

Moderate to severe Crohn's disease induces high productivity losses: Work Productivity and Activity Impairment (WPAI) baseline data from the PRECiSE program

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Background

- The substantial direct costs associated with Crohn's disease (CD) are driven by hospitalizations and surgical procedures.¹ In addition, CD may lead to high indirect costs — as measured by productivity losses — owing to its early onset during economically productive years.² However, limited information is available regarding work and activity impairment in these patients.
- The PRECiSE clinical program, comprising two large Phase III studies (PRECiSE 1³ and PRECiSE 2⁴), assessed the efficacy and tolerability of certolizumab pegol, a PEGylated Fab' fragment of a humanized monoclonal antibody that neutralizes tumor necrosis factor, compared with placebo in patients with CD.

Objective

- The objective was to describe the burden of CD in terms of its effect on employment status, work productivity, and unpaid daily activities among patients randomized in the PRECiSE program.

Methods

- PRECiSE 1 and 2 are both multinational, randomized, placebo-controlled clinical trials of certolizumab pegol. All patients had moderate to severe CD (Crohn's Disease Activity Index [CDAI] score between 220 and 450 points, inclusive).
- In PRECiSE 1, 660* patients received at least one dose of certolizumab pegol 400 mg or placebo at Weeks 0, 2, and 4, and then every 4 weeks up to Week 24.

*662 patients were randomized.

- In PRECiSE 2, patients (n=668) received at least one dose open-label certolizumab pegol 400 mg at Weeks 0, 2, and 4. CDAI responders (decrease from baseline ≥ 100 points) at Week 6 were randomized to double-blind certolizumab pegol 400 mg or placebo every 4 weeks over Weeks 8–24.
- Baseline data from PRECiSE 1 and 2 were pooled.
- The Work Productivity and Activity Impairment (WPAI) questionnaire, which is a validated instrument,⁵ was used to collect data on impairment due to CD during the 7 days prior to the baseline visit. Four mean scores were calculated: absenteeism (% of work time missed); presenteeism (% of work time with impairment); overall work impairment (absenteeism plus presenteeism); and activity impairment (% of regular daily activity impairment; for example, impairment in work around the house, shopping, childcare, exercising, studying). Higher scores indicate greater impairment and lower productivity.
- The work and activity impairment scores obtained in the PRECiSE studies were compared with WPAI scores reported in clinical studies for other gastrointestinal diseases: gastroesophageal reflux disease (GERD),⁶ chronic hepatitis C,⁷ and irritable bowel syndrome (IBS).⁸
- A univariate inferential analysis was used to identify possible factors associated with the employment status of the patients.

Results

- At baseline, there were no significant differences between PRECiSE 1 (n=662) and PRECiSE 2 (n=668) for patient demographic characteristics, clinical characteristics, or WPAI scores.

Demographic characteristics

- Demographic characteristics of the 1330 patients are summarized in Table 1.

Table 1. Demographic characteristics of patients in the PRECiSE 1 and 2 studies

Demographic variable	PRECiSE 1 and 2 (n=1330)
Age, mean (SD)	37.5 (11.9)
Gender, % male	45.4
Region, %	
Eastern Europe	36.2
Western Europe	18.5
North America	25.0
Rest of the world	20.3
Smoking status, %	
Never	45.4
Stopped before diagnosis of CD	9.2
Stopped after diagnosis of CD	12.4
Current smoker	33.0

CD = Crohn's disease; SD = standard deviation.

Clinical characteristics

- Clinical characteristics are presented in Table 2.

Table 2. Clinical characteristics of patients in the PRECiSE 1 and 2 studies

Clinical variable	PRECiSE 1 and 2 (n=1330)
Age at CD onset, mean (SD), years	29.7 (11.8)
Duration of CD, mean (SD), years	7.9 (7.7)
Location of CD, %	
Terminal ileum	24.7
Colon	25.4
Ileocolon	44.5
Upper gastrointestinal	5.3
Behavior of CD, %	
Inflammatory	67.1
Strictureing	12.3
Penetrating	20.5
Resection performed, %	
No	66.2
Yes	33.8
Past medications for CD, % "yes"	
Immunosuppressants	37.9
Steroids	76.0
5-ASA	77.0
Infliximab	28.4
CDAI baseline score, mean (SD)	301.0 (62.4)

5-ASA = 5-aminosalicylic acid; CD = Crohn's disease; CDAI = Crohn's Disease Activity Index; SD = standard deviation.

Impairment in work productivity and daily activities

- Among employed patients, absenteeism was 19.5%, presenteeism was 42.0%, and overall work impairment was 47.5%. Among all patients, the mean impairment in daily activities was 53.3% (Table 3).

Table 3. Impairment in work and daily activities (WPAI: CD scores) in the PRECiSE 1 and 2 studies (n=1330)

WPAI: CD scores	n	Impairment due to CD, mean % (SD)
Work time missed, %	706	19.5 (29.2)
Impairment while working, %	715	42.0 (24.8)
Overall work impairment, %	656	47.5 (26.4)
Activity impairment, %	1289	53.3 (24.9)

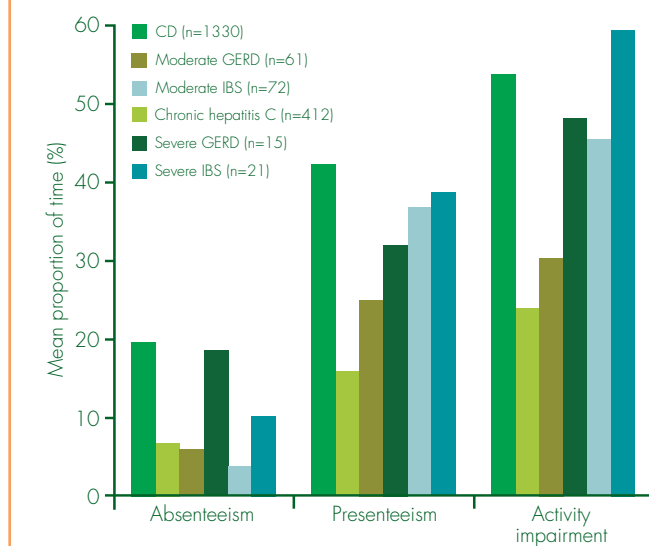
CD = Crohn's disease; SD = standard deviation; WPAI = Work Productivity and Activity Impairment.

- Comparison of these data with those from studies in other gastrointestinal diseases (GERD, chronic hepatitis C, and IBS) revealed that absenteeism and presenteeism were highest for CD (PRECiSE studies). In addition, CD was associated with the second highest impairment of daily activities (behind severe IBS) (Figure 1).

Unemployment rate

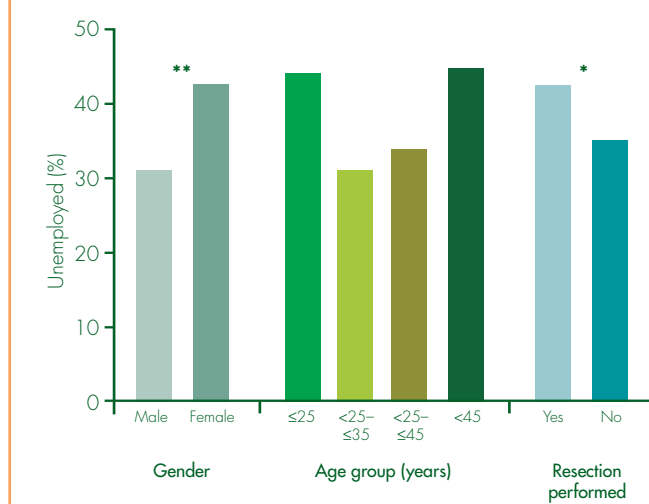
- The unemployment rate was 37.6%. Female gender, older age, and presence of prior bowel resection were significantly associated with being unemployed in patients with CD (Figure 2).

Figure 1. WPAI scores for gastrointestinal diseases.



CD = Crohn's disease; GERD = gastroesophageal reflux disease; IBS = irritable bowel syndrome; WPAI = Work Productivity and Activity Impairment.

Figure 2. Unemployment rate at baseline by gender, age, and presence of a prior resection in the PRECiSE 1 and 2 studies.



**p<0.001; *p=0.005; χ^2 tests.

Conclusions

- Moderate to severe CD has a significant impact on the ability to carry out both paid work and everyday nonwork-related activities. A preliminary investigation suggests that, of the gastrointestinal diseases studied here, CD causes one of the largest indirect cost burdens. Therefore, assessments of the economic impact of CD treatments should include indirect costs, as measured by productivity losses.

References

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