PATIENT AND PHYSICIAN PREDICTIONS OF TIME AND SEVERITY OF THE COMMON COLD

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Family Medicine Research Project 2010
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In the US, roughly 500 million non-influenza respiratory infections cost our society roughly $40 BILLION (Fendrick, AM et. al.).

No truly effective medications are available.

Predictability either on the end of the patient or the physician may prove useful.

Using Bruce Barrett’s PEP study data, I checked to see if predictions about cold duration and severity matched reality.
We used 720 otherwise healthy patients age 12 or older.

Patients were enrolled within 36 hours of symptom onset.

Patients must have thought they had a cold and complained of at least one of the following:
- Nasal discharge (runny nose)
- Nasal obstruction (stuffy nose)
- Sneezing
- Sore throat
Patients were then randomized into 1 of 12 groups using 2-way factorial allocation.

2/3 of patients visited a physician.

Here’s what that looked like.....
## Methods (Allocation)

<table>
<thead>
<tr>
<th></th>
<th>No Pill</th>
<th>Blinded Placebo</th>
<th>Blinded Echinacea</th>
<th>Labeled Echinacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Visit</td>
<td>60 patients</td>
<td>60 patients</td>
<td>60 patients</td>
<td>60 patients</td>
</tr>
<tr>
<td>Standard Visit</td>
<td>60 patients</td>
<td>60 patients</td>
<td>60 patients</td>
<td>60 patients</td>
</tr>
<tr>
<td>Enhanced Visit</td>
<td>60 patients</td>
<td>60 patients</td>
<td>60 patients</td>
<td>60 patients</td>
</tr>
</tbody>
</table>

For a total of n=720 patients
How was duration and severity measured?
- Patients used daily self report forms.
- Duration: days (intake day until recovery)
- Severity: Wisconsin Upper Respiratory Symptom Survey (WURSS) (questions answered by patients in their self report forms)

Here’s what that looked like....
### Wisconsin Upper Respiratory Symptom Survey – 21 --- Daily Symptom Report

**Day:** [ ]

**Date:** [ ]

**Time:** [ ]

**ID:** [ ]

Please fill in one circle for each of the following items:

<table>
<thead>
<tr>
<th>Not sick</th>
<th>Very mildly</th>
<th>Mildly</th>
<th>Moderately</th>
<th>Severely</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

**How sick do you feel today?**

Please rate the average severity of your cold symptoms over the last 24 hours for each symptom:

<table>
<thead>
<tr>
<th>Do not have this symptom</th>
<th>Very mild</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

- Runny nose
- Plugged nose
- Sneezing
- Sore throat
- Scratchy throat
- Cough
- Hoarseness
- Head congestion
- Chest congestion
- Feeling tired

Over the last 24 hours, how much has your cold interfered with your ability to:

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Very mildly</th>
<th>Mildly</th>
<th>Moderately</th>
<th>Severely</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

- Think clearly
- Sleep well
- Breathe easily
- Walk, climb stairs, exercise
- Accomplish daily activities
- Work outside the home
- Work inside the home
- Interact with others
- Live your personal life

**Compared to yesterday. I feel that my cold is…**

<table>
<thead>
<tr>
<th>Very much better</th>
<th>Somewhat better</th>
<th>A little better</th>
<th>The same</th>
<th>A little worse</th>
<th>Somewhat worse</th>
<th>Very much worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
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<td>o</td>
</tr>
</tbody>
</table>

WURSS-21® (Wisconsin Upper Respiratory Symptom Survey) 2004
Created by Bruce Berret MD PhD et al., UW Department of Family Medicine, 777 S. Mills St Madison, WI 53715, USA
Methods (Predictions)

- Patients
  - (1 – 5)

- Physicians:
  - (0 – 100)
Both duration and severity had discrete values.
First I sorted by cohorts to see if a potential association did exist.
If it looked possible, I used an XY scatter plot to look for correlation.
Multiple possible predictors were tested.
4 main plots were ultimately used…
Results (Patients & Duration)

Patient Prediction vs. Actual Duration

$R^2 = 6E-06$

Actual Duration (Days)

0.00 1.00 2.00 3.00 4.00 5.00 6.00

0.00 2.00 4.00 6.00 8.00 10.00 12.00 14.00 16.00

Patient Predicted Duration (1 = Short 5 = Long)
Results (Physicians & Duration)

Physician Prediction vs. Actual Duration

\[ R^2 = 0.0061 \]
Results (Patients & Severity)

Patient Prediction vs. Actual WURSS

$R^2 = 0.033$

WURSS 21 AUC Score

Patient Predicted Severity 1 = Mild 5 = Severe
Results (Physicians & Severity)

Physician Prediction vs. Actual WURSS

$R^2 = 0.0241$

Physician Predicted Severity 0 = Mild 100 = Severe
Neither patient nor physician could strongly predict duration or severity of the cold.
The best predictions were patients predicting their own severity.
This seems to challenge beliefs in the effect of attitude on the length of a cold.
Conclusions (Limitations)

- Statistical analysis is pending.
- Patient R² values may be artificially high since patient predictions were limited to 1 - 5.
- There is an inherent difference between the questions physicians were asked and what the patients were asked.
- I’d like to see if both patients and doctors were asked to predict, in days, how long the cold would last.
Thanks to Bruce Barrett for his patience with me and tolerance of my questions!

Thanks to Tola Ewers for putting the data on one workbook for me!

Thanks to Shari Barlow for helping me hit the ground running!

Thanks to Jon Temte for making these summer projects possible!

Thanks to Laura Kutzke for making our summer meetings enjoyable!

Thanks to you all for having me!
WHO’S GOT QUESTIONS?