Association of Polygenic-based Breast Cancer Risk Prediction with Patient Management

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Methods
- De-identified administrative claims data from the Optum Labs Data Warehouse were linked with de-identified TC and CRS results originally provided to clinicians who had ordered MyRisk with RiskScore (Myriad Genetics).
- Patients included in the analyses were female and ≥18 years.
- Patient management-related claims were retrospectively analyzed.
- Patients were divided into subgroups based on CRS and TC results (Table 1).
- Average age was 46 years (SD 12).
- 94% were White.
- 2799 were <40 years old.
- After receiving CRS results:
  - The CRS-high/TC-high and CRS-high/TC-avg groups had statistically significant increases in SM in patients <40 years old (P < 0.001 and P = 0.003, respectively), breast MRI (both P > 0.001), and GC (both P > 0.001) compared with the baseline period (Fig 1).

Results
- 8662 total patients were included in the analysis and divided into subgroups based on CRS and TC results (Table 1).
- 2799 were <40 years old.
- 94% were White.
- Average age was 46 years (SD 12).

Figure 1. Clinical outcomes by lifetime risk

Table 1. RiskScore cohorts by lifetime risk

<table>
<thead>
<tr>
<th>n (%)</th>
<th>TC-high</th>
<th>TC-avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRS-high</td>
<td>2,423(26)</td>
<td>696(9)</td>
</tr>
<tr>
<td>CRS-avg</td>
<td>856(10)</td>
<td>4,667(54)</td>
</tr>
</tbody>
</table>

Table 2. Comparison of clinical outcomes between groups (odds ratios relative to CRS-avg/TC-avg group) after 1-year follow-up

<table>
<thead>
<tr>
<th>Lifetime Risk</th>
<th>TC-high/TC-avg</th>
<th>TC-high/TC-high</th>
<th>TC-avg/TC-high</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM, age &lt;40, OR (95% CI)</td>
<td>5.19* (3.32, 8.12)</td>
<td>4.52* (2.50, 8.15)</td>
<td>3.80* (2.18, 6.62)</td>
</tr>
<tr>
<td>Breast MRI, OR (95% CI)</td>
<td>23.09* (15.72, 33.69)</td>
<td>12.70* (8.05, 20.04)</td>
<td>11.55* (7.33, 18.21)</td>
</tr>
<tr>
<td>GC, OR (95% CI)</td>
<td>2.96* (1.28, 3.89)</td>
<td>2.74* (1.83, 4.30)</td>
<td>2.03* (1.35, 3.06)</td>
</tr>
</tbody>
</table>

Conclusions
- Patients with a ≥20% lifetime risk for BC were more likely to undergo enhanced management regardless of whether their risk was based on the CRS or on TC.
- These results suggest that clinicians recommend management aligned with guidelines for those with ≥20% lifetime risk, even when such risk was predicted by the CRS.
- Screenings were not significantly increased in low-risk patients, and very few patients in the cohort underwent mastectomy.
- Future research should be expanded to a more diverse cohort and examine the durability of management over a longer follow-up period. It could also examine the potential for CRS testing to identify BC at earlier stages, thereby improving patient outcomes.

Note:
- *P<0.05.
- ORs were adjusted for age (except for SM, which was already restricted to those ≥40 years), race, status, year of testing, test type, and comorbidities (based on the Quan Charlson Comorbidity Index).
