Determining Costs in IBD

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Within the past 12 months, I have had financial relationships with commercial entities and the content of my presentation includes discussion of off-label/investigative use of medicine(s), medical devices, or procedures.

**Lecturer**: Abbott, Salix, Shire

**Consultant**: Abbott, Elan Pharmaceuticals, Guidepoint Global, Johnson and Johnson, Prometheus Laboratories, Salix Pharmaceuticals, Special Design Healthcare, UCB
IBD: “Trifecta” for High Costs

#1: Chronic, Relapsing Disease

#2: Young Age of Onset

#3: Normal Life Expectancy

Potential for Considerable Lifetime Medical Costs
## Total Economic Burden in IBD

<table>
<thead>
<tr>
<th>Disease</th>
<th>Year</th>
<th>USA ($)</th>
<th>Europe (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Crohn’s Disease (2006)</strong></td>
<td>2006</td>
<td>$10.9 - 15.5 Billion</td>
<td>€2.1 - 16.7 Billion</td>
</tr>
<tr>
<td><strong>Ulcerative Colitis (2008)</strong></td>
<td>2008</td>
<td>$8.1 - 14.9 Billion</td>
<td>€12.5 - 29.1 Billion</td>
</tr>
</tbody>
</table>

"COSTS"
2 Major Categories

**DIRECT COSTS**
- Hospitalizations
- Surgeries
- Medications
- Office Visits
- Lab Tests
- Diagnostic Testing
  - GI Procedures
  - XRAYs
- Etc.

**INDIRECT COSTS**
- Work /School Absence
- Work Productivity
- School Performance
- Early Retirement
- Disability
- Premature Death
- Impact on QOL
- Etc.

Including Impact on Friends, Family, Caregivers
Direct Costs

- Surgery and Hospitalizations Have Traditionally Been Major Contributors to IBD Direct Costs
IBD: US Direct Costs (1988-89)

Crohn’s Disease Direct Costs
- Hospitalization: 33.7%
- Surgery: 46.2%
- Medications: 10.2%
- Outpatient: 2.9%
- Complications: 5.5%
- Diagnostic W/U: 1.5%
- Hospitalization: 33.7%

Ulcerative Colitis Direct Costs
- Diagnostic W/U: 7.8%
- Hospitalization: 31.5%
- Surgery: 15.6%
- Medications: 8.4%
- Outpatient: 7.1%
- Complications: 29.5%
Hospitalization Accounts for >50% of Health Care Costs in Crohn’s*

*Data from patients with a CD-related medical claim (10/94-09/95) included in a 1994 integrated claims database.

Total Average Medical Costs for Patients With CD*

Average Medical Costs/ Patient/Year ($)

- Group 1: $37,135
- Group 2: $10,033
- Group 3: $6,277
- All Patients: $12,417

- Required hospitalization for CD (n=117)
- Required chronic Rx† for >6 mo (n=31)
- Remaining patients (n=459)

* Data from patients with a CD-related medical claim (10/94-09/95) included in a 1994 integrated claims database.
†Steroid and/or immunosuppressant

Breakdown of Hospital Charges for Crohn’s Disease Admissions

- Surgery: 39.6%
- Pharmacy: 18.6%
- Other: 34.9%
- Radiology: 2.1%
- Laboratory: 3.8%
- Pathology: 0.8%
- Endoscopy: 0.3%

University of Chicago patient database

Annual Hospitalization Costs for 175 CD Patients (US)

Direct Costs

• In Biologics Era, Medications Account for a Greater Percentage of Direct Costs

• Due to Higher Costs, or Due to Decreased Utilization?
**IBD: US Direct Costs (2003-04)**

**Crohn's Disease**
- Medications: 35%
- Hospitalizations / Surgeries: 33%
- Outpatient Services: 31%

**Ulcerative Colitis**
- Medications: 35%
- Hospitalizations / Surgeries: 27%
- Outpatient Services: 38%

US medical and pharmacy database with 9,056 Crohn’s and 10,364 Ulcerative colitis patients. Data prior to approval of biological therapy for UC.

Hospitalizations Still Account for Largest % of Direct Costs in IBD*

* UC data from high quality studies per Cohen et al. Crohn’s data from medium quality study per Yu et al.

A Minority of Patients Account for the Majority of Costs in Crohn’s Disease

*Data from patients with a CD-related medical claim (10/94-09/95) included in a 1994 integrated claims database.

A Minority of Patients Account for the Majority of Costs in Crohn’s Disease

- % of Patients: 75% (25%) → 90% (10%)
- % Total Costs: 25% (80%) → 41% (59%)

A Minority of Patients Account for the Majority of Costs in Ulcerative Colitis


Indirect Costs

- Indirect costs account for a large % of overall costs in IBD
Impact of Indirect Costs

USA: Crohn's
- Indirect: 28%
- Direct: 72%

USA: Ulcerative Colitis
- Indirect: 33%
- Direct: 67%

Europe: Crohn's
- Indirect: 33%
- Direct: 67%

Europe: Ulcerative Colitis
- Indirect: 39%
- Direct: 61%

Work Disability
Estimates of Work Disability Due to Crohn’s Disease (USA)

- Patients experiencing work disability annually: 5% to 10%

- Disability cost-of-illness: $0.4 billion to $0.8 billion

- Annual cost of CD, including indirect costs: $1.8 billion to $2.6 billion (1990 $)
  - Does not include the value of living assistance provided by family, friends, or formal programs.

### U.S.: Crohn’s-Related Work Disability

<table>
<thead>
<tr>
<th></th>
<th>Full-time Workers</th>
<th>Part-time Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers who missed work/2 mo</td>
<td>47%</td>
<td>46%</td>
</tr>
<tr>
<td>Average no. of work days missed/mo</td>
<td>3.3</td>
<td>2.4</td>
</tr>
</tbody>
</table>

- Patients who report they are not working at all because of CD: 16%

The TREAT Registry Report, September 2000.
Estimate of Work Capacity: 10 Years Following IBD Diagnosis

Disability payments due to IBD were received by 23% of the patients:

- 57% of whom had received long-term disability

- Low income patients were more likely to take early retirement and receive disability payment due to IBD
Employment
Employment Status is Even Worse in Active Crohn’s Disease

Russell D. Cohen, M.D.

* at time of entry into ACCENT I trial
University of Chicago Study: IBD Patients

- 42% of the unemployed indicated that they were out of the workforce due to their IBD

Gaining Remission is Associated with Gaining Employment in Active Crohn’s Disease

Gaining Remission is Associated with Gaining Full-Time Employment in Active Crohn’s Disease

In Remission at Week 54

- Full-Time (FT) Employed: 29% (26/91), P < 0.001
- Part-Time (PT) Unemployed: 5.5% (6/110)

Not in Remission at Week 54

- Full-Time (FT) Employed: 18% (24/131)
- Part-Time (PT) Unemployed: 15% (14/96)

Work Productivity
Work Hours Lost Decreased With % Time in Remission

Data from the ACCENT I trial. % Time in Remission

Work Hours Lost Decreased With % Time in Remission

Data from the ACCENT I trial

Work Time Loss

- Losses in work time secondary to IBD were claimed by 70–74% of patients

Impact of IBD Upon Career Advancement
Negative Impact of IBD Upon Career Advancement

Women more likely to:

- miss work
- more missed opportunities for professional advancement \((p=0.016)\)
- less likely to seek a promotion \((p=0.007)\)
- more likely to compromise their career choice \((p=0.001)\) or location \((p=0.012)\) due to their disease

IBD: Impact on Schooling
IBD: Impact on Schooling

• Adverse Impact of IBD on Schooling*:
  – Crohn’s: 60%
  – Ulcerative Colitis: 50%

• Absence from School for 2+ months:
  – IBD Patients: 57%

*Scottish study of students with Crohn’s disease (n=50) and ulcerative colitis (n=20).
Negative Impact of IBD Upon Patients Currently In School

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Attendance</td>
<td>64%</td>
</tr>
<tr>
<td>Missed 1 day/week</td>
<td>57%</td>
</tr>
<tr>
<td>Arrived late/early</td>
<td>36%</td>
</tr>
<tr>
<td>Performance</td>
<td>43%</td>
</tr>
<tr>
<td>Career choice/location</td>
<td>42%</td>
</tr>
</tbody>
</table>

$\text{n = 14}$

Impact Upon Family, Friends, and Home Life
University of Chicago Study: IBD Patients

- 78% had either a family member or friend accompany them to their physician appointments, requiring a median of 3 hours (IQR 0-10) of those persons’ time over the past 3 months, or approximately one hour per month

University of Chicago Study: IBD Patients

- 46%: due to their IBD, required family or paid assistance with
  - cleaning (44%)
  - cooking (31%)
  - childcare (8 %)
  - (median 6 hours each week (IQR 4-20)
- Women were more likely to depend on family or paid assistance to do these household activity

SUMMARY

- Total Costs = Direct + Indirect Costs

- Direct Costs:
  - Hospitalizations Still The Major Component
  - Increase % of Medications: ? Cost vs. Efficacy
  - A disproportionate amount of costs accounted for by a small % of patients:
    - 10% of patients : 60% of costs
    - 25% of patients : 80% of costs
SUMMARY

• Total Costs = Direct + Indirect Costs

• Indirect Costs:
  – Account for 1/3 – 2/3 of Overall Costs
  – Nearly 25% disability; 50% missing work
  – Gaining Remission: Gains Employment
  – Negative impact in school and career
  – Impacts home life, family, friends
  – Disproportionately affects women