Safety Culture Research: Ways to improve existing methods (R13HS023062)

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04/05/2014-03/31/2015

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Abstract (250 word maximum)

- **Purpose** (Objectives of the study): The purpose of the conference was to discuss the current status of safety culture measurement and what still needs to be done in the future. We brought patient safety culture experts together in a 1-day conference to discuss these issues.

- **Scope** (Background, Context, Settings, Participants, Incidence, Prevalence): The "Patient Safety Culture Research: Next Steps" conference was held at AHRQ on October 2, 2014, from 8:30 am to 4:30 pm. The conference consisted of five presentations from patient safety, culture, and methodology experts about different issues relevant to patient safety culture. After each presentation, Dr. Jason Etchegaray (PI) facilitated a discussion about key points from the presentation, and this report describes these discussions.

- **Methods** (Study Design, Data Sources/Collection, Interventions, Measures, Limitations): We held discussions after each presentation to discuss specific aspects of safety culture in more depth.

- **Results** (Principal Finding, Outcomes, Discussion, Conclusions, Significance, Implications): Many themes were identified based on presentations and discussions at the conference. A detailed summary of the themes from the conference was distributed to conference attendees in 2015.

- **Key Words:** patient safety, patient safety culture, climate, culture

Purpose.

Our 1-day conference brought together experts from several countries to share their expertise concerning safety culture research, specifically focused on improving the psychometrics of the surveys; determining how surveys can be used to drive changes in culture, quality, and safety; and determining how culture fits into the broader quality/ safety framework.

Scope.

The "Patient Safety Culture Research: Next Steps" conference was held at AHRQ on October 2, 2014, from 8:30 am to 4:30 pm. Conference attendees were as follows:

1) James Battles – AHRQ - James.Battles@ahrq.hhs.gov
2) Joann Sorra – Westat – joannsorra@westat.com
3) Laura Gray – Westat – LauraGray@westat.com
4) Naomi Yount – Westat – NaomiYount@westat.com
5) Pat Brick – Westat – PatDeanBrick@westat.com
6) Martha Franklin – Westat – FRANKLM@westat.com
7) Rachel Tesler – Westat – RachelTesler@westat.com
8) Jason Etchegaray – UT – jetchega@rand.org
9) Eric Thomas – UT – Eric.Thomas@uth.tmc.edu
10) Madelene Ottosen – UT – madelene.j.ottosen@uth.tmc.edu
11) Katherine Jones – Nebraska – kjones@unmc.edu
12) Sara Singer - Harvard – ssinger@hsph.harvard.edu
13) Bryan Sexton – Duke – bryan.sexton@duke.edu
14) Patrick Waterson - United Kingdom – P.Waterson@lboro.ac.uk
15) Mary Dixon-Woods – United Kingdom – md11@leicester.ac.uk
16) Ron Hays – UCLA – dr.ronhays@gmail.com
17) Heidi King – DOD – Heidi.King@dha.mil
18) Jana Deen – Mercy Health – JDEEN@mgh.harvard.edu
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Methods.

The conference consisted of five presentations from patient safety, culture, and methodology experts about different issues relevant to patient safety culture. After each presentation, Dr. Jason Etchegaray (PI) facilitated a discussion about key points from the presentation, and this report describes these discussions.

Results.

The proceedings from the conference in terms of presentations and discussion topics are below:

Presentation # 1: Dr. Ron Hays, UCLA

Dr. Hays called in from UCLA and presented "Methods for assessing safety culture: A view from the outside," in which he provided an overview of the tools and methods currently being used to measure safety culture. He provided a critical analysis of the work done to date in measuring safety culture by examining the three most widely used patient safety culture surveys – Patient Safety Climate in Healthcare Organizations (PSCHO), Safety Attitudes Questionnaire (SAQ), and Hospital Survey on Patient Safety Culture (SOPS). He then shared lessons from psychometrics - specifically, item response theory (IRT) - and his work with PROMIS that might help culture researchers better assess safety culture. He noted that coupling IRT with computerized adaptive testing (CAT) would allow for more efficient measurement (by reducing the standard error of measurement and therefore increasing reliability) while reducing response burden. Dr. Hays also mentioned the importance of assessing culture surveys for differential item functioning (DIF). DIF would allow culture researchers to determine whether different groups – physicians and nurses, for example – provide equivalent responses to survey items. The presence of DIF is problematic – it indicates that the item is biased against one of the groups – and therefore needs to be ruled out when researchers are making between group comparisons. Finally, Dr. Hays discussed the value in linking measures across different culture surveys and how this is a potentially fruitful area for future research. After his presentation, the key discussions were focused on the following issues:

Implications for current safety culture surveys

- Fewer items: More efficient safety culture measurement can be achieved by using Computerized Adaptive Testing (CAT); the tradeoff is that less item-level data will be collected because fewer items will be needed to measure the domains. CAT can achieve reliability at .90 with five items per domain.

- Number of culture domains: Do we need a lot of different culture domains or, given the intercorrelation between domains, can we achieve our goals with fewer domains? There is a tradeoff between measuring many domains versus focusing improvement efforts.

- Practical usage of culture data in healthcare settings: Collecting too much culture data can be confusing and debilitating to units, because they don't know what to do with all the data. Furthermore, it is imperative to incorporate safety culture measurement into the "safety/quality workflow."

- Response choices: The "Not Applicable" responses included in current surveys are generic and perhaps should be tailored to the individual items in these surveys.

- Goal of safety culture surveys: It appears that researchers/practitioners want one survey tool to serve multiple functions (science vs. practice tradeoff). For example, we want the survey tool to be used for research (i.e., collect a lot of data) and for improvement opportunities (i.e., simplify meaning of results).

- **Defining safety culture:** The three major surveys – PSCHO, SAQ, and SOPS – seem similar to each other and have been used to define safety culture in healthcare.

- **Linking culture with outcomes:** There is still much work to do in establishing associations among safety culture measurement, patient perceptions of care, and clinical measures. Clinical outcomes might be unit/work-type specific.

- **Time spent completing surveys:** A concern was that many millions of hours of personnel time are spent completing safety culture surveys each year, and this is in addition to the many other demands that healthcare providers have. One possibility to address this concern and still collect a lot of culture data is to have a subset of providers answer all survey questions (from a given survey) while the rest of that population answers a more efficient version of the survey.

- **Differential item functioning:** One psychometric concern is that different populations (nurses, physicians) tested with the same instruments have differential responses based on different interpretations/understandings of the items included in the surveys. Differences may also exist in subgroups in different units based on leader attitudes, which means that results might reflect not a single unit culture but many smaller leader/professional driven cultures. There is also a need to examine whether participants from different geographic locations (UK vs. US) conceptualize culture similarly.

"Review of safety culture dimensions and updates needed"

Dr. Jason Etchegaray presented the different dimensions measured in the three most widely used safety culture surveys – SOPS, SAQ, and PSCHO. He then moderated a discussion about whether new dimensions are needed to measure culture and the extent to which existing dimensions are serving their intended function or need to be revised/removed in future iterations of the surveys. The discussion focused on each of these three surveys and the following key issues:

- **SOPS 2.0:** Dr. Naomi Yount from Westat provided an overview of the main changes that were being considered for SOPS 2.0 based on feedback they have received from users, researchers, vendors, technical expert panels, etc. These changes included:
  - adding a "does not apply" or "don't know" option to the composite item.
  - adding more work areas and job positions to reduce the amount of "Other" responses they are receiving to these two questions.
  - reducing the number of negatively worded items.
  - related to the negatively worded questions is shifting the focus of the nonpunitive response to error over to a just culture perspective.
  - using items that are more easily translatable across different languages, given widespread international interest in the survey internationally.
  - conducting a "bridge" study to be able to understand how to compare old items and new items for some of the domains.

- o using cognitive interviews and pilot testing of items prior to the next release of the survey in 2017.
- Additional comments about how SOPS 2.0 might be changed included:
  - o SOPS 2.0 could be a skeleton that allows units to select additional scales with which they are struggling.
  - o Get HR on board to harmonize multiple surveys to impact hiring the right people and measuring the right constructs to improve care.
    - ▪ Perhaps this can be accomplished through examining constructs like high-performance work systems, which is more like what HR people like?

- PSCHO: Dr. Sara Singer explained the evolution of the PSCHO and the key driver for creating a new version of PSCHO.
  - o Survey length: Originally the survey was 45 items, and they examined R^2 to identify a subset of items that represents the content of the instrument with fewer items. They found that three domains explained the majority of the variance and still represented content. The current version is a shorter subset of original items grouped by organization unit.
  - o Response rate: The response rate has been improved with the shorter survey.

- SAQ: Dr. Bryan Sexton believes that some of the original SAQ dimensions are outdated and that a new version needs to focus on making actionable, diagnostic tools that are predictive of outcomes. Discussions around the SAQ included:
  - o Potentially outdated dimensions: perceptions of management, working conditions, job satisfaction
  - o Retain dimensions of: safety climate (predicts clinical outcomes), teamwork climate (predicts operational outcomes), burnout (predicts clinical and operational outcomes), and stress recognition (renamed as threat awareness to predict everything else)
  - o Improve measurement of: Burnout and healthcare resilience may be more important in predicting safety (compared to perception of safety and nonpunitive culture), but we need to find a better way to measure these dimensions. Also complicating the issue is that burnout often looks like bad teamwork, delays in care, or disruptive behaviors.

- New dimensions needed in safety culture surveys:
  - o Psychological safety
  - o Learning environment (of particular interest to those who do quality improvement work)

- o Preoccupation with failure (do frontline caregivers have the ability to identify and fix/report hazards; if so, how does this relate to event reporting?)
- Survey environment: We need to consider the environment in which people are completing surveys:
    - o What is the leadership like? What are the goals of the person filling out the survey (i.e., punishing the manager or trying to make the manager look good)? We need to consider how safety issues get used in political battles in the hospital. Is stagnation occurring due to lack of leadership attention to safety (healthcare reform has distracted management)?
    - o We need to get "quality culture": integrate regular results into regular quality work so that, before a new project starts, they can assess if people are ready for a new project (burnout).
    - o We need a tool to show how they provide leadership and get engagement and/ or a tool that helps implement interventions.
    - o These tools need to be in regular quality work; safety culture can't be a standalone survey with results given once a year.

- Debriefing sessions (i.e., sharing/discussing culture results with frontline providers): Several needs were mentioned including:
    - o Tools need to be discussed with front line staff easily and in a language that means something to them to encourage action.
    - o Tools need to incorporate Human Resources and risk information into debrief sessions to encourage action.
    - o Future surveys need to be "debrief friendly" (need to be able to communicate effectively, succinctly, and concretely to the frontline staff).
    - o Debriefings need to be done by trained professionals, because they can turn into therapy sessions and need to be able to direct the conversation to systems-based elements as opposed to people focused. Otherwise, staff are likely to be defensive on some issues.
    - o Debriefings must occur and focus on getting results of a survey back to frontline staff, help them with sense making, and give feedback on how to integrate the results into the work of the units so that the results can more easily be incorporated into the culture of the unit.

- Complex adaptive systems: We need to consider that measures do not just function as measures; they also affect the system that is being measured.
    - o What we measure ultimately defines the issue (i.e., if we measure incident reporting but not burnout, burnout will not be the issue).

- Interprofessional education is not addressing the complex environment of healthcare – people are not prepared to use the information on safety culture, because they do not understand complex adaptive systems. One solution is to add safety culture assessment to interprofessional education.
- Many stakeholders are solving problems for their particular local environment without considering impact up/downstream. For example, a nonpunitive culture is a double-edged sword, because it might mean that people get away with inappropriate things.
- Measuring things one by one has the risk of not seeing the big picture (i.e., need to think about how measurement is driving safety behavior). For example, the NHS Safety Thermometer is a person-based measure looking at all forms of harm. Attempts to reduce one (i.e., falls) can raise the prevalence of others (i.e., DVT from being in bed, UTI from catheterization).
- Our view of patient safety is limited by adverse event tracking, because this is too narrow a view. Variables related to patient safety are constantly changing and we need to be able to assess this.
- Our understanding of safety and risk is nested around the questions that we ask – are we asking the right questions to identify low-performing hospitals?
- There is concern about comfort seeking – people don't want to be at the bottom and reassure themselves that they are in the middle/not as bad as the low performers. If the top is doing this, then it impairs movement forward.
- Leadership has a big impact on culture – if hospital leadership isn't talking about safety, then nothing is going to change. Both hospital and unit leadership and the relationship with the front line can affect culture. Unit leadership may be able to compensate for poor hospital leadership, but the reverse is not true.
- Where is the leadership dimension looking – hospital, unit, or middle? Is there a way to separate the influences of different levels of leadership, because leadership varies a great deal within and organization?
  - This area may not be formally evaluated well, and there may be a loss of learning here.

- <u>How patients fit in to patient safety culture measurement:</u> Are we losing the face/story of the patient with focus on safety culture/systems? Evidence from the front line (anecdotal) suggests that front lines are still relating safety to patients.

"Putting safety culture into the quality/safety framework: Where does it fit?"

Dr. Mary Dixon-Woods discussed current research trends in the area of quality and patient safety that are related to safety culture. She also presented her thoughts about how culture

fits into the quality/safety framework. Key discussion points after her presentation focused on:

- <u>Is culture an outcome or an intervention?</u> We can measure either culture as an outcome or culture as an intervention for change in outcomes. Both culture and the intervention are interrelated, and it is difficult to separate them.

- <u>Additional discussions about SOPS 2.0 included:</u>
  - What is the ultimate goal of SOPS 2.0?
    - Currently surveys are used as a research tool and a way to assess improvement in the culture. Should SOPS 2.0 seek to accomplish both goals or focus on only one?
  - What new measures are suggested for SOPS 2.0?
    - The goal is to make subtle changes to the survey so that we do not lose the current definition of safety culture.
    - SOPS 2.0 should gather information about a core set of items that measure safety culture based on old/existing dimensions and then add in new dimensions like burnout that reflect new areas of interest.
  - SOPS 2.0 needs to include a debriefing toolkit or video training about how to discuss and implement results.
  - SOPS 2.0 needs to include material to explain the importance of safety to other key stakeholders (HR, risk managers) so that safety and employee engagement surveys can be merged.
    - They could potentially use psychologists to help develop tools to teach HR. We need to examine CEO education in safety intelligence from aviation and adapt it to healthcare. Risk management is damage control, and it tends to be very reactive. Perhaps we can use safety intelligence to shift perception from reactionary to preventive.
    - Risk management/hospital management may not be well versed in safety tools right now and could benefit from education.
  - SOPS 2.0 needs to be a multifaceted solution, not a tool.
    - That is, it needs to be a process that defines standards for how to communicate measurements, what is measured, how to explain what is measured, and the response after debriefing.
    - SOPS 2.0 materials need to be aimed at people with different levels of resources/previous education (i.e., tailored to different levels of complexity) and include how to choose appropriate measures, how to create profiles, how to analyze data, how to get it back to the community, and how to follow up on it with the goal being to avoid just getting a number with no follow-up.
  - Alternative ways of understanding culture:

- o Are there ways other than surveys we can get information about culture? For example, can we create a "profile" of information about safety culture and how it interrelates to other measures?
  - o Qualitative methods can yield more than just the surveys in terms of feedback and can be an intervention in itself.

- Toolbox concerns: We do not understand how all the elements that have been developed for different areas and different goals integrate. If we do not have a clear end/goal to the toolbox, the toolbox can be difficult to use.
  - o One solution for a toolbox is to make culture the core/foundation and develop materials that focus on specific systems to address. One can create an inventory of safe practices grouped by reporting practices, culture practices, teamwork practices, learning practices, etc., and identify target areas in which you can improve/learn from improvements. One can then pick and choose a tool to address one problem at a time with the goal of giving people a starting place because much of this material is overwhelming.

"An international perspective on safety culture"

Dr. Patrick Waterson shared his experiences working on safety culture change in the UK. He discussed lessons learned and best practices from the UK and whether they are transferrable to US institutions.

- Perspectives form other industries
  - o Human factors in safety culture in the nuclear power industry is likely relevant (Barry Kirwan's work).
  - o There may be a danger in over translating from non-healthcare industries (i.e., UK using crew resource management and limiting scope of what people are trained in to just teamwork).
  - o Aviation does not use the same model for after incidents. Aviation has highly trained, specialized investigation teams for each incident. Healthcare uses amateurs and people with personal agendas, so not all the tools translate from aviation to healthcare.
  - o Aviation might also not translate well to healthcare, because aviation takes a centralized approach, whereas healthcare takes a decentralized approach that is focused on creating a number of different local solutions.

- Data considerations
  - o Creating a dashboard of indicators for CEOs (organizational culture is a part) that includes soft and hard data could be helpful.

- Approach to problems in healthcare

- Healthcare seems to have adopted a catastrophe model in which the focus is on big problems that cause a reaction. An alternative approach is to look at both catastrophes and the safety events that occur in normal function (food, infection, UTIs, etc.) to better understand the system. There are many things we may not even consider as problems, because they are part of what we think of as natural.
- It is easier to look backward at catastrophes than to look forward and measure markers of doing well/potential harm.
  - Currently, we do not have a marker for when things are going well.
  - Hospitals tend to look more at sentinel events and react (have to wait for an event to learn) as opposed to planning in advance. For example, an RCA after a fall discovered that policies often developed with the "spray and pray method" (put a policy out and hope that it works); this approach is an organizational problem that was found through the RCA and can now be tackled proactively.
  - We need to stop waiting for a failure and getting resilient people to be proactive and look for potential failures before they occur.

- <u>Should safety scores be publicly reported?</u>
  - Concerns about publicly reporting include:
    - Current instruments are not robust enough to truly measure safety culture; if contracts are rewarded/taken away based on safety culture scores, that is likely inappropriate.
    - Culture scores may be easy to game, especially if executive bonuses are tied to culture scores.
    - Public reporting might undermine the purpose of measuring safety in the first place (effect from measuring).
    - Many of the dimensions are problematic, and there is too much potential for fiddling to make decisions based on culture scores.
    - There is a need to consider/debate cooperative use versus public reporting.
    - One concern is that we don't have enough interventions – we would be rating and publishing information that we don't know how to make better yet (public reporting is too early).
  - Reasons/solutions for publicly reporting include:
    - Safety culture measurement could be added to the performance measure that CMS uses for payment, which will encourage hospitals to collect and share this data.
    - Some comparative data is currently publicly available but not identified and this could continue in the future.

- Some hospitals are not releasing data even to the staff much less to the public, so this could enforce data dissemination.
- Pressure to report data publicly could improve the feedback given to hospitals to help their quality efforts.
  - *Consensus was that we want hospitals to be using and sharing this data, but it is not a solid enough tool yet to be immune to manipulation and tie money/contracts to, and we don't have enough interventions that are proven to affect culture.*

- Other factors that need to be accounted for/measured in future surveys:
  - Culture maturity (how mature an organization's culture is).
  - Mindfulness (after interventions, scores shift down because of increase in mindfulness but mindfulness is not currently measured).
  - Preoccupation with failure.
  - Proactivity. This is oftentimes a barrier because people see reporting as writing someone up as opposed to identifying safety issues. Perhaps this needs to be phrased as risks and harms to patients versus errors, because people personalize errors and shut down. How do we get clinical unsafe versus error unsafe?
  - Provision of safe care items (i.e., I've preformed/witnessed/never witnessed someone doing something unsafe) to get a measure of how willing people were to talk about unsafe act. Coupling these items with some understanding of the organization has been helpful previously.
  - Very little recognition of the culture when you are in it. It is hard to rate something without a comparison and it is difficult to capture this well by self-reporting.

- Safety intelligence systems
  - Safety intelligence systems via early detection/correction can reduce cost by 10%. Economic margin may determine whether a safety intelligence system gets put in place.
  - Healthcare needs to examine alternatives to an event-based system, which other industries have adopted. However, it is difficult to convince healthcare stakeholders to spend money until an event occurs.
  - Many patient deaths are caused by basic care, but they are not often recognized because a direct event did not result from the basic issue (leadership doesn't connect basic care with the events and is not focusing on the basics). This tends to occur because:
    - Confirmation bias - leadership already decided what the safety issue is.
    - We do not know what signs we are missing that are elements of basic care.

- We also need to look at the personal factors of the healthcare leaders and what contributes to handling/failing to handle incidents.
- Managers need interpersonal skills to have a good appreciation of safety and get in implemented.
- What are the detection methods of events?
    - Spontaneous, event reporting, where else are we getting reports from and are we capturing what needs to be captured?
    - Are we sensitive enough to the detection of harm?

"What's next? Where do we go from here?"

Dr. Joann Sorra discussed how the field of safety culture has evolved in the past 10+ years. She initiated discussion about where the next generation of research in this area needs to focus, namely the importance of evidence-based findings linking safety culture with outcomes and identifying initiatives that can improve safety culture.

- <u>Summary points for SOPS 2.0</u>
    - We need a tool that is flexible and smaller.
        - Having a core group of subscales/domains that can be added on to target either what the front line uses will help tease out nuances for researchers.
        - Focus will be on fewer domains and more items in each domain.
    - We need a tool that is integrated with the quality improvement systems in the organization so that the results can be communicated to the front line in an understandable and actionable way.
        - Proposed mechanisms include training HR for debriefings, including HR interests into scales to coordinate hiring and focusing staff, need to assess culture as a continuous tool before starting improvement projects, and incorporate results into approach to projects
    - A toolkit/video on how to debrief would be useful for healthcare stakeholders.
    - The development of a safety intelligence educational tool to accompany 2.0 might reduce comfort seeking or impractical goal setting.
    - The development of a tool for leadership – dashboard or training – might help leaders better understand how to manage culture.

List of Publications and Products (Bibliography of Outputs from the study. Follow the AHRQ Citation Style Format at http://www.ahrq.gov/funding/grant-mgmt/refstyle.html

A detailed summary of the conference proceedings was disseminated to conference attendees.