Background

Circumferential Resection Margin (CRM): Distance between deepest point of tumor invasion and surgically resected nonperitonealized surface of the colon/rectum.

Positive CRM (<1mm distance of tumor from the resected margin) associated with disease recurrence, distant metastasis, and worse survival.

Since 2010, The SEER Program has collected Collaborative Stage Site-Specific Factor 6 (SSF 6) data item (CRM measurement) and Surgery Primary Site Code (SEER Program Coding and Staging Manual 2018) for colon and rectal cancers.

Due to ambiguous guidance and a lack of understanding on the reporting and coding of these variables, a review of the data quality was warranted.

Methods

Colon and rectal cancer cases diagnosed between 2010-2015 identified using SEER5Star: Malignant and in situ included in the analysis.

SSF 6 codes and surgery primary site codes categorized according to CRM measurement if surgical resection was performed.

Outlier detection performed to analyze six problem areas by registry.

Trends (2010-2015) in six problem areas observed.

Seven volunteer registries completed a manual review of 100 randomly selected colon and/or rectal cancer cases with the help of Information Management Systems (IMS).

A total of six problem areas identified in the cross tabulations:

Issue 1. Resection not performed per surgery primary site code (00-28), CRM should also indicate no resection (99).

Issue 2. Cases with higher likelihood of miscoding because of decimal point conversion errors or cm to mm conversion errors; likely to benefit from visual editing.

Issue 3. Surgery primary site code indicates resection (30-80), CRM code indicates no resection (99).

Issue 4. Cases with higher likelihood of miscoding as unknown CRM; likely to benefit from review of pathology reports and NAACCR Abstract text.

Issue 5. CRM indicates resection performed; Surgery primary site should be coded accordingly to resection codes (i.e. 80).

Issue 6. Large Margins: CRM value ≥ 20.0mm.

While the results are presented solely on rectal cancer cases, the same methodology was applied to colon cancer cases, and a similar distribution of issues was found.

Results

Table 1. Surgery Primary Site Code and CRM Cross Tabulation for Rectal Cancer

<table>
<thead>
<tr>
<th>Cases</th>
<th>RX summ – Surg Prim Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRM (SSF 6)</td>
<td>00-28 (No surgical resection)</td>
</tr>
<tr>
<td>000 (CRM Positive)</td>
<td>2031</td>
</tr>
<tr>
<td>001-010 (0.1mm-1.0mm)</td>
<td>921</td>
</tr>
<tr>
<td>011-019, 992 (1.1mm-1.9mm)</td>
<td>21</td>
</tr>
<tr>
<td>020-199, 953-995 (2.0mm-19.9mm)</td>
<td>85</td>
</tr>
<tr>
<td>999 (%0.0mm)</td>
<td>51</td>
</tr>
<tr>
<td>200-991 (0.0mm-98.1mm)</td>
<td>616</td>
</tr>
<tr>
<td>990 (No residual tumor identified on specimen)</td>
<td>838</td>
</tr>
<tr>
<td>991 (Margins clear; CRM negative; NOS)</td>
<td>679</td>
</tr>
<tr>
<td>998 (No resection)</td>
<td>19,715</td>
</tr>
<tr>
<td>999 (Unknown)</td>
<td>1,292</td>
</tr>
<tr>
<td>Total:</td>
<td>24,936</td>
</tr>
</tbody>
</table>

Figure 1. Issue 1 By Year – Rectal Cancer
Proportion of cases with no resection (surgery primary site 00-28) which are not coded to CRM 998 (no resection).

Figure 2. Issue 2 By Year – Rectal Cancer
Proportion of resection cases (surgery primary site 30-80) which are also CRM positive (CRM 001-010).

Discussion

The following corrective-action plan is proposed:

1. Remove the CRM data item from existing datasets (completed April 2019); do not re-release the data item until corrected.

2. Edit Checks
   - If surgery primary site is <30, CRM should only be 998
   - If surgery primary site = 90 (surgery NOS) and CRM indicates resection performed, can code to surgery primary site 80 (resection NOS)
   - Large margins: Should not have CRM values greater than 200 (20.0mm; 2.0cm)

3. Full Audit: Re-consolidate the values based on verification of pathology report and NAACCR Abstract text.