### American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

<table>
<thead>
<tr>
<th>NQF #:</th>
<th>0753</th>
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<tbody>
<tr>
<td>Developer:</td>
<td>American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure</td>
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<td>Measure Steward:</td>
<td>Centers for Disease Control and Prevention</td>
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<td>Data Source:</td>
<td>CMS Hospital Compare</td>
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<td>Description:</td>
<td>Prototype measure for the facility adjusted Standardized Infection Ratio (SIR) of deep incisional and organ/space Surgical Site Infections (SSI) at the primary incision site among adult patients aged &gt;= 18 years as reported through the ACS National Surgical Quality Improvement Program (ACS-NSQIP) or CDC National Health and Safety Network (NHSN). Prototype also includes a systematic, retrospective sampling of operative procedures in healthcare facilities. This prototype measure is intended for time-limited use and is proposed as a first step toward a more comprehensive SSI measure or set of SSI measures that include additional surgical procedure categories and expanded SSI risk-adjustment by procedure type. This single prototype measure is applied to two operative procedures, colon surgeries and abdominal hysterectomies, and the measure yields separate SIRs for each procedure.</td>
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<td>Rationale:</td>
<td>SSIs are estimated to account for 20% of all HAIs. It is estimated that there are 290,485 estimated SSIs per year. There are an estimated 8,205 deaths associated with SSIs each year. An estimated 11% of all deaths occurring in intensive care units are associated with SSIs. The medical cost to manage each SSI is $34,670, resulting in a total of over $10 billion attributable to SSIs in U.S. each year.</td>
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It is envisioned that the use of this measure will promote SSI prevention activities which will lead to improved patient outcomes including reduction of avoidable medical costs, and patient morbidity and mortality. Prevention activities include but are not limited to, appropriate ordering, administration and discontinuation of preoperative prophylactic antibiotics, proper surgical site preparation, optimal glucose control in certain surgical patients, maintenance of patient normothermia during surgery and SSI surveillance with feedback of surgeon-specific SSI data to surgeons.

SSI SIRs are relevant to the patient populations because SSIs are a recognized complication of surgery and prevention recommendations have been published to reduce their incidence. A high SIR indicates an opportunity for improvement.

### Rationale:


### Numerator:

Deep incisional primary (DIP) and organ/space SSIs during the 30-day postoperative period among patients ≥ 18 years of age, who undergo inpatient colon surgeries or abdominal hysterectomies. SSIs will be identified before discharge from the hospital, upon readmission to the same hospital, or during outpatient care or admission to another hospital (post-discharge surveillance). Case accrual will be guided by sampling algorithms as described below.

### Denominator:

Using multivariable logistic regression models for colon surgeries and abdominal hysterectomies, the expected number of SSIs is obtained. These expected numbers are summed by facility and surgical procedure and used as the denominator of this measure (see also 2a.8).

**Denominator Exclusions:**

Persons under the age of 18, those having a procedure performed on an outpatient basis, those with ASA Class VI (6) are excluded. In the NHSN, patients without primary closure of the surgical incision are not considered eligible cases and are excluded- the NSQIP will match this practice for this measure, although this is not standard practice within the NSQIP.

### Impact:

- Estimated to account for 20% of all HAIs
- 290,485 estimated SSIs/yr
- Estimated 8,205 deaths associated with SSIs each year
- Estimated 11% of all deaths occurring in intensive care units are associated with SSIs
- $34,670 medical cost/SSI
- Total >$10 billion attributable to SSI in U.S. each year

### Evidence of High Impact:


### Opportunity:

It is envisioned the use of this measure will promote SSI prevention activities which will lead to improved patient outcomes including reduction of avoidable medical costs, and patient morbidity and mortality. Prevention activities include but are not limited to, appropriate ordering, administration and discontinuation of preoperative prophylactic antibiotics, proper surgical site preparation, optimal glucose control in certain surgical patients, maintenance of patient normothermia during surgery and SSI surveillance with feedback of surgeon-specific SSI data to surgeons.
**Evidence:**

Two guidelines address the prevention of SSI:  
1) Strategies to Prevent Surgical Site Infections in Acute Care Hospitals, 2008 (Society for Healthcare Epidemiology of America) and  

The Guideline for Prevention of Surgical Site Infection, 1999, provides recommendations concerning reduction of surgical site infection risk. Each recommendation was categorized on the basis of existing scientific data, theoretical rationale, and applicability.

Both of these publications cite multiple studies (over 500 in the HICPAC guideline), scientific evidence, and recommendations of other prevention organizations which show that actions taken before, and at the time of, surgery can decrease the rate of SSI. The publications provide recommendations for healthcare practitioners and infection preventionists that can be implemented in efforts to reduce the incidence of SSIs. These utilized guidelines are published by two internationally recognized organizations, Centers for Disease Control and Prevention and Society for Healthcare Epidemiology of America.

The SSI data used in this measure have been endorsed by NQF in a previous measure set. The SMR, upon which the SIR is based, is a widely accepted method for summarizing mortality experience. Therefore, we conclude the SIR measure has inherent face validity. However, the measure’s steward is undertaking validity studies beginning in July 2010.

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<th>Citations for Evidence:</th>
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Guidelines:
1) Strategies to Prevent Surgical Site Infections in Acute Care Hospitals, 2008 (Society for Healthcare Epidemiology of America) and