Recruiting Updates in Orthopaedic Surgery

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Preference Signaling
Why Preference Signaling?

• To add VALUE to both programs and applicants
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  • When APPLICANTS overapply and apply to most programs, the value of the application is lost
    • High cost in application fees
    • Not able to indicate most preferred programs
    • Equity issues
Why Preference Signaling?

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  • When APPLICANTS overapply and apply to most programs, the value of the application is lost
    • High cost in application fees
    • Not able to indicate most preferred programs
    • Equity issues
  • When PROGRAMS receive applications from most applicants, the value of the application is also lost
    • Burden of reviewing applications
    • Unable to perform holistic review
    • Wasted interview slots on uninterested applicants
How Many Signals to Use?

• Otolaryngology (OPDO)
  • 2020-21 and 2021-22
  • 5 signals via OPDO website

• ERAS Supplemental Application Pilot 2021-22
  • IM, General Surgery, Dermatology
  • 3-5 signals
How Many Signals to Use?

• History
  • With 5 or fewer signals, they frequently become aspirational tokens
    • 50% signals to top 25% programs
      • All or Nothing phenomenon
  • “Signal Concentration”
How Many Signals to Use?

• Literature Review
  • J Urology Feb 2022 – Simulated Application Cap
    • Asked applicants to rank all programs at the time of application and compared to Match results
    • 84% matched within top 25 of application list
    • Diversity – no effect on match rate of URIM, IMG or DO applicants
    • Least applied-to program – 12 applications per position
    • Majority of applicants favored a hard cap of 25
How Many Signals to Use?

• Math
  • Numbers crunching with historical application and match data

  • NRMP – programs need ~ 5 ROL spots per position to fill (14.4 in 2022)
    • 5 x 875 positions = 4375 ROL spots at all programs (12,588 in 2022)

  • 30 signals x 1727 applicants = 52k total signals
    • 52k signals / 875 positions = 60 signals per position
    • Compare with 170 apps / position in 2022
How Many Signals to Use?

• Strategy and Advising
  • Allows for more strategic application
    • For an individual applicant, a given program may be aspirational (Reach), well-suited (Wheelhouse), or less competitive (Safety)
    • Depending on strength of application, applicants can devote more or fewer signals to different tiers (e.g. 10/10/10 vs. 20/5/5 vs. 0/5/25)
  • Allows for specialized strategies
    • Geography (e.g. prefers Midwest but not Chicago)
    • Couples match
    • Coordination with classmates to avoid all signaling the same programs
    • Academic vs. Community
    • Urban vs. Rural
How Did It Work?
Outcomes

• Survey by Council of Orthopaedic Residency Directors (CORD)
  • Do you support continued use of preference signaling in future cycles?
    • 90% programs support
    • 78% applicants support
Distribution of Preference Signals

- **Mean 37%**
  - Compare with 5-8% in large specialties with 5 or fewer signals

- **Minimum 17%**
  - Compare with 1-3% in large specialties with 5 or fewer signals

Source: Supplemental ERAS Application 2022-2023 Cycle: Evaluation of Program Signaling

Table 10. Mean Number of Signals and Percentage of Signals Received by Programs Relative to the Number of Applications, by Specialty, 2022-2023

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Mean (Per Program)</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Percentage of Signals Received Relative to Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Neurology</td>
<td>33.87</td>
<td>2</td>
<td>101</td>
<td>Mean (Per Program) 5% Minimum 1% Maximum 16%</td>
</tr>
<tr>
<td>Anesthesiology</td>
<td>104.55</td>
<td>14</td>
<td>278</td>
<td>Mean (Per Program) 7% Minimum 2% Maximum 19%</td>
</tr>
<tr>
<td>Dermatology</td>
<td>23.06</td>
<td>3</td>
<td>76</td>
<td>Mean (Per Program) 4% Minimum 1% Maximum 11%</td>
</tr>
<tr>
<td>Diagnostic Radiology</td>
<td>63.4</td>
<td>5</td>
<td>206</td>
<td>Mean (Per Program) 7% Minimum 1% Maximum 18%</td>
</tr>
<tr>
<td>Interventional Radiology</td>
<td>11.84</td>
<td>1</td>
<td>40</td>
<td>Mean (Per Program) 7% Minimum 1% Maximum 23%</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>53.05</td>
<td>2</td>
<td>203</td>
<td>Mean (Per Program) 6% Minimum 1% Maximum 22%</td>
</tr>
<tr>
<td>General Surgery</td>
<td>65.77</td>
<td>9</td>
<td>236</td>
<td>Mean (Per Program) 6% Minimum 1% Maximum 13%</td>
</tr>
<tr>
<td>Internal Medicine - Categorical</td>
<td>211.11</td>
<td>5</td>
<td>1,222</td>
<td>Mean (Per Program) 8% Minimum 1% Maximum 35%</td>
</tr>
<tr>
<td>Internal Medicine/Psychiatry</td>
<td>29.69</td>
<td>14</td>
<td>57</td>
<td>Mean (Per Program) 20% Minimum 11% Maximum 34%</td>
</tr>
<tr>
<td>Neurological Surgery</td>
<td>28.55</td>
<td>5</td>
<td>85</td>
<td>Mean (Per Program) 10% Minimum 3% Maximum 25%</td>
</tr>
<tr>
<td>Obstetrics and Gynecology</td>
<td>150.8</td>
<td>25</td>
<td>440</td>
<td>Mean (Per Program) 22% Minimum 8% Maximum 43%</td>
</tr>
<tr>
<td>Orthopedic Surgery</td>
<td>244.33</td>
<td>42</td>
<td>540</td>
<td>Mean (Per Program) 37% Minimum 17% Maximum 57%</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>101.29</td>
<td>9</td>
<td>440</td>
<td>Mean (Per Program) 9% Minimum 3% Maximum 25%</td>
</tr>
<tr>
<td>Physical Medicine and Rehabilitation</td>
<td>39.10</td>
<td>6</td>
<td>121</td>
<td>Mean (Per Program) 8% Minimum 2% Maximum 26%</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>64.13</td>
<td>6</td>
<td>240</td>
<td>Mean (Per Program) 7% Minimum 1% Maximum 15%</td>
</tr>
<tr>
<td>Public Health and General Preventive Medicine</td>
<td>0.23</td>
<td>1</td>
<td>20</td>
<td>Mean (Per Program) 25% Minimum 4% Maximum 54%</td>
</tr>
</tbody>
</table>
Signal Concentration

- Prior years – 50% of signals to 25% of programs
- 17% of top 10% programs
  - Compare with 26-31% for large specialties with 5 or fewer signals

### Table 11. Number and Percentage of Signals Sent to 10% of Programs, 2022-2023

<table>
<thead>
<tr>
<th>Specialty</th>
<th>10% of Participating Programs</th>
<th>Percentage of Signals Received by 10% of Programs</th>
<th>Number of Signals Received by 10% of Programs</th>
<th>Total Number of Signals Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Neurology</td>
<td>15</td>
<td>22%</td>
<td>1,160</td>
<td>5,250</td>
</tr>
<tr>
<td>Anesthesiology</td>
<td>15</td>
<td>21%</td>
<td>3,456</td>
<td>16,100</td>
</tr>
<tr>
<td>Dermatology¹</td>
<td>12</td>
<td>22%</td>
<td>624</td>
<td>2,836</td>
</tr>
<tr>
<td>Diagnostic Radiology</td>
<td>19</td>
<td>22%</td>
<td>2,650</td>
<td>11,793</td>
</tr>
<tr>
<td>Interventional Radiology</td>
<td>9</td>
<td>28%</td>
<td>278</td>
<td>1,006</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>26</td>
<td>28%</td>
<td>3,882</td>
<td>13,845</td>
</tr>
<tr>
<td>General Surgery²</td>
<td>28</td>
<td>28%</td>
<td>5,176</td>
<td>18,546</td>
</tr>
<tr>
<td>Internal Medicine – Categorical²</td>
<td>51</td>
<td>31%</td>
<td>33,053</td>
<td>107,668</td>
</tr>
<tr>
<td>Internal Medicine/Psychiatry</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Neurological Surgery</td>
<td>11</td>
<td>24%</td>
<td>759</td>
<td>3,140</td>
</tr>
<tr>
<td>Obstetrics and Gynecology</td>
<td>27</td>
<td>21%</td>
<td>8,642</td>
<td>41,168</td>
</tr>
<tr>
<td>Orthopedic Surgery</td>
<td>18</td>
<td>17%</td>
<td>7,381</td>
<td>44,468</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>20</td>
<td>26%</td>
<td>5,215</td>
<td>20,258</td>
</tr>
<tr>
<td>Physical Medicine and Rehabilitation</td>
<td>9</td>
<td>22%</td>
<td>816</td>
<td>3,675</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>26</td>
<td>20%</td>
<td>4,258</td>
<td>19,354</td>
</tr>
<tr>
<td>Public Health and General Preventive Medicine</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Source: Supplemental ERAS Application 2022-2023 Cycle: Evaluation of Program Signaling
Signal Concentration

Unnamed Specialty with 5 signals

Orthopaedic Surgery

Source: Supplemental ERAS Application 2022-2023 Cycle: Evaluation of Program Signaling

*Ratio of percentage of total program signals a program received to the total applications a program received.
Interview Rate

ORTHOPEDIC SURGERY
Model 1: Median Predicted Interview Invitation Probability by Program Signal & Geographic Preference
(Program n=158; Unique applicants n = 1,599)

- Sent Program Signal
- Did Not Send Program Signal

= Dotted lines represent the 10th percentile and 90th percentile of predicted probabilities across programs.
Interview Rate

• Historically ~5% chance of interview with application in orthopaedics

• In 2022-23
  • Signaled applicants had 23% chance of interview
  • Unsighaled applicants had ~1% chance of interview
    • May actually be less than 1% due to not signaling home and away rotation programs

• Adding value – applicants had 4-5x increased chance of interview by signaling programs compared to prior years without signaling
Creating Value

• Matching the right people to the right programs
  • More applicants getting interviews and matching *at most preferred programs*
  • More holistic review by programs
  • Fewer wasted interview slots
Potential harm?

• Will signaling negatively affect applicants’ chance of matching?
  • Match rate is unchanged with signaling
    • # applicants / # positions

• Will signaling create inequity?
  • Hopefully decrease financial burden of overapplication
  • Programs identify interested applicants that they otherwise would have overlooked

• Will signaling create a *de facto* application cap?
  • Maybe?
  • Several studies show applicants favor a cap
Lesson Learned - Communication is Key

• Home and Away signaling
  • Signal all programs of interest INCLUDING home programs and away rotations
    • CORD website
    • AAMC / ERAS website
    • AAMC / ERAS Supplemental Application Guide
    • CORD webinar
    • CORD email to all programs
  • 42% of programs in some way told applicants not to signal home and/or away programs
    • Majority of applicants (94%) did not heed this advice and did follow the recommendations of CORD and AAMC to signal all programs of interest.
Summary Findings from CORD and AAMC Surveys

• 2022-23 application cycle in orthopaedic surgery saw a 12% decrease in average applications sent per applicant. Applicants reported applying to 12.5% fewer programs due solely to preference signaling.

• Preference signaling was received quite positively by both programs and applicants with 90% of programs and 78% of applicants supporting continued use of preference signaling in the future. There is broad support for a high signal number with most supporting 30, although there is a minority of enthusiastic opponents preferring fewer.

• The use of a high signal number (30) helped to prevent the phenomenon of signal concentration with only 17% of signals going to the top 10% of programs. Programs averaged 37% signaled applicants with a minimum of 17%.
Summary Findings from CORD and AAMC Surveys

• Approximately 2/3 of applicants believe that preference signaling will help them match at one of their most preferred programs. Similarly, 70% of programs reported that preference signaling helped identify applicants who they would have otherwise overlooked.

• Program directors intended to utilize preference signaling to help in holistic application review and in making interview selections but not for ranking decisions.

• Geographic signaling had low utility
Thanks