RESULTS
Death Certificates by Multiple Cancer Related Causes Available and DCO: Puerto Rico, 2009-2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Total DC</th>
<th>Underlying CC1</th>
<th>CC2</th>
<th>CC3</th>
<th>DCO</th>
<th>Underlying CC1</th>
<th>CC2</th>
<th>CC3</th>
<th>Total DCO</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>29,125</td>
<td>5,257</td>
<td>80</td>
<td>120</td>
<td>128</td>
<td>527</td>
<td>52</td>
<td>579</td>
<td>118</td>
</tr>
<tr>
<td>2010</td>
<td>29,300</td>
<td>5,345</td>
<td>49</td>
<td>129</td>
<td>130</td>
<td>540</td>
<td>52</td>
<td>592</td>
<td>129</td>
</tr>
<tr>
<td>2011</td>
<td>29,622</td>
<td>5,395</td>
<td>64</td>
<td>112</td>
<td>121</td>
<td>434</td>
<td>52</td>
<td>486</td>
<td>112</td>
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<td>2012</td>
<td>29,890</td>
<td>5,558</td>
<td>79</td>
<td>118</td>
<td>146</td>
<td>455</td>
<td>65</td>
<td>520</td>
<td>146</td>
</tr>
<tr>
<td>TOTAL</td>
<td>147,305</td>
<td>62,938</td>
<td>326</td>
<td>626</td>
<td>714</td>
<td>2,363</td>
<td>286</td>
<td>2,649</td>
<td>2,649</td>
</tr>
</tbody>
</table>

Cancer Related Causes of Death at Underlying and Contributing Causes of Death: Puerto Rico, 2009-2013

RESULTS

• For 2009-2013, PRCCR received 147,305 electronic DC from which approximately 20% (28,794) had Ca related ICD codes in any of the 4 causes of death.
• Approximately, 6% (n=1,666) had Ca related ICD code in any of the 3 contributing causes of death only: 1% (326) in CC1, 2% (626) in CC2 and 3% (714) CC3.
• For this period, an average of 3.4% (n=530) were DCO cases. In 2009 the highest DCO was reported at 4.2% and the lowest in 2013, 3.0%.
• DCO cases identified from contributing causes of death represent, in average, 0.4% (57) of all Ca cases for this period: 67.1% (355) of DCO cases were identified at the underlying COD, 4.2% (22) at CC2 and CC3 each and 2.5% (13) at CC1.
• For the year 2013, follow back was performed on 371 cases of which 82.9% (306) resulted in MIC, 5.4% (20) DCO, 3.5% (13) not reportable, 3.0% (11) metastasis and 5.1% (19) were not received and PRCCR matched it to existing patient (not DCO).
• Of the 306 MIC cases, 56% (171) had four causes of death available, 31% (94) had 3 causes, 10% (30) two causes, and 3% (11) had only the underlying COD.
• Of all MIC, 93% (239) had a Ca related COD in the underlying COD, 4% (10) in CC2, 2% (5) in CC1, and 1% (2) in CC3.

DISCUSSION

• The consideration of contributing causes of death has impacted the PRCCR's death clearance process by allowing identification of additional cases adding to DCO percentage as well as completeness. Especially, for 2013 when PRCCR achieved NAACCR's Silver certification with 91.1% completeness and 2.9% DCO cases.
• By considering contributing causes, most DCO cases recovered for 2009-2013 had Ca related code on CC2 and CC3. In 2013, of the 306 MIC, 6% had Ca related code in CC1-CC3.
• The review of contributing causes of death represents additional workload for PRCCR staff however, the results support the review of multiple causes of death as best practice for death clearance process.
• These results justify maintaining the PRCCR and PRDR agreement to receive up to four causes of death per death certificate.
• The high number of MIC for year 2013 reflect a deficiency in sources’ case finding efforts and calls for action to assure a complete and timely reporting of cases to PRCCR.
• The addition of DCN flag, which started in 2013, permitted the quantification of MIC and allowed the present evaluation of PRCCR’s death clearance process. Additional flags were identified as possible additions to PRCCR DCL process to allow easier and more extensive evaluation (e.g.; existing patient(not DCO) and metastasis).
• Future considerations include: identifying common primary sites through DC only; evaluating the impact of contacting non-clinical sources to obtain contact information for follow back; and evaluating other best practices and guidelines suggested by the DCL Manual for implementation at the PRCCR.