

**HHS Action Plan to Prevent Healthcare-Associated Infections:
 APPENDICES**

Appendix A

Metric Number and Label	Metric	Measurement System	National 5-Year Prevention Target
1. CLABSI 1	CLABSIs per 1,000 device days by ICU and other locations	NHSN Administrative discharge data¹	CLABSIs per 1,000 device days by ICU and other locations below present NHSN 25th percentile by location type (75% reduction in SIR)
2. CLABSI 2	Laboratory detected bacteremia per 1,000 patient days	ADT/lab System Data Streams	50% reduction in laboratory detected bacteremia per 1,000 patient days
3. CLABSI 3	CLABSIs per 100 patient months	NHSN Administrative discharge data	50% reduction in CLABSIs per 100 patient months
4. CLABSI 4	Central line bundle compliance (non-emergent insertions)	NHSN CLIP module	100% compliance with central line bundle (non-emergent insertions)
5. C diff 1	Case rate per patient days and administrative/discharge data for ICD9 coded Clostridium difficile Infections	NHSN MDRO module and Administrative discharge data	30% reduction in the case rate per patient days and administrative / discharge data for ICD9 coded Clostridium difficile Infections NOTE: Preventability of endemic CDI is unknown; therefore, the experts suggested that HHS revisit this target in 2 years as prevention research findings may become available
6. C diff 2	Contact precautions	NHSN MDRO module	100% compliance with contact precautions
7. C diff 3	Appropriate hand hygiene practices	NHSN MDRO module	100% compliance with appropriate hand hygiene practices
8. CAUTI 1	Rate of BSI secondary to UTI / 1,000 patient days	NHSN	50-75% reduction in the rate of BSI secondary to UTI / 1,000 patient days
9. CAUTI 2	# of symptomatic UTI / 1,000 urinary catheter days	NHSN	25% reduction in the number of symptomatic UTI / 1,000 urinary catheter days

¹ Any source that would provide nationally representative hospital discharge coding (i.e., ICD9 or, in the future, ICD10) data, including such sources as the Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project, the CDC National Center for Health Statistics or National Hospital Discharge Survey, and those in the Centers for Medicare and Medicaid Services (CMS).

	[Number of UTIs (ICD9+not present on admission) / (# major surgery ICD9+ urinary catheter ICD9)]*100 discharges	Administrative discharge data	25% reduction in the [Number of UTIs (ICD9+not present on admission) / (# major surgery ICD9+ urinary catheter ICD9)]*100 discharges²
10. CAUTI 3	(Urinary catheter days / patient days)*100	NHSN	50% reduction in (urinary catheter days / patient days)*100
11. MRSA 1	Incidence rate (number per 100,000 persons) of invasive MRSA infections	CDC EIP/ABCs	50% reduction in incidence rate of all healthcare-associated invasive MRSA infections
12. MRSA 2	Incidence rate (number per 1,000 patient days) of hospital-onset MRSA bacteremia (hospital wide)	NHSN (starting 2009)	50% reduction in incidence rate of hospital-onset MRSA bacteremia (hospital wide)
13. MRSA 3	Number of hospitalizations with non-present on admission MRSA bacteremia/pneumonia/sepsis Number of hospitalizations with non-present on admission MRSA not otherwise specified (NOS)/pneumonia/sepsis	NHDS Administrative discharge data	25% reduction in hospitalizations with non-present on admission MRSA not otherwise specified (NOS)/pneumonia/sepsis 90% of facilities with fewer “hospitalizations” with non-present on admission MRSA not otherwise specified (NOS)/pneumonia/sepsis than predicted (i.e. model prediction)
14. SSI 1	Deep incision and organ space infection rates using NHSN definitions (SCIP procedures)	NHSN	Median deep incision and organ space infection rate for each procedure/risk group will be at or below the current NHSN 25th percentile
15. SSI 2	Adherence to SCIP/NQF infection process measures (perioperative antibiotics, hair removal, postoperative glucose control, normothermia)	CMS SCIP	95% adherence rates to each SCIP/NQF infection process measure
16. VAP 1	VAP rate, ventilator utilization (vent days), intermediate outcome – duration of ventilation	NHSN definitions	Track performance, no national target
17. VAP 2	VAP process bundle: Continuous assessment of head of bed elevation; Daily oral care and daily assessment of readiness to extubate and sedation levels	Direct local observation	100% compliance with each metric in the VAP process bundle within 2 years

² Zhan C, et.al. Medical Care (in press)

Appendix B

Metric Number and Label	Metric	Measurement System	National 5-Year Prevention Target	NQF Measures³	Compendium Measures⁴
1. CLABSI 1	CLABSIs per 1000 device days by ICU and other locations	CDC NHSN; Administrative discharge data⁵	CLABSIs per 1000 device days by ICU and other locations below present NHSN 25th percentile by location type (75% reduction in SIR)	CLABSI rate: CLABSI rate for ICU and high-risk nursery (NRN) patients	CLABSI rate
2. CLABSI 4	Central line bundle compliance (non-emergent insertions)	NHSN CLIP Module	100% compliance with central line bundle (non-emergent insertions)	Central line bundle compliance (hand hygiene; maximal barrier precautions upon insertion; Chlorhexidine skin antiseptics; Optimal catheter site selection; Daily review of line necessity with prompt removal of unnecessary lines.)	1. Compliance with CVC insertion guidelines as documented on an insertion checklist 2. Compliance with documentation of daily assessment regarding the need for continuing CVC access. 3. Compliance with cleaning of catheter hubs and injection ports before they are accessed. 4. Compliance with avoiding the femoral vein site for CVC insertion in adult patients.
3. C diff 1	Case rate per patient days; administrative/discharge data for ICD9 coded Clostridium	CDC NHSN MDRO module; Administrative discharge data	30% reduction in the case rate per patient days and administrative/discharge data for ICD9 coded		CDI rates should be calculated according to the recently published recommendations. (Rates for healthcare onset,

³ NQF Endorsed Measures for Healthcare-Associated Infections (<http://www.qualityforum.org/pdf/reports/HAI%20Report.pdf>)

⁴ SHEA/IDSA “Compendium of Strategies to Prevent Healthcare-Associated Infections in Acute Care Hospitals” (http://www.cdc.gov/ncidod/dhqp/HAI_shea_idsa.html)

⁵ Any source that would provide nationally representative hospital discharge coding (i.e., ICD9 or, in the future, ICD10) data, including such sources as the Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project, the CDC National Center for Health Statistics or National Hospital Discharge Survey, and those in the Centers for Medicare and Medicaid Services (CMS).

	difficile Infections		Clostridium difficile Infections. NOTE: Preventability of endemic CDI is unknown; therefore, meeting attendee experts suggested that HHS revisit this target in 2 years as prevention research findings may become available.		healthcare facility associated; community onset, healthcare facility associated; community associated; indeterminate onset; unknown; and recurrent CDIs)
4. CAUTI 2	# of symptomatic UTI / 1000 urinary catheter days [Number of UTIs (ICD9+not present on admission) / (# major surgery ICD9+ urinary catheter ICD9)]*100 discharges	CDC NHSN Administrative Discharge data	25% reduction in the number of symptomatic UTI/1000 urinary catheter days 25% reduction in the [Number of UTIs (ICD9+not present on admission) / (# major surgery ICD9+urinary catheter ICD9)]*100 discharges ⁶	Catheter-associated urinary tract infection rate for intensive care unit patients.	Rates of symptomatic CAUTI, stratified by risk factors (age, sex, ward, indication, and catheter-days)
5. MRSA 1	Incidence rate (number per 100,000 persons) of invasive MRSA infections	CDC EIP/ABCs	50% reduction in incidence rate of all healthcare-associated invasive MRSA infections		Overall prevalence or prevalence density of MRSA colonization and/or infection
6. SSI 1	Deep incision and organ space infection rates using NHSN definitions (SCIP procedures)	CDC NHSN	Median deep incision and organ space infection rate for each procedure/risk group will be at or below the	Surgical site infection rate: Deep wound and organ space infections as a result of elective surgery to include	Surgical site infection rate

⁶ Zhan C, et.al. Medical Care (in press)

			current NHSN 25th percentile	coronary artery bypass graft (CABG) and cardiac surgery; hip or knee arthroplasty; colon surgery; hysterectomy (abdominal and vaginal); and vascular surgery.	
7. SSI 2	Adherence to SCIP/NQF infection process measures (perioperative antibiotics, hair removal, postoperative glucose control, normothermia)	CMS SCIP	95% adherence rates to each SCIP/NQF infection process measure.	Cardiac surgery patients with controlled postoperative serum glucose; Surgery patients with appropriate hair removal; Prophylactic antibiotics received; Prophylactic antibiotics selection; Prophylactic antibiotics discontinued	Compliance with Centers for Medicare and Medicaid Services antimicrobial prophylaxis guidelines.

Appendix C – Current HHS HAI-Related Research Responsibilities (AHRQ, CDC, CMS, and NIH)

	AHRQ	CDC	CMS	NIH
Basic Discovery		Biofilms, resistance mechanisms		Vaccines, biofilms, studies of pathogenesis (intramural and extramural)
Surveillance	At a population level, using hospital inpatient and outpatient administrative databases	National Healthcare Safety Network (NHSN), Active Bacterial Core Surveillance, new measure development and validation, e-surveillance, electronic medical record capture		Electronic healthcare epidemiology surveillance system currently being installed at the NIH/Clinical Center
Epidemiology	Population-based epidemiologic studies (longitudinal trends, population risk associations)	Outbreak response, molecular epidemiology, other epidemiologic studies (burden estimates, risk factors, etc.)		Intramural studies in a unique clinical research hospital setting
Etiology		Identification of emerging pathogens through surveillance and outbreak response		Funding for clinical studies, basic studies characterizing new and/or emerging pathogens
Prevention Efficacy/Effectiveness		Prevention demonstration projects, intervention studies, investigation of novel/innovative prevention strategies		Proof of principle studies (intramural), comparative trials (extramural)
Prevention Implementation	Within organizations, systems of care, institutions, primary care networks	Prevention demonstration projects, prevention collaboratives, behavioral epidemiology, education, promotion	Through quality reporting, payment incentives, and special Quality Improvement Organization (QIO) programs	Clinical studies, including comparative trials (intramural and extramural)
Guidelines	Generate the evidence base for further guideline development	Healthcare Infection Control Practices Advisory Committee (HICPAC) produces evidence-based		Research contributions to inform Public Health Service guidelines, society-sponsored guidelines, etc.

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	AHRQ	CDC	CMS	NIH
		guidelines and related guidance; Maintain consistent case definitions in guidelines and NHSN		
Treatment Comparative Effectiveness	Comparative effectiveness of treatments	Comparative effectiveness of prevention strategies	Comparative effectiveness through information from coverage with evidence development	Comparative trials (intramural and extramural)
Implementation	Within organizations, systems of care, institutions, primary care networks			
Quality/Safety of Healthcare	Patient Safety Organizations, measurement tools for baseline and evaluation and quality improvement, training, data collection	NHSN as a system to track infections; Develop baseline through measurement, training, and data collection; NHSN as a quality improvement tool	Through quality reporting, payment incentives, and special QIO programs	Developed and implemented electronic occurrence reporting system and ongoing clinical quality/performance measurement/performance improvement program at the NIH/Clinical Center
Efficiency and Costs	Improved quality and reduced costs, avoidable admissions and re-admissions (HAIs)	Cost estimate studies, assess impact, assess unintended consequences of prevention initiatives and policies related to HAI prevention	CMS does not pay for certain hospital-acquired infections	

Appendix D

Top 5 Hospital Allegations for Complaints & Incidents, CY2005 to CY2008

TOP 5 HOSPITAL ALLEGATIONS FOR COMPLAINTS & INCIDENTS

Ranking	Allegation	# Allegations
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CY2008 to date (01012008-08182008)

1	Quality of Care/Treatment	2426
2	Restrain/Seclusion - Death	2074
3	Resident/Patient/Client Rights	1205
4	Nursing Services	832
5	EMTALA	826
13	Infection Control	216

CFY2007

1	Quality of Care/Treatment	4103
2	Resident/Patient/Client Rights	2225
3	EMTALA	1346
4	Nursing Services	1157
5	Resident/Patient/Client Abuse	631
11	Infection Control	405

CY2006

1	Quality of Care/Treatment	3677
2	Resident/Patient/Client Rights	2101
3	EMTALA	1517
4	Nursing Services	1105
5	Resident/Patient/Client Abuse	608
12	Infection Control	314

CY2005

1	Quality of Care/Treatment	3872
2	Resident/Patient/Client Rights	3240
3	EMTALA	1483
4	Nursing Services	1139
5	Resident/Patient/Client Neglect	705

12 Infection Control

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Source: QIES Workbench 8/21/2008; ACTS; Pennsylvania
Complaints and incidents are combined for this report

Note: Includes data for the State of Pennsylvania

Appendix E

Hospital Acquired Conditions, Including Codes, Selected for October 1, 2008

HAC	CC/MCC (ICD-9-CM Codes)
1. Foreign Object Retained After Surgery	998.4 (CC) 998.7 (CC)
2. Air Embolism	999.1 (MCC)
3. Blood Incompatibility	999.6 (CC)
4. Pressure Ulcer Stages III & IV	707.23 (MCC) 707.24 (MCC)
5. Falls and Trauma: - Fracture - Dislocation - Intracranial Injury - Crushing Injury - Burn - Electric Shock	Codes within these ranges on the CC/MCC list: 800-829 830-839 850-854 925-929 940-949 991-994
6. Catheter-Associated Urinary Tract Infection (UTI)	996.64 (CC) Also excludes the following from acting as a CC/MCC: 112.2 (CC) 590.10 (CC) 590.11 (MCC) 590.2 (MCC) 590.3 (CC) 590.80 (CC) 590.81 (CC) 595.0 (CC) 597.0 (CC) 599.0 (CC)
7. Vascular Catheter-Associated Infection	999.31 (CC)
8. Manifestations of Poor Glycemic Control	250.10-250.13 (MCC) 250.20-250.23 (MCC) 251.0 (CC) 249.10-249.11 (MCC) 249.20-249.21 (MCC)
9a. Surgical Site Infection, Mediastinitis Following Coronary Artery Bypass Graft (CABG)	519.2 (MCC) And one of the following procedure codes: 36.10-36.19

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HAC	CC/MCC (ICD-9-CM Codes)
9b. Surgical Site Infection Following Certain Orthopedic Procedures	996.67 (CC) 998.59 (CC) And one of the following procedure codes: 81.01-81.08, 81.23-81.24, 81.31-81.38, 81.83, 81.85
9c. Surgical Site Infection Following Bariatric Surgery for Obesity	<i>Principal Diagnosis</i> – 278.01 998.59 (CC) And one of the following procedure codes: 44.38, 44.39, or 44.95
10. Deep Vein Thrombosis and Pulmonary Embolism Following Certain Orthopedic Procedures	415.11 (MCC) 415.19 (MCC) 453.40-453.42 (MCC) And one of the following procedure codes: 00.85-00.87, 81.51-81.52, or 81.54

Appendix F

Hospital Compare Measures as of October 1, 2008

Acute Myocardial Infarction (AMI) – Heart Attack	Aspirin at Arrival
	Aspirin Prescribed at Discharge
	ACE Inhibitor or Angiotensin Receptor Blocker (ARB) for Left Ventricular Systolic Dysfunction
	Adult Smoking Cessation Advice/Counseling
	Beta-Blocker Prescribed at Discharge
	Beta-Blocker at Arrival
	Fibrinolytic Therapy Received within 30 Minutes of Hospital Arrival
	Primary Percutaneous Coronary Intervention (PCI) within 90 Minutes of Hospital Arrival
	AMI 30-day Mortality
Heart Failure (HF)	Discharge Instructions
	Evaluation of Left Ventricular Systolic Function
	ACE Inhibitor or Angiotensin Receptor Blocker (ARB) for Left Ventricular Systolic Dysfunction
	Adult Smoking Cessation Advice/Counseling
	HF 30-day Mortality
Pneumonia (PN)	Oxygenation Assessment
	Pneumococcal Vaccination
	Blood Culture Performed in the Emergency Department Prior to Initial Antibiotic Received in the Hospital
	Adult Smoking Cessation Advice/Counseling
	Initial Antibiotic Received within 6 Hours of Hospital Arrival
	Appropriate Initial Antibiotic Selection
	Influenza Vaccination
	PN 30-day Mortality
	Surgical Care Improvement Project (SCIP)
Prophylactic Antibiotic Selection for Surgical Patients	
Prophylactic Antibiotics Discontinued within 24 Hours After Surgery End Time	
Surgery Patients with Recommended Venous Thromboembolism (VTE) Prophylaxis Ordered	

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	Surgery Patients Who Received Recommended Venous Thromboembolism (VTE) Prophylaxis Within 24 Hours Prior to Surgery to 24 Hours After Surgery
Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS)	Communication with nurses
	Communication with doctors
	Responsiveness of hospital staff
	Pain management
	Communication about medicines
	Discharge information
	Cleanliness of hospital environment
	Quietness of hospital environment
	Overall rating of hospital
	Willingness to recommend hospital
Children's Asthma Care	Use of relievers for inpatient asthma
	Use of systemic corticosteroids for inpatient asthma