California – Focused on Colorectal Cancer Surveillance: Recommendation for Recurrence Risk and Survival after Surgery

When Positive may mean Negative, and other miscoding patterns noted in data collection of CRM

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Introduction:
The circumferential resection margin (CRM) is an important prognostic factor for recurrence risk and survival after surgery.

- According to the American Joint Committee on Cancer (AJCC) 8th Edition Cancer Staging Manual, “The CRM is the surgically dissected non-peritonealized surface of the tumor.”
- For Collaborative Stage (CS) Site Specific Factor #6 (SSF6) the CRM is the exact measurement/distance from the greatest extension of the tumor to the nearest surgical margin.
- Equivalent terms for CRM are radial margin or mesenteric margin.

Background:
The California Cancer Registry (CCR) conducted a recasting audit to review accuracy for twenty (20) colon cancer data items, including required CS Site Specific Factor #6 (SSF6), Colon CRM Code 000 for 2015 year. Results identified SSF6 CRM as the data variable with the highest overall discrepancy rate. Overall 47% of 335 cases audited involved use of CRM. Several discrepancy patterns were identified.

The most frequent miscoding patterns noted were errors in converting centimeters to millimeters leading to decimal point errors in the code, or coding margins other than CRM, and findings of CRM coded as Positive (POS), yet clearly stated CRM was Negative. The number of cases coded CRM Positive with documentation stating the CRM was Negative, were of particular concern. Therefore, the CCR decided to perform a focused audit of CRM code 000 for both colon and rectal cancers for 2016 for other error patterns and assess overall accuracy.

Concurrently, our CCR colorectal audit, the Surveillance, Epidemiology, and End Results Program (SEER), Quality Improvement Expert Group identified several areas of interest to review and assess CRM data quality.

One area identified was CRM codes 000 (0.1 mm-1 mm) and 001 (0.1 mm or less). This is a small subclass of CRM code group 980 which records the exact CRM measurement/distance. There is potential for coding errors resulting in misclassification for cases with a CRM measurement greater or equal to 0.1 mm.

The CCR chose to expand our audit to include CRM codes 001-010 to identify cases misclassified positive vs negative to secondary decimal point errors. Any errors identified for CRM code 000 as well as decimal point errors in codes 001-010 should be corrected to ensure quality data for research purposes.

Methodology:
Colon and Rectum/Rectosigmoid sites were audited using a test to code review. Does text support coded measure of CRM? The following two code groups were reviewed:

<table>
<thead>
<tr>
<th>CRM Code Group</th>
<th>Notes</th>
</tr>
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<tbody>
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<td>000 (0.1 mm-1 mm)</td>
<td>When CRM is described as involved or positive (POS), or CRM margin distance described within a range of “0.1 mm” without an exact measurement, or described as “less than 1 mm”, 0.1 coding rule directs to use code 000 indicating the CRM is positive.</td>
</tr>
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<td>001 (0.1 mm or less)</td>
<td>When CRM is stated as Positive or Negative, and an exact distance is also documented, the exact distance has priority in coding over Positive or Negative (POS/Neg) CRM codes.</td>
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Audit analysis for positive vs negative CRM classification:
- CRM > 1.0 mm is considered positive. A CRM > 2 mm is considered negative.

Notes:
- CS SSF6 CRM is expressed in nearest tenths in millimeters (mm) in a 3 digit code with an implied decimal point. Example: if a code is 0.2, code is 0.2 mm, is 0.02 if CRM 0.2 centimeters, is 0.0025 if 0.25 mm.
- When CRM is described as involved or positive (POS), or CRM margin distance described within a range of “0.1 mm” without an exact measurement, or as described as “less than 1 mm”, 0.1 coding rule directs to use code 000 indicating the CRM is positive.
- When CRM is stated as Positive or Negative, and an exact distance is also documented, the exact distance has priority in coding over Positive or Negative (POS/Neg) CRM codes.
- Audit analysis for positive vs negative CRM classification is based on the following definition:

** CRM > 1 mm is considered positive. A CRM > 2 mm is considered negative.**

Results CRM codes 001-010, (0.1 mm-1.0 mm):

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Above includes RN/TS tumors recoded from code 001 to 000. CRM was described as <1 mm w/o an exact measurement. Correcting the code does not alter the positive classification, so these cases were included in the counts for “CRM code & Positive classification confirmed.”

- **213 (21%) of 854 rectum/rectosigmoid tumors recoded to 000.**
- **58% (203) Code 000 Correct. CRM confirmed positive.**
- **42% (149) Code 000 INCORRECTLY coded as Negative/Unk/Other.**

Conclusions:
- For the 1,040 colon and rectal tumors with CRM coded as 000 (Positive CRM 0.00), 46% overall were incorrect. In fact the CRM was not positive. In cases with errors, registrars used code 000 incorrectly when CRM was not mentioned and other margins were negative (Neg), if the code was 001, or when the CRM was described as a negative (Neg). In both instances apparently preserving code 000 indicated a negative status.
- For the 618 colon and rectal tumors with CRM coded in the range 001-010 (0.1 mm-1.0 mm), which is generally considered within the “positive range”, 60% were correct. In cases with errors 10% were recoded as CRM negative because the CRM measurement was understated (the CRM was actually greater than what was coded), secondary to centimeter to millimeter conversion, or implied errors and decimal point errors.
- Patterns identified in coding discrepancies for CS SSF6 CRM for colorectal cancers could continue in the new 2018 Site Specific Data Item CRM, therefore it is important to address coding issues with additional education and monitoring of 2018 data.
- Further audits that look at a large number of cases are useful to confirm data quality and identify coding issues which may affect a significant percentage of data. Issues identified can be addressed with global corrections or may identify the need for review and recording of all cases in the database, or within a specified range. It is important to review and monitor data outside of traditional visual editing practices, to ensure data quality which may be used in outcomes studies.

Recommendations:
- A CCR Educational “Q-Tips” with audit findings and coding clarifications for CS SSF6 CRM, contracted with the new 2018 SSID codes and definitions for CRM will be developed. The CCR coding “Q-Tips” was distributed statewide in December of 2018.
- Develop a QC tool for Visual Editors to quickly assess CRM coding as they continue to review 2017 data, and segue into 2018 data with the new CS Data Item CRM codes. Potential updated coding guidelines for the new CS Data Item CRM will be evaluated by the SSDI work group, which is comprised of data editors from the SSDI work group members that a CRM may in fact not be applicable for in situ tumors. This will need to be clarified further. Potential updated coding guidelines for the new SSDI Data Item CRM is a key item for discussion by the SSDI work group. Appropriate updates or clarifications for coding CRM will be incorporated into CCR education material.
- Based on our audit findings, the CCR is considering reviewing and recoding of CRM codes 000 and 001-010 for all colorectal tumors in the database diagnosed between 2010-2017 to ensure data quality. While errors in other CRM codes were observed, codes 000 and 001-010 have the most potential to be used in outcomes studies to assess recurrence risk after surgery.
- SEIR is also in the process of a data quality assessment of CRM in colon and rectal tumors. The CCR will await SEIR’S conclusions and recommendations for assessment of the CRM data item and will proceed further as appropriate.

*The CalCARES Program partners with the California Department of Public Health (CDPH) to manage the operations of the state mandated California Cancer Registration program*