Is my patient here?
The value of predicting no-shows in independent physician practices

Predictive Analytics World for Healthcare – Las Vegas 2019
June 16-20, 2019

Chip Hart
Director of Pediatric Solutions
Physician’s Computer Company
chip@pcc.com

Karl Rexer, PhD
President
Rexer Analytics
krexer@rexeranalytics.com
How’d we end up here today?

Pediatricians are at the bottom of the totem pole.
Our Assumption: Time Is Money

Every no show represents lost income.

If a typical pediatric visit is $150, and a 1% drop in no-shows represents 50 visits annually,

... that’s $7,500 in lost income, or 5% of a pediatrician’s income.
Industry Sells “No Show Solutions”
So what do we know?

Is our wisdom too conventional?

68% of Pediatric practices have no-show rates < 5%

4% of Pediatric practices have no-show rates of 15% or higher
- They account for 12% of total missed appointments

Over 30% of practices had missed appointment rates of 5% or higher
What did we learn?

Is our wisdom too conventional?

- Size, region, state have no significant relationship.
- Clinical quality measures (well visit rates, immunization coverage) don’t affect no-show rates.
- Pricing, coding expertise, appointment volume, use of patient portal, use of patient reminder system – nada.
Hypothesis #1

• If we can identify the families most likely to no-show at the time of scheduling we can fill those appointments!

• There are going to be hot times/days we want to avoid

• Those Medicaid families are the big problem
Let’s **predict** no-shows when we schedule!

- Increase revenue!
- Improve clinical response!
- Save some high Medicaid practices!
Analysis & Results

- There really aren’t hot spots!
- A majority of patients never no-show.
- A huge majority of patients almost never miss.
- The ones who miss, miss consistently.
- The impact of the ‘age’ of the appointment isn’t intuitive.
Analysis & Results

• The strongest predictor of missing an appointment is having a history of missing appointments.

• However, those who schedule an appointment the same day rarely miss an appointment. This holds true even among people with a long history of missing appointments.

• Among those who have scheduled an appointment in advance, having either Medicaid or no insurance is a strong predictor of missing the appointment.
The strongest predictor of missing an appointment is having a history of missing appointments.
Analysis & Results

- Logistic regressions and decision tree analyses also revealed some interesting patterns.

- Among patients that historically have missed 9% or more of their appointments...
  - They have an almost 40% no-show rate when they schedule appointments 3+ days in advance
  - About a 20% no-show rate when they schedule 1-2 days in advance
  - And a 5% no-show rate on same day appointments

271,863 patients
745,352 appointments
Appointments scheduled far in advance are more likely to be missed.

<table>
<thead>
<tr>
<th>Time between scheduling and appointment</th>
<th>Percent of appointments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same Day</td>
<td>44.8%</td>
</tr>
<tr>
<td>1 - 7 Days</td>
<td>17.5%</td>
</tr>
<tr>
<td>8 Days to 1 Month</td>
<td>17.6%</td>
</tr>
<tr>
<td>1 - 2.9 Months</td>
<td>14.6%</td>
</tr>
<tr>
<td>3 - 5.9 Months</td>
<td>4.6%</td>
</tr>
<tr>
<td>6+ Months</td>
<td>1.0%</td>
</tr>
</tbody>
</table>
Hypothesis #2

- Let’s initiate a **second reminder call** for high no-show people!
- It’s better to have a canceled appointment than a missed appointment.
- **Reducing no-shows isn’t about the $$**, it’s about reducing the chaos and knowing what kind of time you have with the patient in front of you.

“If I am in an exam room working with a depressed teen, knowing that I don’t have to leave the room in 2 minutes is so much more important to me than filling that overbooked slot to make more money.”
Analysis & Results: Round 2

- The vision of scrolling around for the best place to drop a patient is backwards — we want to know what’s happening today. Not only does knowing what will happen today reduce chaos, it will be more accurate than the prediction made last year.

- Patients who were unable to be contacted by the automated notification process were literally 2x more likely to miss appointments and 25% less likely to cancel them.
Next Steps

If:

• 15% of the patient base makes up 60% of the no-shows
• AND
• We can identify which patients aren’t answering their phones
• AND
• We just want to know what’s going to happen today
• THEN
• Let’s predict the top 3-4 patients/day and call them personally to determine what’s going to happen
Questions? Comments?

**Chip Hart**  
*Director of Pediatric Solutions*  
*Physician’s Computer Company*  
chip@pcc.com  
+1 802-846-8177  
pcc.com

**Karl Rexer, PhD**  
*President*  
*Rexer Analytics*  
krexer@rexeranalytics.com  
+1 617-233-8185  
www.RexerAnalytics.com