

Comparative Effectiveness Research Review Disposition of Comments Report

Research Review Title: *Closing the Quality Gap Series Part 6: Prevention of Healthcare-Associated Infections*

Draft review available for public comment from February 7, 2012 to March 7, 2012.

Research Review Citation: Mauger Rothenberg B, Marbella A, Pines E, Chopra R, Black ER, Aronson N. Prevention of Healthcare-Associated Infections. Closing the Quality Gap: Revisiting the State of the Science. Evidence Report/Technology Assessment No. 208. (Prepared by the Blue Cross and Blue Shield Association Technology Evaluation Center Evidence-based Practice Center under Contract No. 290-2007-10058-I.) AHRQ Publication No. 12(13)-E012-EF. Rockville, MD: Agency for Healthcare Research and Quality. November 2012. www.effectivehealthcare.ahrq.gov/reports/final.cfm.

Comments to Research Review

The Effective Health Care (EHC) Program encourages the public to participate in the development of its research projects. Each comparative effectiveness research review is posted to the EHC Program Web site in draft form for public comment for a 4-week period. Comments can be submitted via the EHC Program Web site, mail or email. At the conclusion of the public comment period, authors use the commentators' submissions and comments to revise the draft comparative effectiveness research review.

Comments on draft reviews and the authors' responses to the comments are posted for public viewing on the EHC Program Web site approximately 3 months after the final research review is published. Comments are not edited for spelling, grammar, or other content errors. Each comment is listed with the name and affiliation of the commentator, if this information is provided. Commentators are not required to provide their names or affiliations in order to submit suggestions or comments.

The tables below include the responses by the authors of the review to each comment that was submitted for this draft review. The responses to comments in this disposition report are those of the authors, who are responsible for its contents, and do not necessarily represent the views of the Agency for Healthcare Research and Quality.

#	Commentator & Affiliation	Section	Comment	Response
1	Peer Reviewer #1	General Comments	The evidence summary is well written and addresses clinically relevant questions about the role and clinical (but not financial) impact of quality improvement approaches on reducing selected high-risk and high-frequency of HAIs in acute-care hospitals.	No response is needed.
2	Peer Reviewer #1	General Comments	The methods, including search strategies, inclusion/exclusion criteria, are clearly defined and analysis plan appropriate for summarizing qualitative research.	No response is needed.
3	Peer Reviewer #1	General Comments	The authors are to be commended for the thoughtful approach to organizing and analyzing the quality improvement strategies.	No response is needed.
4	Peer Reviewer #1	General Comments	The biggest deficiency of the evidence summary is the underlying variable quality and heterogeneity of the primary research available to inform the key questions.	This point is noted in the discussion section and elsewhere.
5	Peer Reviewer #1	General Comments	I think that the report could be improved by addressing the following: 1. Who are the key audiences for this evidence summary and how can health organizations involved in quality improvement research and implementation best utilize the findings?	The following sentence was added to the Objectives section in the Introduction: "The purpose of this review is to inform and assist health care decisionmakers, patients, clinicians, health systems leaders, and policy makers."
6	Peer Reviewer #1	General Comments	2. How do the findings compare to the 2007 evidence summary in terms of study quality, strength of evidence and breadth of data across and within the specific HAIs under review?	The following section has been added to the executive summary discussion: Findings in Relationship to 2007 Evidence Report Authors of the 2007 report concluded that the evidence for QI strategies to improve preventive interventions for HAI was generally of suboptimal quality and therefore they were unable to reach firm conclusions. Evidence on the results of QI strategies to reduce HAI has shown improvement since the 2007 report. There was improved methodological quality in the included studies of the current report compared with the previous report. We found moderate strength of evidence to support several combinations of strategies across all four infections, and within specific infections.
7	Peer Reviewer #1	General Comments	3. Set more explicit research needs and priorities and identify potential resource needs to address the knowledge gaps identified by the evidence summary.	A future research needs report could address priorities in more detail, but is beyond the scope of the present evidence report.

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8	Peer Reviewer #2	General Comments	This is a thorough report that provides an accurate picture of the current state of the evidence that certain specified interventions reduce adherence to recommended practices and infection rates. The true quality of this report requires reading the entire document, not just the Executive Summary, which provides only a dry and potentially misleading characterization of the state of the art and the relevant findings. In particular, the decision to use organizational change and education as the base case and to focus on the incremental value (if any) of audit and feedback and reminders will seem curious to those involved in improvement science and implementation science. One must read the entire report to understand that the authors actually have a nuanced view of organizational change and quality improvement, which is where a lot of the current focus on implementation and dissemination rests. Indeed, audit and feedback of data is integral to any rigorous quality improvement effort that relies on the science of improvement. Virtually every serious article on the subject emphasizes the role of real time data to guide testing and adaptation. I think that the authors should confront this virtual paradox up front. They apparently have used an economic model to specify the "base case," but I think this will be very difficult for the scientific improvement community to understand.	The results overview has been revised to bring more clarity to the decision to use base strategies and combinations of QI strategies. Furthermore, education and organizational change is by far the most widely used, and there was more variation in the use of audit and feedback. As is now stated in the Methods section, "While this hypothesis is open to debate, the use of these strategies [i.e., provider education and organizational change] was ubiquitous, so in practical terms, little distinction could be made between those studies that used these two strategies and those that did not."
9	Peer Reviewer #2	General Comments	The authors may want to consider the fact that in spite of a paucity of high quality studies (apparently, virtually none), there is good evidence that the rate of CLABSI is falling. The evidence is less dramatic for the other infections studies, but how do we explain this? What are folks in hospitals around the world doing to reduce infection rates since there is so little evidence about what works and why? Perhaps the authors can discuss this "working backwards" from the data and see where it leads them.	The fact that all combinations of QI strategies for CLABSI yielded a moderate strength of evidence is consistent with what is seen in practice. With other types of infections, the preventive interventions needed appear to be well established, but the QI strategies that are needed to increase their implementation are not as well supported. However, as is stated in the report, absence of evidence does not imply evidence of lack of efficacy. "The strength of evidence conclusions rely on both the underlying effect of different QI combinations on outcomes and on the availability of studies to assess the relationship. A low strength of evidence, therefore, means that the evidence reflects the direction of the effect (e.g., the QI strategy improves adherence or infection rates) but that the magnitude of the effect is uncertain."

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10	Peer Reviewer #2	General Comments	In the previous AHRQ report, if memory serves, about the only measures that had "evidence" were technological - impregnated catheters, etc. Such studies apparently are not considered seriously in this report. This needs to be justified. It is not just a detail - for example, the famous Michigan CLABSI study did not report on the use of impregnated catheters, which may have been an important determinant. I am not sure why measures such as decolonization or use of specific antiseptics were given such short shrift, especially for SSI. One might say the same for mupirocin and nasal decolonization to prevent SSI, alcohol containing surgical prep, chlorhexidine washcloths....	The focus of this report was on how to change provider behavior rather than on the preventive interventions themselves. Furthermore, both report on evidence-based preventive interventions identified by CDC, SHEA, or IDSA. The specific preventive interventions varied from study to study and technological changes were considered as a possible confounder in evaluating the impact of QI strategies on adherence to preventive interventions and infection rates.
11	Peer Reviewer #2	General Comments	The authors may want to explain why they have not considered observational studies, especially those that use propensity scoring and other methods to approximate clinical trial group balancing, as well as those that include time dependent variables. This merits discussion.	Observational studies were included if they met the inclusion criteria described in the methods section. Studies were not excluded due to propensity scoring per se, but because they did not meet other inclusion criteria.
12	Peer Reviewer #2	General Comments	Perhaps the authors can clarify whether or not they sought to extract bacteremia data from MRSA studies. For example, the English campaign to reduce MRSA saw a 70+ percent decline in hospital MRSA rates nationwide, most of which probably are due to catheters. Do MRSA studies permit an assessment of factors influencing the rate of CLABSI (e.g., the VA Jain MRSA study from 2011)?	We only abstracted data on overall CLABSI and did not look at specific organisms. The Jain study is reviewed in our forthcoming CER of MRSA screening.
13	Peer Reviewer #2	General Comments	On the positive side, the authors have given a very nice review of the various study designs that could be used to develop evidence, and they provide a table that will be useful to many people. I also appreciated their discussion of context, though this could have been richer and might have mentioned the SQUIRE guidelines and the various mixed methods evaluation methods that are of great value for this kind of work. I should note that the authors have chosen to use one framework for key contextual attributes, but they may want to note that others exist and that this is a fertile area for exploration. For example, take a look at Mary Dixon-Woods' "Explaining Michigan" in Millbank.	The SQUIRE guidelines are now mentioned in the introduction section. While potentially useful, they do not focus in any detail on setting and context which was a secondary goal of this report. Furthermore, a decision was made a priori to use this report to evaluate the practical utility of the RAND framework. Unfortunately, the scarcity of data reporting on context precluded us from drawing any conclusions.
14	Peer Reviewer #2	General Comments	The authors seem to disregard statistical process control as a viable method for evaluating effect and developing evidence. Since SPC is the basic tool of improvement scientists, this merits discussion, even though it apparently was not used very often in the studies reviewed.	There were five included studies that used SPC. Although SPC is widely used in evaluating the impact of QI efforts in real time, SPC generally does not account for confounding or autocorrelation. All of the studies that used SPC had other quality limitations that resulted in a lower quality rating independent of the use of SPC.

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15	Peer Reviewer #2	General Comments	The descriptions of the individual studies are extremely valuable, and I would argue that reading these is far more useful than all of the summary tables which are not nuanced enough to describe the pros, cons, and limitations of the studies included in the tables.	In view of this comment and similar comments, both narrative summaries and tables will be kept in the body of the report as various readers might find one or the other more useful.
16	Peer Reviewer #2	General Comments	I find the discussion of cluster randomized trials to be a bit limited. It is critical to consider ADAPTIVE CRCTs since this allows intervention sites to work to improve compliance with key components of the intervention if this is found to be unsatisfactory during the trial. Moreover, the use of run in periods to solidify adherence with the intervention would be helpful in most circumstances.	The cluster randomized trials included in this report did use run in periods and could be considered adaptive CRCTs. These details are noted in the description of each study.
17	Peer Reviewer #3	General Comments	Very nicely written and detailed analysis of the topic providing a very thorough resource regarding QI strategies to reduce HAIs. Very clear definition of target population and audience as well as key questions. I found the key questions to also be very appropriate.	No response is needed.
18	Peer Reviewer #4	General Comments	This assessment of the quality of implementation research on HAI prevention strategies is very detailed, systematic, comprehensive, and well-written. Since it is an update of a previous review on the same topic done in 2007, it uses a similar roadmap. However, the techniques, inclusion and exclusion criteria, evaluation criteria, and key questions have been updated since the last report. If anything, the methods used are more rigorous than in 2007. The questions are pertinent.	No response is needed.
19	Peer Reviewer #4	General Comments	There appears to be good news and bad news in the report. The good news is that there has been some progress in both the quantity and quality of HAI prevention implementation research. More papers were found that met inclusion criteria and could be evaluated than in the previous review.	No response is needed.
20	Peer Reviewer #4	General Comments	The bad news is that only marginally stronger conclusions are able to be reached. The take home messages seem to be (1) the quality of the research is so poor that a quantitative analysis is not possible (2) most of the studies have major methodological flaws and are not well done and (3) often the researchers neglected to include information that would have allowed the study to be adequately evaluated. The authors do try to balance these negative impressions by at least acknowledging that conducting research on implementation of HAI prevention is very challenging, due to the setting, the	The text was reviewed for negative tone and several sentences were added including the following: "Furthermore, the finding of moderate strength of evidence given a heterogeneous, incomplete literature is noteworthy and suggests that these implementation strategies can be effective in reducing HAIs, which is the ultimate objective of the QI efforts."

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			<p>multiplicity of interventions, the difficulty of controlling for important confounders, and the inability to disentangle multiple interventions. Regarding the findings, I would summarize them as follows: In 2007, the quality of the research around HAI prevention implementation was really terrible. Now 5 years later we can remove the term "really" and simply describe it as terrible. Some may view that as progress. Most will not. It is very unsatisfying that it takes >500 pages to reach such a conclusion. That calls into question how useful the report will actually be, especially to the user community. Maybe this is the result of the fact that while the analysis that forms the bulk of the report uses the state-of-the-art approach, it applies it to a topic it isn't well suited for. This seems often to be the case, as many similar reviews also reach the conclusion that sufficient research hasn't been done or the available studies are of bad quality. One can question whether the findings were almost a foregone conclusion. We may simply be setting the bar too high. If it was easy to do this type of research, it is likely it would already have been done. It can be questioned how useful it is to remind researchers that they should have included more information or details in their publications. However, such a comment flies in the face of today's publication environment, where authors are almost always asked to shorten their articles and leave out many details. One positive aspect of the report is that it does highlight and provide a roadmap to those who want to take up the challenge and do the research suggested in this report. The comments about the lack of studies in non-hospital settings is also an important point, and may spur this type of research. This is helpful to point out. But it also is discouraging when the overall conclusion seems to be that a large and growing body of research (6,000 reviewed abstracts) is inferior. Even though it is clear that most of the identified abstracts were not relevant to the topic, even among those that met inclusion criteria, more than half ended up discarded because they failed to adequately address confounding or have a sufficient follow-up period. This level of stringency will appear to many who read the report as the perfect being the enemy of the good.</p>	

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27	Peer Reviewer #4	General Comments	Will this review help the infection prevention community that has to do something to address HAIs? Or will the community simply shrug it off by saying they have to do something and what they are doing appears to be working.	The report provides moderate evidence on the effectiveness of QI combinations that include provider education, organizational change, audit and feedback, with or without provider reminder systems. This finding should have practical implications.
28	Peer Reviewer #4	General Comments	In today's challenging fiscal times, it is doubtful the types of studies that the report says need to be done can be funded or practically implemented.	Our recommendations are modest. We did try to focus on practical and feasible approaches. Our recommendations steer away from the use of the logistically and financially burdensome cluster RCT to a study design, interrupted time series, which were used often in the current report, but used suboptimally.
29	Peer Reviewer #4	General Comments	Therefore I hope there is some way of making the tone of the report a little more positive and encouraging than it comes across to me. Otherwise it has the potential to simply discourage the community from doing the type of research the report indicates needs to be done.	The text was reviewed for negative tone and several sentences were added including the following: "Furthermore, the finding of moderate strength of evidence given a heterogeneous, incomplete literature is noteworthy and suggests that these implementation strategies can be effective in reducing HAIs, which is the ultimate objective of the QI efforts."
30	Peer Reviewer #4	General Comments	One additional comment is that the report is very repetitive. I realize this largely results from the way the report is structured and the need to present so much information in such detail. But the same points seem to show up over-and-over. Given the length of the report, few readers will easily get to the end. More isn't necessarily better.	We have tried to reduce the repetitiveness.
31	TEP #1	General Comments	Report is clinically meaningful for evaluating Evidence-based practices for prevention of HAIs in the acute care setting. Key questions are explicitly stated	No response is needed.
32	TEP #2	General Comments	This report is clinically relevant and practically applicable to the science of Infection Prevention. In particular, the weighted 'strength of evidence' is useful for those who are charged with the execution of practices designed to achieve and sustain infection prevention improvement processes	No response is needed.

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33	Peer Reviewer #8	General Comments	In general this report attempts to qualitatively review the available literature regarding quality improvement efforts aimed towards reduction of four highly clinically relevant HAI (CLABSI, HAP, SSI, CAUTI). The efforts reviewed are largely system based and include the broad categories of audit, feedback, provider reminder systems, and outcomes. The target audience as stated in the document includes health care decisionmakers—patients and clinicians, health system leaders, and policymakers. The intent is to assist in making well-informed decisions and thereby improve the quality of health care services. This is a broad target audience.	No response is needed.
34	Peer Reviewer #8	General Comments	Key questions are appropriate and explicitly stated. The report is most helpful from a clinical standpoint as it identifies all relevant literature on the topic. It builds on the previous report from 2007. It is as robust as it could be given the limitations of the data. It is apparent from the report that there is clearly an increased body of work being conducted in this arena.	No response is needed.
35	Peer Reviewer #9	General Comments	The report is clinically meaningful, as it focuses on efforts around reduction of HAIs, which affect >1 million people in the US annually with associated morbidity and costs. Additionally, attention to and funding for efforts around HAI reduction have increased since the last AHRQ report. It is not known the effects of those efforts.	No response is needed.
36	Peer Reviewer #9	General Comments	The key questions are appropriate, but as discovered by the authors, data is limited on some components such as setting and financial incentives. Specifics of what constitutes clinician or patient education are not specified, other than the QI strategies from the 2007 report.	Some information on specific strategies is provided in the study summaries in the results section. In addition, this issue is brought up in the discussion as a limitation of the categorization of QI strategies. It is also a point that we bring up as a future research need.

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37	Peer Reviewer #1	Executive Summary	ES -1. Should briefly address the issue of attributable mortality of the selected HAIs and estimated proportion of HAIs preventable by optimal adherence to evidence based guidelines (see Umscheid CA Infect Control Hosp Epidemiol 2011;32(2):101-114).	The Umscheid article estimates the proportion of HAIs that are preventable, as well as the number of cases and costs. It bases the estimates of preventable cases on the 2007 AHRQ report (Ranji et al. 2007) and the articles cited therein. The current systematic review updates that 2007 report. Given the heterogeneity of the studies on many dimensions and the limitations in some of the study designs (e.g., before-after studies), we chose not to calculate attributable mortality and proportion of preventable HAIs. In simple before-after studies, for example, calculating “risk reductions from the reported infection rates before and after the study intervention” may be misleading.
38	Peer Reviewer #1	Executive Summary	Figure ES1 is very useful to understand the analytical framework and interrelatedness of the key questions. Might be useful to include an example of an interaction between implementation of a QI strategy and contextual factors, as the notion of contextual factors is new to many readers.	The following sentence was added to the Analytic Framework description: “For example, institutions with an existing patient safety infrastructure may have fewer barriers to implementing QI strategies than institutions that do not.”
39	Peer Reviewer #1	Executive Summary	ES-4. Provide a brief description of the search strategy used to identify relevant QI studies in the nursing home population.	A line was added directing reader to the appendix.
40	Peer Reviewer #1	Executive Summary	ES-6. Footnote in figure ES (3) and text (4) differ on the number of studies reporting more than one type of HAI.	This has been corrected.
41	Peer Reviewer #1	Executive Summary	Table ES1. Might be useful to summarize the median duration and range for the duration of the QI interventions and especially post-intervention assessment, as the limited duration of post-intervention assessment is specifically highlighted in the discussion as a knowledge gap.	We have added this to table ES1 and 4 in the report.
42	Peer Reviewer #1	Executive Summary	ES-8. Would state that the base case QI strategy is termed “combination #4” in the text and relevant table ES2.	We have changed the naming scheme for the combinations used.
43	Peer Reviewer #1	Executive Summary	Table ES2. Consider reorganizing the columns so that the columns for the base case strategies of organizational change and provider education are left most among the QI strategies. The column header abbreviations for each QI strategies are more descriptive and intuitively meaningful than the “combination 1, 2, 3, 4” designations but are rarely used throughout the remaining text and tables. Suggest incorporating them into the relevant table row names and text, where appropriate	We have changed the naming scheme for the combinations used.

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44	Peer Reviewer #1	Executive Summary	ES-14. Missing summary for low strength of evidence for shaving and antibiotic timing in text for SSI QI strategies.	This has been changed.
45	Peer Reviewer #1	Executive Summary	ES-15. Antibiotic timing adherence is an outcome with low quality rather than insufficient evidence as an SSI QI strategies.	This has been changed.
46	Peer Reviewer #1	Executive Summary	ES-15. Typo in the text. CAUTI not VAP is the HAI target of interest in Table ES6.	This has been changed.
47	Peer Reviewer #1	Executive Summary	ES-16 and Table ES7. The text identifies 25 studies (24 + 2 – 1) analyzed for key question 1c. The table includes 23 studies, presumably recombining the 2 studies that analyzed adherence and infection rates for two infections each. Text should clarify how the studies were summarized.	References were crosschecked and the discrepancy was fixed.
48	Peer Reviewer #1	Executive Summary	ES-18. Might be useful to summarize the 39 studies included in the effect of contextual change key question (KQ2) in a table, including which of the eight specific contextual factors the studies addressed, similar to the example of Table ES2.	A table has been added to the context section of the executive summary outlining the frequency of each contextual factor.
49	Peer Reviewer #1	Executive Summary	E-21. Provider reminders and or base strategies were associated with moderate strength of evidence for reducing CLABSI infection rates and CAUTI duration of catheterization whereas these strategies were associated with low quality of insufficient strength of evidence in aggregate across HAI analysis. The authors should discuss whether these differences were due to higher study quality and/or to improved outcomes with these more limited QI strategies applied to CLABSI or CAUTI prevention. These findings suggest that QI strategies (and resources) potentially may be differentially applied across the different HAI prevention efforts.	Even though this combination of strategies was found to have moderate strength of evidence when used to improve CAUTI rates, there was limited data for this combination within the other three infections therefore this conclusion was not generalizable across all infections. This point has been inserted in the report.
50	Peer Reviewer #3	Executive Summary	Very nice summary table (ES1)	No response is needed.

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51	Peer Reviewer #3	Executive Summary	One of the key issues with the VAP bundle adherence literature (and likely most literature on process measure adherence and outcome impact) is the variability in when adherence is audited -- for some measures (re: head of bed elevation) if the audit is a spot audit at a specific frequency each day (e.g. once Q shift during rounds), this may errantly note the actual adherence (i.e. if compliant at the spot audit but then the head of bed is reclined 5 minutes later and maintained at this level, the audit reveals "compliance" yet the actual practice was not compliant). I think adding some summary of method of ascertainment of adherence is helpful when looking across studies.	We agree with the importance of this issue and have added the following section to the Weaknesses in the Evidence section of the Discussion: "The studies included in the current report had to implement QI strategies that addressed evidence-based preventive interventions. While there is a very clear list of these preventive interventions, the way in which adherence is measured varied greatly from study to study. The inconsistency does reduce the comparability of process measures across studies. Another potential confounder is that studies varied in how preventive interventions were implemented, for example in the frequency of oral care for ventilated patients or the use of antibiotic-impregnated catheters. Adopting more standardized approaches to measuring adherence would strengthen the body of evidence."
52	Peer Reviewer #3	Executive Summary	How do practices that hardwire practices (e.g. the use of a central line cart where all supplies are kept, making it hard to do the wrong thing) categorized? Are they a "provider reminder system?"	The carts themselves were considered organizational change. This does support our discussion point that the categories mask a great deal of variability.
53	TEP #1	Executive Summary	At times (example ES-18 line 53) a volume of studies is cited and footnote the studies referenced - do not add up to the volume cited? (Example- ES-16 line 33 references twenty four studies - including reference 15 - but additional verbiage describing this section- including Table ES7 - reference 15 is not discussed/found.	This has been changed.
54	TEP #1	Executive Summary	ES-19 (line 26) - "most comparisons were to usual care" - this is also in the main document - it would be of benefit to the audience to describe what is meant by this phrase.	The following phrase was added to the discussion section: " Most comparisons were to usual care; ten studies were compared to a period of a low intensity QI intervention." These 10 articles are cited in this sentence. Usual care is also defined in the results overview section on pages ES-9 and 27.
55	TEP #1	Executive Summary	ES-22 line 12 - " as discussed in the results section" - results section not found in the ES.	Pages ES-8 and ES-9 discuss the reasoning for the use of combinations of QI strategies in this report.
56	Public Reviewer #1 (Joan Blanchard)	Executive Summary	Executive Summary clean and well stated.	No response is needed.

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57	Public Reviewer #4 (Jeff Maitland)	Executive Summary	On behalf of the American College of Chest Physicians (ACCP) the ACCP Quality Improvement Committee (QIC) appreciates the opportunity to comment on this report. The QIC felt that this report was very thorough and well written. The QIC noted that there was no information in this report regarding the ambulatory setting; the QIC suggests that this may be a potential area for future research.	This is listed in the Evidence Gaps section.
58	Peer Reviewer #2	Introduction	Since the results stress how hard it is to find any evidence about the cost effects of implementation of practices to prevent infection, are the cost estimates given in this section reliable? If so, can they not be extrapolated or imputed to the studies in the review? In fact, I do think this is risky, but then the authors might want to talk about the difference between extrapolated light green dollars and real hard green dollars.	The information given in the introduction is national estimates of the cost of these infections to the country as a whole. The results section refers to the cost and savings from the specific QI projects reported in each study.
59	Peer Reviewer #3	Introduction	Nice summary of the issues especially in terms of QI strategy analysis and HAI prevention (i.e. issue with "effectiveness," other confounders that impact HAIs, etc).	No response is needed.
60	Peer Reviewer #3	Introduction	Of note, the 80% figure must be noted in the context of all tracked HAIs. There are likely other HAIs that are not detected and/or reported.	This has been changed to: "responsible for over 80 percent of all reported HAIs."
61	Peer Reviewer #3	Introduction	Also worth noting the new requirements to report CLABSI in ICUs, CAUTI in ICUs, colon SSI, and abdominal HYST SSI as part of CMS IPPS -- resulting in a de facto national reporting of these outcomes.	The following companion report addresses public reporting: <i>Public Reporting as a Quality Improvement Strategy: A Systematic Review of the Multiple Pathways Public Reporting May Influence Quality of Health Care.</i>
62	Peer Reviewer #4	Introduction	The introduction is written very well, and frames the discussion and the content very well. There are no specific recommendations about how this section should be changed.	No response is needed.
63	TEP #1	Introduction	Very nice background to the relevance of the report and update to the 2006 AHRQ release.	No response is needed.
64	TEP #2	Introduction	Very practical; sets the stage for the 'why'.	No response is needed.
65	Public Reviewer #1 (Joan Blanchard)	Introduction	Introduction gives important information needed for this extensive study. How exactly are HHS, APIC, SHEA, IDSA, ASTHC, CSTE, PIDS and CDC working together besides consensus especially in the health care setting where prevention and control needs to occur? Need to include physician office based surgery.	These issues are beyond the scope of this project. Efforts were made to identify relevant studies in many nonhospital settings.
66	Public Reviewer #3 (Ron Romero)	Introduction	I know that there are several different types of errors in Healthcare-associated infections, diagnostic, treatment, and preventative. My concern is of those associated with the equipment and other systems dealing with the facilities and the	This is outside the scope of this project.

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			<p>maintenance of the same. I was an Electronics Technician in the facility here in St. George, Utah (Intermountain Health Care). I would like to share some attachments that involve the two facilities here, one built in the 70's and the other opened November of 2003. The conditions and the maintenance of the facilities are appalling, not only for the patients but also for everyone involved. There are always lawsuits against physicians for various medical issues. But how about the facilities, the buildings and equipment that runs those facilities. They too should be included in these lawsuits. Intermountain Healthcare is a very visual company the grounds, buildings, the associated decorations, all top notch. When I started my employment I was concerned knowing that the Grounds budget was larger then the Maintenance Department. I was assigned some of these Air Handlers and there were no filters to replace them with. I was terminated in November of 2008 trying to fight these issues. I understand in reducing healthcare associated infections the health care system must ensure that its stakeholders have clear responsibilities for which they are accountable. These infections cause serious, difficult to treat infections that are often related to substantial morbidity, mortality, and excess cost. The Institute for Healthcare Improvement believes that everyone deserves safe and effective health care. The cornerstone of the medical profession is to "do no harm". The older facility has 6 main air handlers; the conditions can only be realized by viewing the photo's I have. The mold started in the new facility after a major leak in the crawlspace which I discovered. Remediations have been done in the crawlspace, ER lounge on the first floor, the Kitchen on the lower level, and the OR showers on the second floor. Many tests showing massive levels, this in the occupied areas of the facility. Perhaps there should be some kind of task force for the maintenance of these facilities. The Health Department stated they had no jurisdiction over a privately owned facility; JCAHO has kept ignoring and still accrediting. Finally I went through the State Fire Marshall and Fire Department to get the Electrical issues fixed. Perhaps you know some Hospital facility managers to view and address these issues. The C-Section, air handler the final filters or Hepa filters were not installed. This is a surgery area air handler. In the flood at the new facility the remediator was cited by OSHA for improper PPE, this tells what</p>	

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			kind of remediation Intermountain Health Care allowed. That's why the spread into the occupied areas of the facility. I have lots of information, tests, and photo's to share. Thanks!	
67	Peer Reviewer #8	Introduction	The introduction is clear regarding the traditional discussion of the impact of HAI on patients (morbidity and mortality) and the healthcare system (mostly cost data).	No response is needed.
68	Peer Reviewer #8	Introduction	It may be helpful to include discussion regarding the impact that public reporting and/or mandatory HAI prevention policies has had on HAI rates (if at all) as well as costs and resources expended by healthcare facilities to comply with these measures. It would be helpful to introduce this concept as the measures evaluated in this report are often the ones utilized to maintain compliance.	This is outside the scope of the report. The following report does deal with this topic: <i>Public Reporting as a Quality Improvement Strategy: A Systematic Review of the Multiple Pathways Public Reporting May Influence Quality of Health Care</i> .
69	Peer Reviewer #9	Introduction	Well written and clear; outlines objectives/scope	No response is needed.
70	Peer Reviewer #2	Methods	Please see above for some comments about what was excluded. The authors may want to note just how few of the enormous number of studies they found made it to even a low-to-moderate level of evidence.	Observational studies were included if a clearly defined baseline period existed. Also, the number of excluded studies is listed in the PRISMA diagram, along with the 5 most common reasons for exclusion.
71	Peer Reviewer #3	Methods	Inclusion and exclusion criteria -- yes and very good justification provided. Search strategies -- also quite good Stats methods -- no concerns	No response is needed.
72	Peer Reviewer #3	Methods	Outcome measure defs -- also good, although I have some mild concern regarding analysis of some process measure adherence outcomes given the variability in assessment of adherence (see detailed notes)	We agree with the importance of this issue and have added the following section to the Weaknesses in the Evidence section of the Discussion: "The studies included in the current report had to implement QI strategies that addressed evidence-based preventive interventions. While there is a very clear list of these preventive interventions, the way in which adherence is measured varied greatly from study to study. The inconsistency does reduce the comparability of process measures across studies. Another potential confounder is that studies varied in how preventive interventions were implemented, for example in the frequency of oral care for ventilated patients or the use of antibiotic-impregnated catheters. Adopting more standardized approaches to measuring adherence would strengthen the body of evidence."

#	Commentator & Affiliation	Section	Comment	Response
73	Peer Reviewer #3	Methods	Agree with decision to not include norovirus, C diff, and MDRO at this point.	No response is needed.
74	Peer Reviewer #3	Methods	Figure 2 is a very nice illustration of important concept regarding this type of literature	No response is needed.
75	Peer Reviewer #4	Methods	The methods section is well described and comprehensive. The overall approach taken in the report is the currently state-of-the-art standard for conducting these types of reviews. The authors are to be congratulated for approaches they took. This includes identifying abstracts for inclusion, definitions and diagnostic criteria, how abstracts and articles were screened, and how things were scored. The rationale and criteria are clearly spelled out.	No response is needed.
76	TEP #1	Methods	inclusion/exclusion criteria explicitly stated and logical. Definitions for outcome are appropriate. Excellent research conducted to analyze the questions.	No response is needed.
77	TEP #2	Methods	Yes to all of the above. Much thought and consideration was obviously given to inclusion and exclusion criteria. Outcome and process measures (definitions) also very well defined.	No response is needed.
78	Public Reviewer #1 (Joan Blanchard)	Methods	Table 2. Prevention Intervention in SSI section should include cleaning, decontamination and sterilization of instrumentation which may have biofilm remaining on instruments when placed on a sterile field.	Bullets 10 and 11 within SSI address this.
79	Peer Reviewer #8	Methods	I think the methods are excellent. There is a very detailed description of the literature review process and it seems logical and comprehensive. It builds on the prior version of the document. Inclusion and exclusion criteria are clearly defined. Each figure clarifies the strategy to identify studies to answer each of the key questions and tables are provided to define outcomes as well as individual prevention measures. It is very clearly stated what was extracted from each of the studies. Definitions of outcomes are supported by well documented references. The report is largely descriptive and thus no advanced statistics are included. This seems appropriate given the type of literature available on the topic and the data. With regard to the report's assessment of the quality of the data presented in the included studies, the reviewers weighted this heavily on the type of statistical analysis utilized. This is explained well and clearly defined.	No response is needed.
80	Peer Reviewer #9	Methods	Inclusion and exclusion criteria were the same as used in the 2007 report with the addition of setting, so the results are largely comparable.	No response is needed.

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#	Commentator & Affiliation	Section	Comment	Response
81	Peer Reviewer #9	Methods	Use of SHEA/IDSA and HICPAC prevention strategies that were highly rated makes sense and focuses on activities used by most infection prevention programs. Not immediately clear why articles from the 2007 report were not included in question 2 outcomes, if the data on setting were available but were included in question 1. Would consider adding a sentence explaining this further.	The included articles from the 2007 report were added to KQ2.
82	Peer Reviewer #9	Methods	Search strategies were well stated and logical. Figure 1 is a bit confusing and took a couple of readings to see that flow of the overall outcome is horizontal with results of separate questions impacting this flow. Would consider the use of color, patterns or thicker lines to distinguish the main path from the components of question 1.	The lines were thickened in the figure.
83	Peer Reviewer #9	Methods	Definitions of diagnostic criteria for outcome measures are outlined and bulleted list in Data Abstraction section helps to clarify what fields are being compared.	No response is needed.
84	Peer Reviewer #9	Methods	Statistical methods and grading of studies are clear. Clarification on how this was done combining data for multiple types of HAIs would be useful.	In grading the strength of evidence across all HAIs, the same approaches were used as within each infection. There were no attempts to combine data across infections.
85	Peer Reviewer #2	Results	See comments above. As noted, the discussion of individual studies was more interesting and valuable than the tables, which are exhausting to wade through.	In view of this comment and similar comments, both narrative summaries and tables will be kept in the body of the report as various readers might find one or the other more useful.
86	Peer Reviewer #2	Results	The exclusion of certain interventions, the base case framework noted above, and the decision not to include observational trials are limitations, I think.	Observational studies were included. Additional justification of the base case framework has been added.
87	Peer Reviewer #2	Results	As noted, improvement scientists will wonder about the scant attention paid to SPC and the relatively limited (though valuable) discussion of context and "realist" type evaluations.	There were five included studies that used SPC. Although SPC is widely used in evaluating the impact of QI efforts in real time, SPC generally does not account for confounding or autocorrelation. All of the studies that used SPC had other quality limitations that resulted in a lower quality rating independent of the use of SPC.

#	Commentator & Affiliation	Section	Comment	Response
88	Peer Reviewer #2	Results	One might question the decision not to discuss specific limitations of the studies without a counterfactual. Yes, such studies may have limitations, but not necessarily to the same extent. For example, the Pronovost Michigan Keystone study is THE national model for AHRQ and CDC funding, yet there are no comments about its limitations or why it might be "better" evidence than it might first appear.	The following section has been added to each Keystone Project publication: " Some limitations of this study are the lack of uniformity in surveillance across sites or information pertaining to other contemporaneous QI efforts in the hospitals, and the variability in the sample provided. The hospitals that provided baseline data were not the same as those that provided postintervention data. However, a subgroup analysis was provided of hospitals with complete data and the authors found similar results. In addition to the limitations noted above, the following strengths are worth noting: 1) extensive hospital participation across the state and surrounding area, 2) sustained reductions in majority of the settings, and 3) similar results reported in the subgroup analysis of hospitals with complete data."
89	Peer Reviewer #3	Results	Detail presented is appropriate (although would add data on frequency of process measure assessment as noted in detailed notes) and study descriptions are very detailed but not overly verbose.	While frequency is important for preventing HAIs, the report focuses on the QI strategies not the preventive interventions.
90	Peer Reviewer #3	Results	One citation that may be worth examining (and I admit some self-promotion here) -- Speroff T, Ely EW, Greevy R, et al. Quality improvement projects targeting health care-associated infections: comparing virtual collaborative and toolkit approaches. J Hosp Med 2011;6(5):271-8.	This citation was added from update search.
91	Peer Reviewer #3	Results	(In PRISMA diagram, I think) Worth noting in broad categories the reasons for the exclusions?	The top five reasons for exclusion have been added to the PRISMA diagram. This accounts for over half of the excluded articles.
92	Peer Reviewer #3	Results	Table 9 -- as noted above, a summary of frequency of audit is important with some of the process measures	This is noted above.
93	Peer Reviewer #3	Results	Oral Care Section -- important to note frequency of oral care as this varies by study (Q 12 hrs, Q6 hrs, Q4 hrs etc); also need to note if oral care performed with an antiseptic such as chlorhexidine.	The focus is on change in adherence not the prevention measure.

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94	Peer Reviewer #3	Results	I found the noted limitation of use of NHSN surveillance definitions and adjudication bias interesting and should probably apply to many more of the studies in this report, as they likely also used NHSN defs. The NHSN surveillance measures are the "gold standard" but do have some issues with subjectivity and how they are used.	The following sentences have been added to the results overview section: "The majority of studies relied on CDC NHSN/NNIS criteria for identifying infections. These are generally accepted in the United States as the standard definition, although they have some limitations, including possible differences in how they are applied from one setting to another. However, this report focuses on changes in infection rates over time, so as long as the method of identifying infections is stable over time, the results should be fairly reliable."
95	Peer Reviewer #3	Results	Insertion bundle -- one key descriptor is the components of the "bundle" studied, as they may not have been the same.	Focus is on change in provider behavior, not the prevention measure specifically. The study summary includes aspects of the insertion bundle.
96	Peer Reviewer #3	Results	Can you describe the components of this maintenance bundle?	The study summary includes aspects of the maintenance bundle. It included the following: daily catheter needs assessment, catheter site care, and hub cap and tubing care.
97	Peer Reviewer #4	Results	As noted in the general comments, the findings are discouraging although the results naturally follow from the methods. The use of flow charts and tables is excellent. The synopses of the individual articles included in the review are excellent (although some are much more detailed than others). The authors are to be commended for these aspects. I am unaware of any studies that were missed.	No response is needed.
98	Peer Reviewer #4	Results	As noted previously, some of the narrative and the findings strike me as highly repetitive. Ways to reduce the overall bulk of the report should be considered.	We have tried to reduce the redundancy, but the nature and structure of this report makes some unavoidable.
99	TEP #1	Results	The amount of detail for studies evaluated and included or excluded from evaluation was clearly described and of benefit to the reader. Tables and appendices are adequate.	No response is needed.
100	TEP #1	Results	Improvement is all about results and, yes, this document clearly defines what improvement efforts are intended to achieve. Studies are well defined and the rationale for the work is useful and applicable. Very effective use of data display. To my knowledge, there were no studies that were overlooked and I am not aware of any bias regarding inclusion or exclusion of published works.	No response is needed.

#	Commentator & Affiliation	Section	Comment	Response
101	Public Reviewer #1 (Joan Blanchard)	Results	Tables Presentation of information is well grouped and easy to follow. Key questions have substantial information and presented clearly as well.	No response is needed.
	Public Reviewer #1 (Joan Blanchard)	Results	Interesting result of analysis for perfect scores that simulation training showed significant improvement over video training. Simulations may be more effective in training.	We feel that there are nuances to the QI strategies themselves that might impact the effectiveness and this was an example of that.
	Public Reviewer #1 (Joan Blanchard)	Results	A concern on page 117 is the inability to compare staffing for each area for each infection since some infections occur in many settings. Page 127 Insufficient data- who will collect? Much is learned and improvements can be teased out. Evidence Gaps well identified.	The report concluded that there was insufficient evidence for cost and savings in part because even for those studies that addressed this issue, nearly all overlooked the cost of implementing the QI strategies, a major component of which is staffing costs.
102	Public Reviewer #2 (Dolph Chianchiano)	Results	In both "Results" and "Evidence Gaps," it is stated that no studies relating to reducing Health Care-Associated Infections in dialysis centers were identified. In response, we would like to suggest consideration of the studies listed in the "Reference" box provided for this feedback.	The references have been checked and one meets inclusion criteria and has been added to the report.
103	Peer Reviewer #8	Results	The results are presented logically. They begin with summarizing the studies included and the elements assessed in each of the studies. Beyond support of the heterogeneity among the studies included in the report, I am not sure how helpful it is to know how many studies looked at X number of quality measures and reported X number of outcomes. The results rely heavily on information presented in tables and it can be cumbersome to go back and forth from the tables to the discussion given the amount of information presented. As a clinician and hospital epidemiologist, the most meaningful portion of the results were the discussions focusing on specific types of studies designed to prevent specific infections. The way it is presented would make it possible to assess how your own institution's preventive measures/quality improvement for HAI prevention compares to what is currently reported in the literature giving you the ability to directly compare to the same type of methods.	In view of this comment and similar comments, both narrative summaries and tables will be kept in the body of the report as various readers might find one or the other more useful.
104	Peer Reviewer #9	Results	The Results section contains an enormous amount of detail. Despite all of the useful tables, it is a bit difficult to draw conclusions on first read, especially across all HAIs. The tables, such as table 9 for VAP, are extremely useful in navigating through all of the data.	In view of this comment and similar comments, both narrative summaries and tables will be kept in the body of the report as various readers might find one or the other more useful.

#	Commentator & Affiliation	Section	Comment	Response
105	Peer Reviewer #9	Results	Tables on the strength of evidence groupings, such as table 10 on p.48 and table 41 on p.124, are difficult to relate to the content without continually flipping back and forth to remember the definition of each combination.	The terminology for combinations has been renamed.
106	Peer Reviewer #2	Discussion/ Conclusion	<p>The conclusions, discussion and limitations section is reasonable and fair. However, I do think some revisions would be helpful:</p> <p>1. The authors mention simulation as a superior educational tool, apparently based on a small number of studies related to CLABSI prevention during insertion. Simulation almost certainly is a good way to improve performance of procedures, and probably is a good technique in general. But if the reviewers want to give it this much emphasis in a summation, they should do their own due diligence on the broader evidence base and its limitations.</p>	We have narrowed the discussion of simulation studies in response to this comment.
107	Peer Reviewer #2	Discussion/ Conclusion	2. the authors mention heterogeneity among sites as being important. This is a critical insight, but it is given scant attention in the manuscript as a whole, and raising it here begs for further discussion. To understand heterogeneity, mixed methods evaluation is needed, but there is little mention of this in the manuscript in general.	The challenge of this body of literature is that the heterogeneity is not limited to site differences, but also includes measurement frequency, preventive interventions selected, statistical approaches used, etc. The importance of incorporating context into the analysis is highlighted in the report and mixed methods is one way to address this. However, how to address evidence gaps such as this one is beyond the scope of this report.
108	Peer Reviewer #2	Discussion/ Conclusion	3. The recommendation for time series studies is useful, but it is not clear why this method was singled out in the summation (as opposed to adaptive cluster randomized trials, for example). Moreover, while 3 data points before and after an intervention probably are adequate, this is the bare minimum. Most good time series studies use many more data points as this allows a view on variability over time and a much more nuanced analysis. Improvement science emphasizes understanding data over time AND variation.	The time series studies were highlighted in the discussion because these study designs seem more feasible for most investigators than a trial design and because interrupted time series were common in the literature. However many failed to report sufficient data points or to use appropriate statistical analysis which limited their utility.
109	Peer Reviewer #2	Discussion/ Conclusion	4. The discussion/conclusion might say more about the next steps in improving/categorizing quality improvement interventions, including contextual analysis.	A future research needs project could address priorities in more detail, but it is beyond the scope of the present evidence report.
110	Peer Reviewer #2	Discussion/ Conclusion	The recommendations for superior study designs, including adherence to processes as well as outcome data, toolkits to help with contextual analysis, and better journal reviews, are helpful.	No response is needed.

#	Commentator & Affiliation	Section	Comment	Response
111	Peer Reviewer #3	Discussion/ Conclusion	Yes, the implications are clearly stated as is the progress from the 2007 report. Study limitations are described adequately. The future research section is very clear.	No response is needed.
112	Peer Reviewer #4	Discussion/ Conclusion	Given the way the evaluation was done and the criteria that were used, the findings and conclusions were virtually inevitable. As noted in the general comments, attempts should be made to be less negative, as the report appears to denigrate as inferior a very large body of research. It is not clear the types of studies demanded by the authors are technically or financially feasible. One may then question how useful the suggestions for the path forward are. And while it is important to highlight the dearth of research outside of the hospital, it has to be recognized that doing implementation research in non-hospital settings is even more difficult than in the hospital. The future research section is clear, but it is difficult to envision it actually being carried out.	We revised the text to make sure there is a balanced tone. We understand that the research in this field is very difficult and our intent is to encourage toolkits and other resources to make it easier to produce studies that permit causal inference.
113	TEP #1	Discussion/ Conclusion	Major findings are clearly stated. Future research section could be enhanced - particularly focusing on the research need for non-acute healthcare settings.	No response is needed.
114	TEP #2	Discussion/ Conclusion	Conclusions are supported by findings/recommendations. It is clear to me that there are data to support limitations and recommendations but that additional studies/research are necessary to enhance and further support the major findings.	No response is needed.
115	Public Reviewer #1 (Joan Blanchard)	Discussion	Discussion pulls everything together. Weaknesses well identified. Now how do you change infection rates in health care settings?	No response is needed.
116	Public Reviewer #2 (Dolph Chianchiano)	Discussion	With regard to future research needs, it is noted that the evidence review team found only one study that reports on patient education as a quality improvement strategy. In view of the fact that the DHHS Strategic Plan has a goal of helping patients make more informed decisions about their health care, it would appear that research on the effectiveness of various patient education strategies for the prevention of health care-associated infections is warranted.	The lack of evidence on patient education strategies is now noted in the discussion section.

#	Commentator & Affiliation	Section	Comment	Response
117	Peer Reviewer #8	Discussion/ Conclusion	The report has a very clear discussion of its methods and results. The major findings (strength of evidence for combinations of QI strategies across HAI) are clearly stated and explained. Limitations are clearly discussed. I am not able to identify any important relevant literature that has been omitted from the report. The future research section is clearly written and hopefully can be used as an agenda to improve quality of research in HAI prevention.	No response is needed.
118	Peer Reviewer #9	Discussion/ Conclusion	Major findings and limitations are clearly stated in the text of the discussion beginning on p. 131. Not clear to me that table 45 (p. 133) adds anything to the text and is less interpretable in terms of guiding reader to areas where future work is needed.	In view of this comment and similar comments, both narrative summaries and tables will be kept in the body of the report as various readers might find one or the other more useful.
119	Peer Reviewer #9	Discussion/ Conclusion	Interesting conclusions about alternate interpretations for CLABSI and CAUTI results on p.134. In terms of areas for future research, would emphasize this more in "Key Questions with Insufficient Data" (p. 134) so that it comes across as areas for researchers to focus rather than merely limitations of this summary and research to date. This does come out a bit on p.135 with comparison to 2007 report, but I think that it can't be overstated. Would also enhance the section on Future Research Needs (pp. 136-138) to include the bulleted points at the bottom of p.134. This section currently addresses the first point (on nonhospital settings) and gaps in evidence/structure of studies but not specifically calling for studies that include cost efficacy analyses or address context.	The Key Questions With Insufficient Data have been incorporated into the Future Research Needs section.
121	Public Reviewer #1 (Joan Blanchard)	References	References are great- good for future use.	No response is needed.

#	Commentator & Affiliation	Section	Comment	Response
122	Public Reviewer #2 (Dolph Chianchiano)	References	<p>1. Saib A. Abbas, et al. "Effect of Antimicrobial Locks for Tunneled Hemodialysis Catheters on Bloodstream Infection and Bacterial Resistance: A Quality Improvement Report." American Journal of Kidney Diseases, Vol 53, No 3 (March), 2009: pp 492-502.</p> <p>2. M. Albalade, et al. "Have we forgotten the most important thing to prevent bacteremias associated with tunneled hemodialysis catheters?" Nefrologia 2010;30(5):573-7.</p> <p>3. Christine K. Bakke. "Clinical and Cost Effectiveness of Guidelines To Prevent Intravascular Catheter-Related Infections in Patients on Hemodialysis." Nephrology Nursing Journal, November-December 2010 ? Vol. 37, No. 6.</p> <p>4. Marisa Battistella, et al. "Long-term Follow-up of the Hemodialysis Infection Prevention With Polysporin Ointment (HIPPO) Study: A Quality Improvement Report." American Journal of Kidney Diseases. 2011;57(3):432-441.</p> <p>5. Brenda R, Hemmelgarn, et al. "Prevention of Dialysis Catheter Malfunction with Recombinant Tissue Plasminogen Activator." N Engl J Med 2011;364:303-</p> <p>6. Laurie R. Solomon, et al. "A Randomized Double-Blind Controlled Trial of Taurolidine-Citrate Catheter Locks for the Prevention of Bacteremia in Patients Treated With Hemodialysis." American Journal of Kidney Diseases, Volume 55, Issue 6, June 2010, Pages 1060–1068.</p>	<p>1. Focuses on the preventive intervention and does not seem to have any QI strategies.</p> <p>2. No statistical analysis was conducted.</p> <p>3. This is a very comprehensive article. This does meet our inclusion criteria for the group of studies that does not control for confounding or secular trend. It has been added to the report.</p> <p>4. No statistical analysis was conducted.</p> <p>5. Focuses on the preventive intervention and does not seem to have any QI strategies.</p> <p>6. Focuses on the preventive intervention and does not seem to have any QI strategies.</p>
123	Public Reviewer #1 (Joan Blanchard)	List of Abbreviations	Abbreviations are appropriate.	No response is needed.
124	Public Reviewer #1 (Joan Blanchard)	Tables	Tables are excellent- easy to read and comprehensive.	No response is needed.
125	Public Reviewer #1 (Joan Blanchard)	Figures	Figures enhance information in text.	No response is needed.
126	Peer Reviewer #3	Appendixes	Need to fix table headers, as column headers slightly cutoff; also given the length in pages of these tables, perhaps putting the variable definitions at the start rather than the end may be more helpful.	This has been fixed.

#	Commentator & Affiliation	Section	Comment	Response
127	Public Reviewer #1 (Joan Blanchard)	Appendixes	Appendixes give good recap of important information in the body of the body of the	No response is needed.
128	Peer Reviewer #1	Clarity and Usability	Future revisions must address QI strategies to reduce the burden and impact of healthcare-associated MRSA and C. difficile infection. This should be acknowledged as a limitation of this evidence review and an opportunity for further study.	MRSA and C Diff are addressed in other AHRQ CERs. 1) <i>Comparative Effectiveness of Screening for MRSA</i> 2) <i>Treating and Preventing C-diff. Infections: A Review of the Research for Adults and Their Caregivers</i>
129	Peer Reviewer #2	Clarity and Usability	Please see earlier comments about the density of the tables and the problems with the executive summary. The paper is best when it explains its points in well written text, including the analyses of individual studies. This case study approach is very helpful. Indeed, I wish the authors had recommended more qualitative and case study research in the infection prevention field. The call for this is the paper is rather weak and muffled.	In view of this comment and similar comments, both narrative summaries and tables will be kept in the body of the report as various readers might find one or the other more useful.
130	Peer Reviewer #3	Clarity and Usability	Very well-structured. Some tricky reading when navigating around the various intervention combinations the first time encountered, but organization of report is nice in that keeps sections very consistent. I think this will help direct the needs in this area quite nicely.	Descriptions of the combinations have been changed to increase clarity.
131	Peer Reviewer #4	Clarity and Usability	The report is certainly well structured, but very long. The main points are clearly presented, although sometimes lost in the length of the report. Unfortunately since the conclusions seem to point the lack of useful research regarding implementation of HAI prevention, it is hard to see how the information will guide practice decisions.	The report provides moderate evidence on the effectiveness of QI combinations that include provider education, organizational change, audit and feedback, with or without provider reminder systems. This finding should have practical implications.
132	TEP #1	Clarity and Usability	Report is well structured and organized - with the exception of the Executive Summary.	We have revised the Executive Summary.
133	TEP #1	Clarity and Usability	Minor issues that probably will be found during formatting edits: healthcare vs. health care - inconsistencies in document "postintervention" throughout - ? post-intervention "followup" throughout - ? follow-up	These are dictated by the AHRQ Style Guide.
134	TEP #2	Clarity and Usability	I found the writing to be logical and extremely well organized. Many practical 'how-to's' were included in the document which is practical and useful to the practitioners who will be responsible for this quality improvement work.	No response is needed.

#	Commentator & Affiliation	Section	Comment	Response
135	Peer Reviewer #8	Clarity and Usability	The report is well structured and very well organized. Although it is a very lengthy document, it is fairly easy to navigate if you are interested in a particular section or a particular HAI. The main points are clearly introduced, analyzed, and the conclusions aptly stated. The conclusions are helpful in identifying the strengths and weaknesses in available literature to support an institution's response to HAI prevention.	No response is needed.
136	Peer Reviewer #8	Clarity and Usability	The data presented regarding HAI prevention across all types of HAI is particularly useful towards policy development; however, the data is not specific enough in my opinion to be utilized heavily for individual practice decisions. This report will be/should be extremely valuable to researchers and those who fund research.	No response is needed.
137	Peer Reviewer #9	Clarity and Usability	The report is comprehensive and well structured. The main points are clearly presented, but the material is dense; tables do help to guide the reader through to the conclusions. I would consider clarification of some figures and tables as outlined above.	No response is needed.
138	Peer Reviewer #9	Clarity and Usability	Conclusions are limited due to the design of the underlying studies but clearly show an increase in research and improvement in quality of the research on HAIs since the last report. Definition of remaining questions and outlining important needed areas of research may help to provide support for this work in terms of funding.	No response is needed.