



**Summary Report of the Technical Expert
Panel Meeting, November 2011
(Deliverable #20)**

**Project Development, Maintenance
and Support of Hospital Clinical
Quality Measures for ARRA HITECH**

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Prepared for:

Deborah Krauss

Division of Health Information Technology
Quality Measurement & Health Assessment Group
Office of Clinical Standards & Quality
Centers for Medicare & Medicaid Services
7500 Security Blvd., Bldg. S3-09-04
Baltimore, MD 21244-1850

Submitted by:

Abt Associates Inc.

55 Wheeler Street
Cambridge, MA 02138

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Executive Summary

In July 2011, under the Project Development, Maintenance and Support of Hospital Clinical Quality Measures for ARRA HITECH (Hospital eMeasures) contract, the Centers for Medicare & Medicaid Services (CMS) commissioned Abt Associates and our partners to develop five new (*de novo*) clinical quality measures (CQMs) for reporting directly from hospital electronic health records (EHRs), and to retool up to 100 existing CQMs with electronic specifications so that they also can be reported directly from hospital EHRs. As part of this project, the project team convened a Technical Expert Panel (TEP) in November 2011, for the purposes of 1) reviewing and providing input to the work of the eMeasures team; and 2) assisting CMS to prioritize topics and measures for new and retooled CQMs. This document summarizes the TEP proceedings and recommendations.

Fourteen experts agreed to participate in the project's TEP, with twelve members able to participate at the November meeting in person. TEP membership is comprised of five physicians (with specialties in pediatrics, internal medicine, and infectious disease), two nurse informaticists, two pharmacists, and several standards and EHR experts. The TEP was chaired by Dr. Mark Metersky, a pulmonary/critical care physician and member of the Hospital eMeasure project team.

TEP members were presented with findings of the Environmental Scan, and the analysis of gaps in existing hospital CQMs, and made recommendations of topic areas for *de novo* measure development and for measures to be retooled under this contract. Some recommended high priority areas for *de novo* measure development included:

- Palliative care/advance directives;
- Overuse of treatment and testing in end-of-life care;
- Trauma measures.

In addition, TEP members conducted a detailed discussion and review of the measures tentatively identified by the project team for potential retooling, and recommended 35 of them. Nine of these are care coordination measures, an area identified as a high priority by TEP members. All recommendations for *de novo* and retooled measures may be found in Appendix B and C, respectively.

The remainder of this document presents a more detailed accounting of the November 2011 TEP meeting, along with recommended measure areas of priority that are contained in the appendices.

1. Day One

1.1 Meeting Objectives and TEP Charter

The Technical Expert Panel (TEP) meeting began with a welcome by Deputy Project Director Kathleen Fuda and a round of introductions by all participants. (See Appendix A for list of TEP members' names and affiliations). CMS Project Officer Deborah Krauss reviewed the meeting objectives and provided a brief project overview. Ms. Krauss highlighted the role of the TEP in the Hospital eMeasures project, namely to identify approximately 100 existing clinical quality measures (CQMs) to electronically specify (e-specify) and to decide on five priority areas for which *de novo* eMeasures will be created. Dr. Mark Metersky of Qualidigm, a member of the project team, then led a review of the TEP charter with the group. The TEP is to advise the project team on the retooling process (including the measure testing protocol and the NQF endorsement process) as it evolves over the three year contract period (July 2011-July 2014). The TEP will meet several times per year, either in person or by teleconference.

1.2 Review of Accomplished Work: Environmental Scan

Deputy Project Director Kathy Fuda of Abt Associates reviewed the Environmental Scan report with the TEP, delineating the tasks and the findings undertaken by the project team. The environmental scan identified the 16 top hospital conditions used to prioritize CQMs, and also utilized the National Priority Partnership (NPP) and CMS priority areas for quality measurement. The Environmental Scan reviewed the peer-reviewed and gray literature on the subject of clinical quality measurement using data from EHRs. A Master Measures List (MML) of all existing CQMs, or those currently in development or anticipated by measure developers ("pipeline" measures), was compiled by the team to serve as the basis for a gap analysis. Dr. Metersky also interviewed several measure developers to confirm the comprehensiveness of the MML, and to inquire about perceived gaps in measurement and plans for new measures. Finally, the environmental scan included a gap analysis to identify potential topics for *de novo* measure development.

The TEP members' discussions about the environmental scan centered on ensuring that measures would retain validity when they would be retooled from paper to electronic format. They also wanted to be certain that measures chosen for retooling were those that could have the most significant impacts on quality improvement, by lowering costs, mortality and other indicators of poor hospital outcomes. The team assured the TEP that both topics were factors considered explicitly in the Environmental Scan and in future measure testing plans.

1.3 Discussion of Gap Analysis/ *De novo* Measure Topics

Dr. Mark Metersky led a review of the gap analysis, which evaluated how many measures in the MML aligned with the 16 top hospital conditions identified in the team's Environmental Scan and with the priority conditions identified by the NPP and CMS. This analysis revealed significant discrepancies between the numbers of existing measures for certain priority conditions compared to others. There were few measures for trauma and for chronic obstructive pulmonary disease (COPD), for example. However, it was noted that a small number of measures per condition does not necessarily indicate an important gap: existing measures may well capture the key processes and/or outcomes, or the condition in question may not be as important as others. Furthermore, even for important conditions, if key outcomes have not been linked to specific processes of care or quality of care. More generally, measurement may be less useful.

Approximately 20 potential topic areas for *de novo* measure development were identified by the gap analysis; these topics needed to be further narrowed before measure development could begin. The TEP reviewed each area individually. The TEP agreed that *de novo* measures should take advantage of the capabilities of EHRs compared to other sources of data, i.e., what can an EHR do that a paper record cannot in terms of capturing quality of care? The TEP considered whether structured data elements and clinical decision support (CDS) tools already exist in gap areas, and whether new CQMs could be linked to CDS systems if they were to be created. One TEP member emphasized that information captured in the narrative portions of the EHR could be exploited for quality measurement. It was noted that outcomes measures require risk-adjustment; Ms. Krauss noted that incorporating risk adjustment into electronically-specified CQMs is still to be developed, although the Abt team will be working to develop that on an AMI mortality measure. Finally, clinical judgment about the breadth and applicability of a potential measure in a hospital setting guided the TEP in its measure choices.

Throughout the discussion of potential *de novo* measures, TEP members began articulating exactly what new measures might look like. For example, with a void in measures relating to renal conditions, would it be worthwhile to measure adverse drug events and dosage adjustments in patients with renal malfunction? Ultimately, high priority areas evolved for *de novo* measure development, including: palliative care and advance directives; overuse of treatment and testing in end of life care; and trauma measures. By the end of the second day, twenty-two priorities were highlighted as potential *de novo* measure areas (See Appendix B).

Finally, the twenty-two chosen *de novo* measure areas were ranked as "high", "medium" or "low" priority. Much discussion ensued about what would define a high priority measure-

would it consider medical need, a high cost area or an area where there was the greatest paucity of existing measures? Ultimately, all these factors were taken into consideration; there was a particular emphasis on making sure a *de novo* measure would impact a significant subset of hospital patients and would have a meaningful impact on improving an important outcome of care, such as cost, morbidity or mortality.

2. Day Two

2.1 The Retooling Process

Project Director Terry Moore began the day by welcoming participants and reviewing the agenda.

Dr. Bob Dolin of the Lantana Consulting Group, and Principal Investigator on the Abt Associates team, then made a presentation to the TEP about the creation of electronically-specified CQMs, or eMeasures. Although the Measure Authoring Tool (MAT) used to create the eMeasures currently has some technical problems, this is being frequently updated. TEP members wondered whether, if the production software to create eMeasure would become more efficient over time, it made sense to begin e-specifying the measures now. Dr. Dolin explained that although the tools will be more efficient as the project evolves, the process of retooling will begin in the current project year, regardless, and tweaked manually to ensure adherence to the intent of the original paper measure.

2.2 Selection of Measures for Retooling

Dr. Metersky led a review of the MML¹ to identify the most pressing measures to retool within each priority condition or area. The team decided that measures would be tagged for retooling based on the following prioritizing factors

- The measure would affect a reasonably-sized population;
- The measure fit well with the NQF measure evaluation criteria of
 - (1) Importance to measure and report,
 - (2) Usability,
 - (3) Reliability and validity, and

¹ The MLL used for this TEP was a condensed version of complete MLL; whereas the original held over 700 measures, the TEP version contained approximately 50% fewer measures. This refinement process was undertaken by sorting measures to eliminate duplicates or those that were deemed less clinically important by the Abt Associates technical team. The team also eliminated those measures that were deemed not feasible for retooling; see Footnote 2.

- The measure was considered feasible to retool for reporting from a hospital's EHR system.²

The TEP chose thirty-five (35) measures as candidates to be retooled during the project. Some priority areas did not have any measures chosen for retooling for a variety of reasons, including:

- There were few existing measures to begin with or existing measures were of such poor quality that these conditions were identified as areas for *de novo* measure development.
- Some measures may have already been in the process of retooling by another group, such as the Joint Commission.
- The area or condition was not considered as important as others.
- There were already several retooled measures for the condition.

Measures prioritized for retooling fell into several categories, including adverse drug events, childbirth complications (maternal), heart failure, septicemia, care coordination, palliative care, and overuse. All measures chosen as potential candidates for retooling are presented in Appendix C.

² All measures in the MML were given a score of “feasible”, “somewhat feasible” or “not feasible” by the technical team members who will be retooling the measures. The feasibility score takes into account the data elements available to input into the programming software, and the complexity of the measure logic.

3. Appendices**3.1 Appendix A: List of TEP Members**

Name	Title	Email
Zahid Butt	<i>CEO/CMO MediSolv Inc.</i>	zbutt@medisolv.com
Patricia Craig	<i>Associate Project Director</i>	pcraig@jointcommission.org
Sharon Giarrizzo-Wilson	<i>Informatics Nurse Specialist</i>	swilson@aorn.org
Yvonne Grant	<i>Pharmacist, Cardiology, Kaiser Foundation Hospitals</i>	yvonne.e.grant@kp.org
Vasudevan “Juggy” Jagannathan	<i>VP of Research, MedQuist</i>	juggy@medquist.com
Rainu Kaushal*	<i>Director, Center for Healthcare Informatics and Policy</i>	rak2007@med.cornell.edu
Dave Myers	<i>Independent consultant, Higher Education, Economic Development and Health Care</i>	dave.myers545@gmail.com
Michael Niederman	<i>Chairman, Department of Medicine, Winthrop-University Hospital</i>	mniederman@winthrop.org
Philip Renner	<i>Principal Consultant, Care Management Institute, Kaiser Permanente</i>	philip.m.renner@kp.org
Steven Steindel*	<i>Retired</i>	stevejs@mindspring.com
Lisa J. Thiemann	<i>Senior Director, Professional Practice, American Association of Nurse Anesthetists</i>	lthiemann@aana.com
Feliciano Yu	<i>Chief Medical Information Officer, St. Louis Children’s Hospital</i>	yu_F@kids.wustl.edu
Gianna Zuccotti	<i>Associate Physician, Brigham and Women’s Hospital</i>	gzuccotti@partners.org

* These TEP members were not in attendance for this TEP meeting.

3.2 Appendix B: De novo Measures with Priority Scoring

Measure	Score	Notes
1. Palliative care advance directive proxy modified from [E0406], perhaps in inpatient setting as opposed to what exists in outpatient setting	high	high, given that it builds on Meaningful Use (MU)
2. Timely treatment of sepsis (definition: vital sign abnormalities); timing of fluids/pressors/antibiotics; appropriate antibiotics	high	
3. Monitoring of respiratory depressants	high	
4. Reversal agents in non PACU/ OR setting	high	
5. Appropriate use of ICDs and pacemakers	high	
6. Overuse of treatment testing in end of life care and CMO patients	high	
7. Appropriate Ventilator management	high	
i. Low tidal volume for ARDS		
ii. Appropriate use of non- invasive ventilators		
8. Adjustment of antibiotics, based on culture and sensitivity results and appropriate monitoring of antibiotic and other drug levels		
9. Trauma	high	
i. Timing/occurrence of head CT based on given Glasgow Coma Scale (GCS).		
ii. Length of ED stay		
iii. Securing of airway based on GCS		

Measure	Score	Notes
iv. Time from arrival from to emergency surgery		
v. Missed injuries		
10. Re-intubation in PACU/OR	high	
11. Appropriate meds and adjustments in renal failure	medium	
12. Steroids for COPD exacerbation	medium	
13. Unplanned intubation or CPR outside of ICU	medium	
14. Obstructive Sleep Apnea	medium	
i. Appropriate CPAP		
15. Adequacy of dialysis/renal replacement therapy: creatinine came down to acceptable range	low	
16. Appropriate assessment for home oxygen after discharge: over/under use	low	
17. Rapid response team	low	
18. Leveraging Continuity of Care document (CCD); discharge planning	low	likely will be addressed with some grouping of retooling
i. Electronic transmission of D/C summary to primary care physician		

Measure	Score	Notes
19. Evaluations of family history, problem lists/maintenance—areas in outpatient that could be restructured in inpatient.	low	Part of MU, not a CQM. A MU measure to develop in CQM would be beneficial across care settings. The problem list should be across care settings
20. Appropriate prophylaxis among patients with pre-existing renal failure who require IV contrast	low	low, given complexity of creating this measure
21. Risk adjusted length of stay—from the other measured conditions—many length of stay measures but none capture total effectively (measure as observed vs. expected; based on DRG methodology)	low	
22. Conversion rate for laparoscopic cholecystectomy (to an open procedure)	low	

3.3 Appendix C: Candidate Measures for Retooling

Measure Priority	Measure Number	Measure Name
Adverse Drug Events	E0578	Adverse Drug Events Warfarin (Q)
	E0580	Adverse Drug Events LMWH & Factor Xa (Q)
Cardiac Dysrhythmias	E0757	New Atrial Fibrillation: Thyroid Function Test
Cardio-Vascular Disease		NONE
Childbirth- Maternal Complications	E0028	Obstetric trauma (3rd or 4th degree lacerations): rate per 1,000 instrument-assisted vaginal deliveries.
	E0029	Obstetric trauma (3rd or 4th degree lacerations): rate per 1,000 vaginal deliveries without instrument assistance.
	E0241	Foreign object retention: percentage of unintentionally retained foreign objects during labor and delivery.
	E0243	Management of labor: percentage of women in the guideline population with failure to progress diagnosis who have oxytocin.
	E0244	Management of labor: percentage of women who are assessed for risk status on entry to labor and delivery.
Childbirth- Newborn Complications	NONE	
Chronic obstructive pulmonary disease (COPD)	NONE	

Measure Priority	Measure Number	Measure Name
Coronary Atherosclerosis and AMI	NONE	
Heart Failure	E0166	Heart failure: percent of patients with documentation in the hospital record that LVS function was evaluated before arrival, during hospitalization, or is planned for after discharge.
	E0167	Heart failure: percent of patients with LVSD who are prescribed an ACEI or ARB at hospital discharge.
Mood Disorders	NONE	
Pneumonia	NONE	
Renal Failure	E0228	Venous thromboembolism prophylaxis: percentage of adult hospitalized patients with creatinine clearance less than 30 mL/min in the medical record who receive a reduced dose of anticoagulation therapy.
Respiratory Failure	E0732	Confirmation of Endotracheal Tube Placement
Septicemia	E0396	Sepsis: percent of patients with severe sepsis/septic shock who had 2 sets of blood cultures collected within 24 hours following severe sepsis/septic shock identification.
	E0731	Severe Sepsis and Septic Shock: Management Bundle
	PL129	Sepsis Resuscitation Bundle
Surgery	NONE	
Trauma	NONE	

Measure Priority	Measure Number	Measure Name
VTE	NONE	
Other patient populations	E0729	Door to Diagnostic Evaluation by a Qualified Medical Personnel
	E0730	Left Without Being Seen
Care Coordination	E0075	Care transitions: percentage of patients, regardless of age, discharged from an inpatient facility to home or any other site of care for whom a transition record was transmitted to the facility or primary physician or other health care professional designated for follow-up care within 24 hours of discharge.
	E0324	Emergency department transfer communication: percent of patients transferred to another health care facility whose medical record documentation indicated that medication-related information was communicated to the receiving facility within 60 minutes of departure.
	E0325	Emergency department transfer communication: percent of patients transferred to another health care facility whose medical record documentation indicated that nurse generated information was communicated to the receiving facility within 60 minutes of departure.
	E0326	Emergency department transfer communication: percent of patients transferred to another health care facility whose medical record documentation indicated that patient identification was communicated to the receiving facility within 60 minutes of departure.

Measure Priority	Measure Number	Measure Name
	E0327	Emergency department transfer communication: percent of patients transferred to another health care facility whose medical record documentation indicated that physician or practitioner generated information was communicated to the receiving facility within 60 minutes of departure.
	E0328	Emergency department transfer communication: percent of patients transferred to another health care facility whose medical record documentation indicated that pre-transfer information was communicated to the receiving facility within 60 minutes of departure.
	E0329	Emergency department transfer communication: percent of patients transferred to another health care facility whose medical record documentation indicated that procedures and tests were communicated to the receiving facility within 60 minutes of departure.
	E0330	Emergency department transfer communication: percent of patients transferred to another health care facility whose medical record documentation indicated that vital signs were communicated to the receiving facility within 60 minutes of departure.
	PL111	M53 Statin Therapy at Discharge after Lower Extremity Bypass (LEB) (Society for Vascular Surgery)
Palliative/ End of Life Care	E0400	Intensive care unit (ICU) palliative care: percent of 4-hour intervals (on Day Zero and Day One of ICU admission) for which pain was assessed and documented.

Measure Priority	Measure Number	Measure Name
	E0401	Intensive care unit (ICU) palliative care: percent of 4-hour intervals (on Day Zero and Day One of ICU admission) for which the documented pain score was less than or equal to 3.
	E0407	Intensive care unit (ICU) palliative care: percent of patients who have documentation of resuscitation status on or before Day One of ICU admission.
	PL052	Appropriate Pain Management
Overuse	E0024	Incidental appendectomy: incidental appendectomy among the elderly rate.
	E0559	Abdomen computerized axial tomography (CT) use of contrast material: percentage of abdominal CT studies with and without contrast (combined studies).
	E0563	Thorax computerized axial tomography (CT) use of contrast material: percentage of thorax CT studies with and without contrast (combined studies).
Racial, ethnic and class disparities	NONE	
Patient reported care	E0471	Pediatric pain.
	E0499	OP 21: Median Time to Pain Management for Long Bone Fracture
Patient Family Engagement	NONE	

* Note that PL measure numbers indicate pipeline measures.