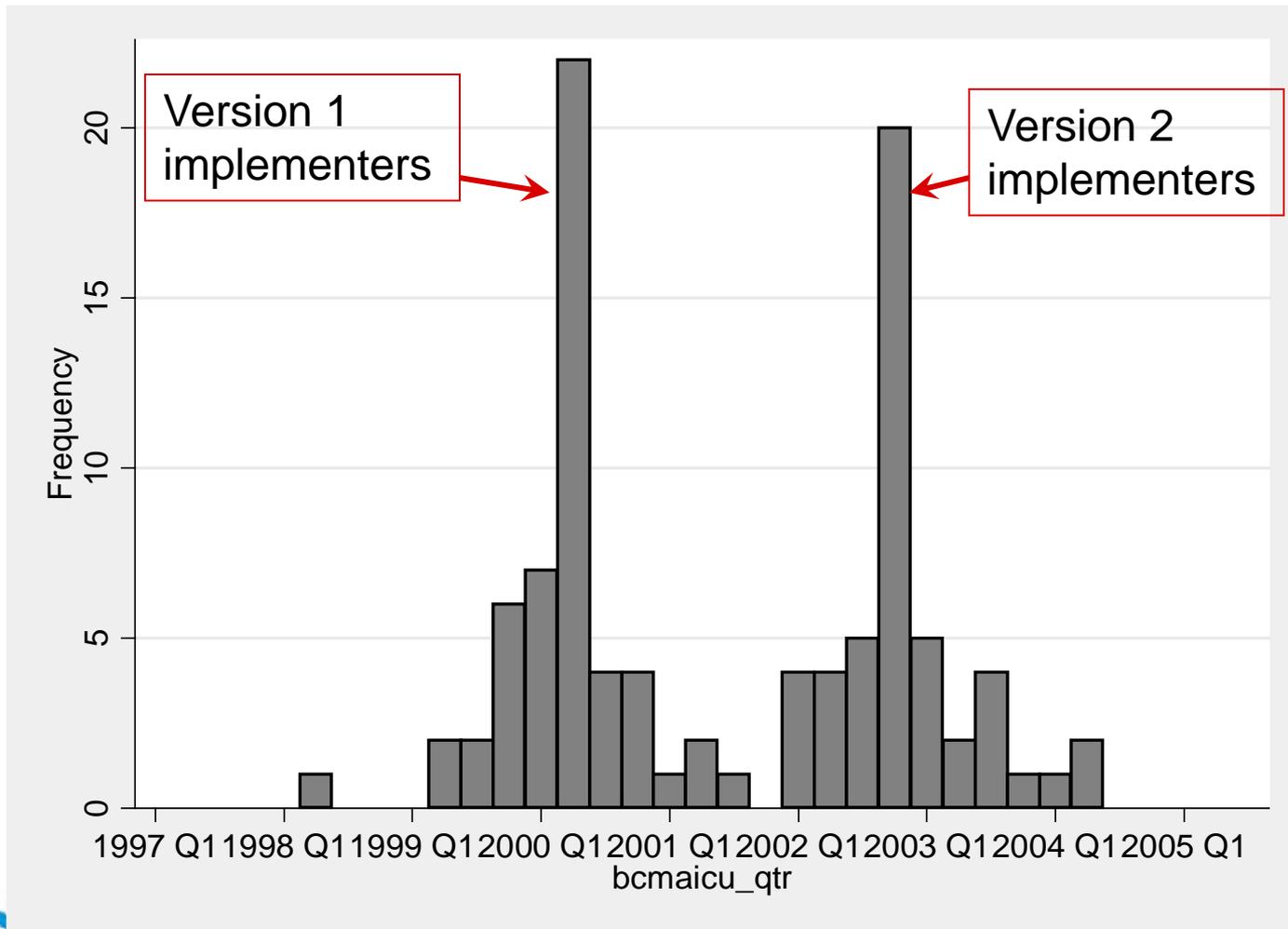
Variation in BCMA implementation initiation – acute wards



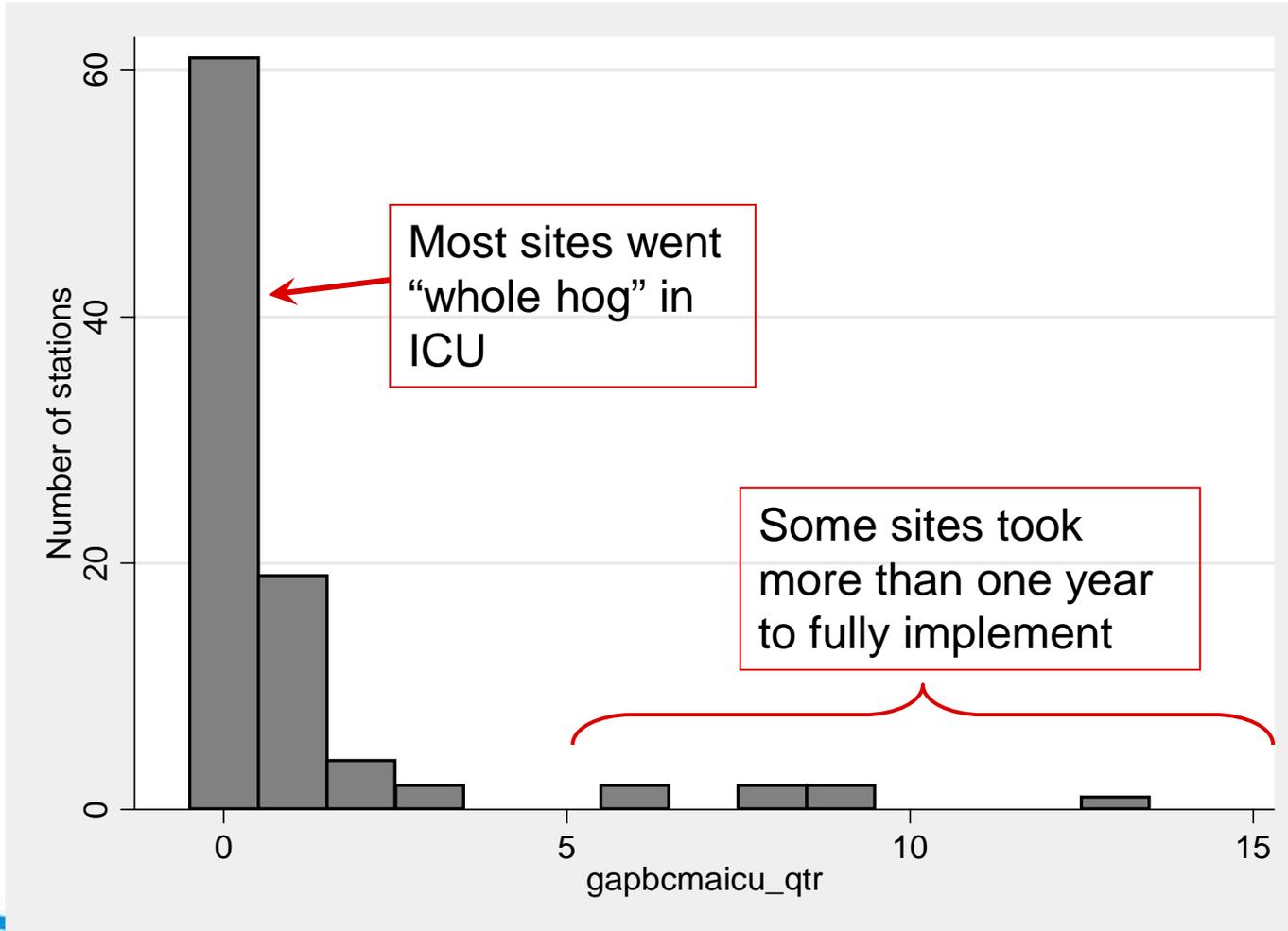
Variation in time to fully implement BCMA in acute wards



Variation in BCMA implementation initiation – intensive care



Variation in time to fully implement BCMA in ICU





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What staff say about culture and success in IT implementation



- | In a “large organizational deployment, [the organization] needs [to be] very stable and fault tolerant.”
- | You “have to have good leadership to articulate the nursing position.”
- | CPRS implementation was “a big culture change”

Leadership matters



- | Support from all top leadership was needed
 - | Sites with lukewarm support from any group had more trouble
- | It did not matter whether the lead came from medicine, nursing, pharmacy, or IT
- | “If nurse managers are in support, you can get farther.”
- | Teamwork
 - | “Everyone was nervous. She [the CNO] boosted staff: ‘You know how we work together.’”



Training and support

- | Training is a process, not a class
 - | “It will take time,’ I was told, ‘just relax.’ I love it now.”
- | Most users said “learning while using it” was important
- | Staff lauded having support available on the floor 24 / 7 during the first weeks
- | Staff who could not find help when they needed it grew frustrated and distrustful

Infrastructure and equipment



- | Adequate hardware and infrastructure was important
- | Hardware
 - | Was there a commitment to making it work from the IT department?
 - | Were staff committed to using the hardware properly and respectfully?
 - | Was the need for replacements recognized?
- | Infrastructure
 - | Trust in communicating problems required
 - | For example, where did or does wireless system drop the computer?
 - | Is “downtime” scheduled in a sensible way?



The time commitment during implementation



- | During implementation, systems took more time
 - | Staff had to learn the system while doing all their other work
 - | Learning was slow for some staff
- | Sites did not get extra budget
 - | Some sites added staff and overtime to help
- | A lack of adequate time and support bred distrust and resistance at some sites

Why did workarounds crop up?



I Necessity

- I Hardware/software problems interfered with work, so care providers solved the problem

I Fear

- I “[I was] intimidated by the computer at first, scared you will mess it up.”

I Resistance

- I Some providers did not trust the system or process, or actively flouted it
- I Some leaders tacitly supported workarounds



What things were common in the successful sites?



- | Sites that recognized there would be setbacks and intentionally pushed through them did better
 - | Willingness to accept and deal with problems was needed
- | Trust of staff
 - | Trust of leadership
- | Adequate resources
 - | Equipment and infrastructure
 - | Time and support

Did the timing of implementation matter?



- | Implementation delays arose for many reasons
 - | Problems with the launch
 - | Unwillingness to push through problems
 - | Sensitivity to staff concerns
- | Sites that delayed are still working through more problems
 - | But they avoided some of the initial issues



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Most staff love CPRS and BCMA now



- | Accessibility of records
 - | “Can follow patients’ course of treatment, flow of outpatient to inpatient to outpatient.”
 - | “Everybody likes to be able to review anything about patients 24 / 7.”
- | Accuracy of records
 - | “Pages of notes don’t disappear, backdating does not occur, timing is accurate.”



Better teamwork

- | “As a team you can see what everybody is doing with the patient.”
- | “Less confusion about orders.”
- | “Sharing of information is better. Pulls information to a team rather than having to run around.”
- | “Pharmacists can see it all, don’t have to track physicians down for things.”

Quality of care



- | Most staff believe quality of care improved
- | CPRS: quality of medical record, ease of getting information
 - | “I know my patients before they come in, because our referral region is huge.”
 - | “Gives a wonderful background on patients... gives all information to do my job.”
- | BCMA: medication error rates dropped

Do CPRS & BCMA take more time now?



- | “Computer savvy” people think it’s quicker
- | CPRS: entering data takes more time, retrieving takes less
 - | “Less time for me – I can type faster than I can write. This was not true at first.”
 - | “Computer takes more time – more and more requirements and templates that nursing has to use.”
- | BCMA: perspectives vary
 - | “Takes less time if everything works ok”
 - | “Absolutely takes more time”
 - | “Takes no more time than passing meds properly”

Impact of the time commitment



- | Some staff think IT takes them away from direct patient care
 - | “Improved access to data, but hands-on care of the patient? No.”
 - | “If there are only 5-6 people on the floor and only 3 with privileges to do meds, it is difficult to do any other patient care.”
 - | “It does take more time... VA likes to say you’ll find time somewhere, but something will get sacrificed.”



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Overarching approaches

- | End users (staff) should be involved in teams to improve systems
- | Managers, IT, and other technology teams must be sensitive and respectful of provider needs and concerns
- | Non-punitive strategies are required to get to the root of workarounds

Continuing training needs



- | New components and templates are added often
- | Staff and managers were concerned that they and their staff do not receive updates to their training
 - | “When there was a new patch or feature, staff was not always informed in advance.”
- | Differing views about whether ongoing training should be mandatory

CPRS needs



- | Control template proliferation
 - | “Template requirements can add up, and that can be a negative with too much to see.”
 - | “Templates need to be decreased by at least 50%.”
 - | “Standardization of templates [is needed]. Current templates, while an improvement, are still cumbersome.”
 - è Many people talked about nursing admission templates being particularly burdensome.
- | Reduce use of copy & paste function
 - | “Sometimes within the same patient record something will be copied from three years ago without editing.”
 - | “Cut and pasting makes it hard to find pertinent data.”

CPRS needs



- | Nurses and physicians need notification when new orders are entered or other things are done
 - | “Orders can get written, RN doesn’t necessarily know about them.”
 - | “No flagging system that order has been written.”
 - | “System is not sending an alert when specialist consults are done.” (from an MD)
- | Flowsheets are needed
 - | And/or link ICU systems (such as Careview) to CPRS

CPRS needs



- | Control alerts
 - | “There are too many, so they can be ineffective. People will clear the series of alerts without reading them all carefully or thinking about them.”
- | Improve ability to find and integrate data
 - | “Make it easy to data-mine.”
 - | “Can’t go elsewhere in the system to look at data when writing a note.”

BCMA needs



- | Address workarounds realistically
 - | Need accepted methods and reasons for bypassing system
 - | Witness and double-check?
 - | Non-punitive reporting of workarounds
 - | “Nurses care about patients, so we need to probe hard about workarounds.”
 - | Anonymous survey about workarounds
 - | Place users on key taskforces

BCMA needs



- | Default times for medications
 - | Example: medication administered immediately, and then every four hours – can have doses too close together
 - | Could prompt physician to check this
 - | Example: pre-surgery antibiotic, ordered for 7am but patient does not arrive until 8am
 - | Unusual dosing is hard to program (e.g., 36 hrs)
- | Reminders for missed medications
 - | Burdensome to generate missed medications lists

BCMA needs



- | Emergent care protocols
 - | Give medication first and chart later – but BCMA is not forgiving about this.
 - | Crash carts not always stocked thoroughly
- | PRN medications
 - | Report on effectiveness in one hour is too strict
 - | “The system forces you to lie.”
 - | “Do not give, too early” warning would be good.
 - | Option to note location of pain

BCMA needs



- | Reminder to remove medication patches
- | Streamline verification for insulin and heparin
- | Expand to other treatments
- | Protocol for patients with resistant infections (on isolation)

System downtime & contingency plans



- | “When [CPRS] shuts down or when it’s slow you feel disabled.”
- | “CPRS crashed a few years ago and it almost was a disaster.”
- | “Biggest issues are downtime. We need a good contingency system in place, do downtime practice.”
- | BCMA downtime causes “a sense of panic.”
- | Staff & leaders are eagerly awaiting a national contingency plan.



Logins and passwords

- | “Too many passwords.”
- | “Logs out too fast... if you forget to save when you run off to deal with a patient and it logs you out, you lose everything.”
- | “Takes forever to log in the morning. Can’t you have a single log in?”

Hardware & infrastructure



- | Wireless networks need upgrades
 - | “We get interference at times of the day that affects the computer hooking into the network.”
- | Computers
 - | “Four computers were down on a night shift...”
 - | “There aren’t enough computers, computers do not work all the time.”
 - | “Each RN needs to have their own laptop, on a cart, with extended battery capacity.”
- | Carts
 - | Varying preferences for smaller vs. larger (sturdier) carts, workstations in rooms vs. carts.

IT support



- | IT reorganization raises concerns
 - | “Centralization of IT staff may be a problem.”
 - | “Will we be able to relate well over time?”
- | IT needs to be more available
 - | “Tech support needed 24 hours.”
 - | “Hotlines don’t mean the support is here.”



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Evaluating staff acceptance and satisfaction



I Surveys

- I Several good surveys can be adapted from textbooks & other research
 - I 5 -7 point scales with “strong disagree” to “strongly agree” or “almost never” to “almost always”
 - I “How frequently do you find it necessary to bypass...”
 - I “How frequently do you feel like hitting the terminal?”
- I Anonymous surveys are required

I Focus groups

- I Outside moderator might be needed
- I Staff as technology experts and coaches
- I Labor-management team efforts

Evaluating effectiveness of new modules



- | Decide on our outcomes measures before implementation, and begin collection early
 - | What data will be measured better after implementation?
 - | How can you get comparable data before implementation?
- | Stagger implementations (when practical)
 - | Control group vs. implementation group
- | Get your research department involved

Course corrections



- | Examine data after implementation
 - | Check on staff satisfaction and acceptance
 - | Check on whether the metrics are improving
- | Determine problem areas
 - | Is it a technology problem?
 - | Is it a user problem?
- | Leverage a team to solve problems
 - | Interdisciplinary team including end users



Questions?

Comments?

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