Work related lost productivity and its economic impact in Canadian patients with moderate to severe psoriasis
Thank you

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Outline

• Background
• Methods
• Results
• Other studies
Take home messages

• Psoriasis appears to an impact on work productivity
Background - Psoriasis

• “Most common autoimmune disease in the US”¹

• itchy, scaly, red patches
  – chronic, autoimmune skin disease

• Affects 1 million Canadians, 80 million worldwide²

1. National Psoriasis Foundation, 2011
2. Canadian Dermatology Association, 2011
Background – health care costs

• $1.24 billion direct costs U.S.\(^1\) (2004)
• $114 million indirect costs U.S.\(^1\) (2004)
  – $50.8 million lost workdays
  – $32.2 million restricted activity days
  – $21.8 million lost caregiver work days
  – $9.6 million loss future earnings

Background – lost productivity

- Substantial in psoriasis – age of onset
- Mean age of onset = 33 years\textsuperscript{1}
- Decline after age 70\textsuperscript{1}
- 16-46 years of age\textsuperscript{2-5}
- 16-22 and 57-60 years of age\textsuperscript{6}

1. Green L., 2011
2. Farber EM et al. 1974
3. Yip SY et al 1984
4. Farber EM et al., 1985
5. Nevitt GJ et al., 1996
6. Henseler T et al. 1985
Rationale

• Lost productivity likely to be substantial burden
• Lack of Canadian data on the economic burden of lost productivity in psoriasis
Objective

• To determine the lost productivity and its economic impact in Canadian patients being treated for moderate to severe psoriasis
Methods

• 4 Canadian dermatology clinics (academic centres and community offices)

• Inclusion: diagnosis of moderate to severe psoriasis, 19 years of age or older, undergoing treatment for psoriasis (biologic, phototherapy, systemic or topical)
Moderate Psoriasis 3-10% body surface area

Severe Psoriasis >10% body surface area
Methods

• Recruitment of consecutive patients – Sept 21st to Nov 8th 2005
• Measurement = Work Productivity and Activity Impairment Questionnaire (WPAI)
Methods

• WPAI
  – Used extensively in prior studies
  – Easy to administer and complete
  – Simple to analyze
Work Productivity and Activity Impairment Questionnaire: Specific Health Problem V2.0 (WPAI:SHP)

The following questions ask about the effect of your PROBLEM on your ability to work and perform regular activities. Please fill in the blanks or circle a number, as indicated.

1. Are you currently employed (working for pay)?
   _____ NO  _____ YES
   If NO, check “NO” and skip to question 6.

   The next questions are about the past seven days, not including today.

2. During the past seven days, how many hours did you miss from work because of problems associated with your PROBLEM? Include hours you missed on sick days, times you went in late, left early, etc., because of your PROBLEM. Do not include time you missed to participate in this study.
   _____ HOURS

3. During the past seven days, how many hours did you miss from work because of any other reason, such as vacation, holidays, time off to participate in this study?
   _____ HOURS

4. During the past seven days, how many hours did you actually work?
   _____ HOURS (If “0”, skip to question 6.)
5. During the past seven days, how much did your PROBLEM affect your productivity while you were working?

Think about days you were limited in the amount or kind of work you could do, days you accomplished less than you would like, or days you could not do your work as carefully as usual. If PROBLEM affected your work only a little, choose a low number. Choose a high number if PROBLEM affected your work a great deal.

Consider only how much PROBLEM affected productivity while you were working.

<table>
<thead>
<tr>
<th>PROBLEM had no effect on my work</th>
<th>PROBLEM completely prevented me from working</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
</tbody>
</table>

CIRCLE A NUMBER

6. During the past seven days, how much did your PROBLEM affect your ability to do your regular daily activities, other than work at a job?

By regular activities, we mean the usual activities you do, such as work around the house, shopping, childcare, exercising, studying, etc. Think about times you were limited in the amount or kind of activities you could do and times you accomplished less than you would like. If PROBLEM affected your activities only a little, choose a low number. Choose a high number if PROBLEM affected your activities a great deal.

Consider only how much PROBLEM affected your ability to do your regular daily activities, other than work at a job.

<table>
<thead>
<tr>
<th>PROBLEM had no effect on my daily activities</th>
<th>PROBLEM completely prevented me from doing my daily activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
</tbody>
</table>

CIRCLE A NUMBER
Methods

• Analysis exclusion: Reported retirees, unemployed, 0 hours worked in last week, or did not complete questionnaire completely.

• Lost productivity = absenteeism
Methods

\[
\text{overall economic burden} = \text{total absenteeism} \times \text{average wage} \times \text{estimated psoriasis population}
\]
Methods

\[ \text{overall economic burden} = \text{total absenteeism} \times \text{average wage} \times \text{study results (WPAI)} \times \text{estimated psoriasis population} \]
Methods

overall economic burden = total absenteeism \times \text{average wage} \times \text{estimated psoriasis population} 

study results (WPAI)

Statistics Canada avg Canadian wage (2012)
Methods

Overall economic burden =

study results (WPAI) X total absenteeism X average wage X estimated Canadian psoriasis population percent moderate to severe X estimated Canadian psoriasis population

Statistics Canada avg Canadian wage (2012)
Results

137 subjects included

- 28 reported retired (20%)
- 22 reported unemployed (20%)
- 5 subjects did not complete
- 1 reported full time but no hours worked

81 subjects included
Results

Currently employed

- Male: 72%
- Female: 28%

Currently unemployed

- Male: 64%
- Female: 36%
Results

Reason for unemployment

- Illness/disability (not psoriasis related): 20%
- Illness/disability (psoriasis related): 12%
- School leave: 15%
- Caring for own children: 8%
- Non-seasonal temporary layoff: 6%
- Permanent layoff: 5%
- Other: 20%
- Not available: 25%
Results

Currently employed
Currently unemployed
Results

Work status

- Full-time: 80%
- Part-time: 15%
- Casual hours: 5%

Household income

- <$20,000
- $20,000 to $39,000
- $40,000 to $59,000
- $60,000 to $79,000
- $80,000 to $99,000
- $100,000+
Results

Psoriasis impact on work productivity

Number of hours worked per week
Number of hours off per week (due to all psoriasis-related events)
Results

5.1\% \ (±12.5\%) \quad \text{Average \% of work time missed due to psoriasis}

16.5\% \ (±2.4\%) \quad \text{Average \% impairment while working due to psoriasis}

19.4\% \ (±26.0\%) \quad \text{Average \% overall work impairment due to psoriasis}
$23.65

Average hourly wage for individual aged 15+ March 2012
Results

$23.65  Average hourly wage for individual aged 15+ March 2012

$2,700  Estimate of lost wages per year due to absenteeism
Results

$23.65  Average hourly wage for individual aged 15+ March 2012

$2,700  Estimate of lost wages per year due to absenteeism

330,000  Canadians with moderate to severe psoriasis
Results

$23.65  Average hourly wage for individual aged 15+ March 2012

$2,700  Estimate of lost wages per year due to absenteeism

330,000  Canadians with moderate to severe psoriasis

$890 million  Estimated lost wages in Canada per year
### Other studies

<table>
<thead>
<tr>
<th></th>
<th>% work time missed</th>
<th>% impairment while working</th>
<th>% overall impairment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our study</td>
<td>5.1%</td>
<td>16.5%</td>
<td>19.4%</td>
</tr>
<tr>
<td>Pearce DJ 2006</td>
<td></td>
<td>23.9%/15%</td>
<td>25%/12.1%</td>
</tr>
<tr>
<td>Meyer N 2010</td>
<td>10.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schmitt JM 2006</td>
<td>6.6%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Other studies

- Sohn 2006 - 14.1 days of sick leave/year
- Schmitt 2006 - Estimated total loss in US $16 billion
- Bala 2009 - missed hours of work (1.37 OR, 1.00-1.89), productivity impairment at work (1.66 OR, 1.28-2.18), overall work impairment (1.62 OR 1.25-2.11)
## Other diseases

<table>
<thead>
<tr>
<th>Disease</th>
<th>Absenteeism %</th>
<th>Presenteeism %</th>
<th>Overall work impairment</th>
<th>Author / year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psoriasis</td>
<td>5.1% (12.5%)</td>
<td>16.5% (2.4%)</td>
<td>19.4 (26.0%)</td>
<td></td>
</tr>
<tr>
<td>Ankylosing Spondylitis</td>
<td>9.0% (21.4%)</td>
<td>41.7% (25.3%)</td>
<td>43.9% (27.5%)</td>
<td>Reilly 2010</td>
</tr>
<tr>
<td>Asthma</td>
<td>10.4% (23.59%)</td>
<td>32.5% (26.99%)</td>
<td>48.8% (29.2%)</td>
<td>Demoly 2012</td>
</tr>
<tr>
<td>Rheumatoid Arthritis</td>
<td>8.7% (25.2%)</td>
<td>24.0% (22.7%)</td>
<td>33.3% (27.6%)</td>
<td>Bansback 2012</td>
</tr>
<tr>
<td>Diabetes</td>
<td>3.49% (1.18%)</td>
<td>13.52 (1.07%)</td>
<td>13.75 (1.07%)</td>
<td>DiBonaventura 2011</td>
</tr>
</tbody>
</table>
Limitations

• WPAI and recall bias
• Accuracy of sensitive questions
• Limited to BC and Ontario
• Paid and unpaid time off unknown
Future directions

• Link between psoriasis-lost productivity-quality of life
• Detailed investigation of income loss
• Comparison with other diseases