Evaluation of Waiting Times in Healthcare Clinic

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Agenda

- Define Phase
- Measure Phase
- Analyze Phase
- Improve Phase
- Control Phase
Problem Statement & Scope

### Phase 1
- From appointment time to being called by Service Provider
- Process creates extensive waiting times:
  - **Average: 68.40 min**
  - **Standard Deviation: 29.66 min**
  - **Goal < 60 min**
- 50% of complaints due to waiting times (VOC)
- Lack of compliance with contract and normative

### Phase 2
- Check-out process – Follow up appointment
- Process creates extensive waiting times:
  - **Average: 10.45 min**
  - **Standard Deviation: 14.97 min**
  - **Goal < 5 min**
- 30% of complaints due to not receiving a follow-up appointment (VOC)
Waiting Time Results/Opportunities

• **Total Time for Phase 1**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (min)</td>
<td>68.40</td>
<td>29.663</td>
<td>24.07</td>
<td>160.15</td>
</tr>
</tbody>
</table>

• **Total Time for Phase 2**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (min)</td>
<td>10.45</td>
<td>14.97</td>
<td>0.00</td>
<td>96.00</td>
</tr>
</tbody>
</table>

**Opportunities**

• **Batch Process** - Security Guard calls patients for check-in every 30 minutes
• **Layout** - Check-in window used for check-in & check-out processes
• **Over Processing** - Manual listing additional to EMR System
• **Core Hours Alignment** - Appointments scheduled before Service Provider arrival
• **Line Balance** - Children appointments only Mondays & Thursdays
• **Line Balance** – Appts. AM=66% vs. PM=34%
  Providers Availability AM=54% vs. PM=46%
• **Workload Balance** - Appointments scheduled for more (or less) time than the Provider’s Service Time
Distribution of Times

Service Provider

- Determine available hours per week
- Calculate the average service time
- Potential capacity vs. Actual

Day of the Week

- Mondays & Thursdays considered Children’s day
  - Psychiatrist (15% of appointments) - available only Mondays and Thursdays
  - Generalist (26% of appointments) - available all week
  - Psychologist (11% of appointments) – available all week

Time of the Day

- Morning appointments have an average waiting time statistically different from afternoon appointments.

<table>
<thead>
<tr>
<th>Service Provider</th>
<th>Available Time (hr)</th>
<th>Actual Service Time (min)</th>
<th>Potential Capacity</th>
<th>Actual Number of Patients Serviced</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Generalists</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr. A</td>
<td>37.50</td>
<td>15</td>
<td>150</td>
<td>124</td>
<td>+26</td>
</tr>
<tr>
<td>Dr. B</td>
<td>27.50</td>
<td>15</td>
<td>110</td>
<td>82</td>
<td>+28</td>
</tr>
<tr>
<td>Dr. C</td>
<td>16.50</td>
<td>20</td>
<td>68</td>
<td>50</td>
<td>+18</td>
</tr>
</tbody>
</table>
Recommendations

Realign roles and responsibilities

<table>
<thead>
<tr>
<th>Employee</th>
<th>Should do...</th>
<th>Should NOT do...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security Guard</td>
<td>- Ensure the security of the patients and clinic employees</td>
<td>- Obtain appointment cards</td>
</tr>
<tr>
<td></td>
<td>- May escort a patient from the Waiting Area to a particular location in the Clinic</td>
<td>- Provide appointment cards to Administrative Assistants</td>
</tr>
<tr>
<td></td>
<td>- Assist staff with behavioral problems with the patients</td>
<td>- Calls patients every 30 minutes to make the line for the Check-in window</td>
</tr>
<tr>
<td></td>
<td>- May answer questions from patients, regarding doubts to were to receive service</td>
<td></td>
</tr>
</tbody>
</table>

Enable use of Check Out Area

- Use of check out area to provide follow up appointments
- Reduce flow at the waiting area

Appointment Scheduling & Capacity Planning

- One Piece flow vs. Batch check-in
- Align service time for each service provider
- Appointment Booking – Only to be allowed during service provider available hours
- Automated Service Time Calculation and Calendar Programming
- Increase number of appointments scheduled based on the new calculated capacity

Improve Phase

![Graph showing improvements in patient flow over the week]

- 22% = 33 patients/day
## Resulting Waiting Times

<table>
<thead>
<tr>
<th>Activity</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify with Security Guard</td>
<td>5.83</td>
<td>Eliminated</td>
</tr>
<tr>
<td>Time waiting for check-in</td>
<td>13.49</td>
<td>1.80</td>
</tr>
<tr>
<td>Check-in with Administrative Assistant</td>
<td>7.71</td>
<td>7.71</td>
</tr>
<tr>
<td>Time waiting for service provider</td>
<td>41.37</td>
<td>20.49</td>
</tr>
<tr>
<td>Time with service provider</td>
<td>32.29</td>
<td>32.29</td>
</tr>
<tr>
<td>Time waiting for check-out</td>
<td>10.45</td>
<td>5.54</td>
</tr>
<tr>
<td>Check-out with Administrative Assistant</td>
<td>3.27</td>
<td>2.47</td>
</tr>
<tr>
<td>Total (minutes)</td>
<td>114.29</td>
<td>70.30</td>
</tr>
</tbody>
</table>

### Phase 1
- From 68.40min to 30 min
- Interaction of Security Guard eliminated
- Time waiting for Service Provider reduced in half (50%)

### Phase 2
- Time waiting for check-out reduced in half (50%)

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**Process Lead Time**

38% = 44 min reduction

*Enhance the Customer Experience*
Applying Controls

• **Visual Management**
  • Waiting Room, Registration/Check-In Sign & Check-Out Sign

• **Communication Plan & Gemba Activity**
  • Inform each employee of new roles & responsibilities. Do's & Don’ts.
  • Take management to the front lines of the Clinic to look for waste and opportunities.

• **Business Review**
  • Use the reports from the Electronic Medical Record system, generate the metrics and evaluate the data using the Scorecard.
  • Discuss with the team on a monthly basis.
  • Take corrective actions accordingly.

### Average Waiting Time in minutes

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Goal</th>
<th>Jan</th>
<th>Feb</th>
<th>March</th>
</tr>
</thead>
<tbody>
<tr>
<td>Médico Generalista</td>
<td>60</td>
<td>60.05</td>
<td>70.54</td>
<td>77.93</td>
</tr>
<tr>
<td>Psicólogo</td>
<td>60</td>
<td>64.14</td>
<td>96.92</td>
<td>88.84</td>
</tr>
<tr>
<td>Psicólogo Int.</td>
<td>60</td>
<td>65.40</td>
<td>79.93</td>
<td>102.12</td>
</tr>
<tr>
<td>Psiquiatra</td>
<td>60</td>
<td>57.70</td>
<td>64.42</td>
<td>77.64</td>
</tr>
<tr>
<td>Psiquiatra de niños y adolescentes</td>
<td>60</td>
<td>47.19</td>
<td>50.13</td>
<td>118.04</td>
</tr>
<tr>
<td>Trabajador Social</td>
<td>60</td>
<td>99.78</td>
<td>94.28</td>
<td>112.01</td>
</tr>
</tbody>
</table>

**Control Phase**
IE & Lean Six Sigma Tools Used

- DMAIC Methodology
- Project Charter
- SIPOC
- Process Map
- Time Studies
- Waste Elimination
- Batch vs. Flow
- Line Balance
- Work Load Balance
- 5S
- Visual Management
- Minitab
- ANOVA
- Strategic Layout Planning (SLP)

- Capacity Planning
- Capability Analysis
- Basic Statistics (mean, std dev, etc...)
- Rapid Problem Solving
- RCCA
- Pareto Charts
- Standardized Work
- Voice of the Customer (VOC)
- Control Charts
- Control Plans
- Six Sigma
- Hypothesis Testing
Thank you