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Presenter Information
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Evaluation of a Patient Communication Program and Patient Appointment Reminder Calls in a Community Health Center Setting

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Background and Significance
Missed patient appointments at community health centers can cause several clinical and operational issues. These include: lost revenue, which few health centers can afford; disruptions in care continuity; limitations in a health center’s ability to respond to same-day appointment requests; increased wait times.

The medical home model recognizes these challenges and establishes patient access as a core element. Identifying effective and feasible strategies to reduce the no-show rate is a critical component of this.

The Massachusetts League of Community Health Centers, the University of Massachusetts Medical School (UMMS), and the Edward M. Kennedy Community Health Center (Kennedy CHC) came together to develop solutions to reduce the no-show rate. Together, they launched a Patient Communications Pilot Program, which included outsourcing patient communications functions to a state-of-the-art call center operated by UHealthSolutions, an affiliate of UMMS.

Evaluation Aims
- Assess how the pilot program was implemented, specifically the operational and organizational steps taken to initiate and sustain the program.
- Examine the performance of the appointment reminder system based on select intermediate and outcome measures, including reminder call disposition and appointment status.
- Determine how patients who do not show for their appointments differ from those who do, in terms of reminder call disposition and patient characteristics.

Quantitative Data Analysis
We employed quantitative methods to address both the second and third evaluation aims. We assessed the performance of the appointment reminder system based on several intermediate, descriptive measures derived from patient call disposition data routinely collected by UMMS. Data were obtained for appointment calls initiated during a six-month period from July–December 2012. To understand associations between call reminders, patient characteristics, and no-shows, we examined a sample of call disposition data from UMMS combined with patient demographic and appointment status data from Kennedy CHC, collected over a consecutive two-week period during February–March 2013. Our analysis employed both descriptive and multivariate methods.

Descriptive Analysis
Call Disposition, Six Months (N=77,002 appointments)

- Missed data (1%)
- Disposition not specified (1%)
- Patient cancelled/rescheduled (3%)
- Did not get through* (12%)
- Left voice or live message (39%)
- Patient confirmed (44%)

Multivariate Analysis
Probability of Keeping Appointment (N=4,506)

<table>
<thead>
<tr>
<th>Odds Ratio</th>
<th>95% CI Lower-Upper</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (reference = 20-44)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 9</td>
<td>0.834</td>
<td>0.646 - 1.078</td>
</tr>
<tr>
<td>10-19</td>
<td>0.779</td>
<td>0.598 - 1.016</td>
</tr>
<tr>
<td>45-64</td>
<td>1.452</td>
<td>1.215 - 1.734</td>
</tr>
<tr>
<td>65+</td>
<td>1.583</td>
<td>1.167 - 2.148</td>
</tr>
</tbody>
</table>

Gender (reference = male)
- Female: 1.022 | 0.86 - 1.166 | 0.984 |

Race (reference = white)
- Black: 1.051 | 0.851 - 1.298 | 0.6412 |
- Multi-Racial: 1.105 | 0.868 - 1.408 | 0.4176 |
- Asian: 1.48 | 0.958 - 2.288 | 0.0772 |
- Other: 0.573 | 0.254 - 1.293 | 0.1803 |

Ethnicity (reference = non-Hispanic)
- Hispanic: 0.95 | 0.777 - 1.161 | 0.6134 |

Language (reference = English)
- Spanish: 1.265 | 1.009 - 1.586 | 0.0412 |
- Portuguese: 1.388 | 1.062 - 1.814 | 0.0164 |
- Other: 1.368 | 0.983 - 1.902 | 0.0138 |

Day of the week (reference = Wednesday)
- Monday: 0.814 | 0.651 - 1.018 | 0.071 |
- Tuesday: 0.903 | 0.711 - 1.147 | 0.4031 |
- Thursday: 0.807 | 0.635 - 1.025 | 0.0791 |
- Friday: 0.816 | 0.603 - 1.105 | 0.1886 |
- Saturday: 0.802 | 0.516 - 1.246 | 0.3268 |

Location (reference = Worcester)
- Clinton: 1.62 | 1.087 - 2.413 | 0.0178 |
- Framingham: 1.914 | 1.445 - 2.535 | <0.0001 |

Call Disposition (reference = could not get through)
- Patient confirmed: 3.15 | 2.527 - 3.927 | <0.0001 |
- Left message (person): 1.935 | 1.367 - 2.741 | 0.0023 |
- Left message (voicemail): 1.846 | 1.471 - 2.316 | <0.0001 |
- Other: 0.689 | 0.367 - 1.292 | 0.2452 |

Type of Service (reference = medical visit)
- Behavioral Health: 1.038 | 0.819 - 1.316 | 0.758 |
- Dental Visit: 0.857 | 0.696 - 1.056 | 0.1485 |
- Other: 0.473 | 0.379 - 0.591 | <0.0001 |

Key Informant Interviews
Results
Implementation was facilitated by:
- Cultural alignment within the health center toward centralization and quality improvement
- Leadership and key stakeholder support
- Technical capacity resulting from an existing electronic health record and practice management system

Implementation was challenged by:
- Extensive call protocol development and maintenance
- Remote call center limitations pertaining to tracking personnel at phone extensions
- Ongoing call center staff training to ensure adherence to call protocols and routing procedures

Evaluation Findings
The evaluation findings suggest that patients are more likely to attend their appointments if they are older than 44 years (versus 20-44 years), speak a primary language other than English, or receive a reminder call that confirms their appointment or leaves a message (versus a reminder call that cannot get through). The findings also suggest that patients are less likely to show for their appointment if the appointment is for specialty care (compared to routine medical care), or the appointment is scheduled for a Monday or Thursday (versus Wednesday).