# Hospitalized Infections In Users of Biosimilar and Originator Infliximab

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## Background

- Real-world comparisons of biosimilars and their originator biologics are scarce.
- We studied risk of hospitalized infection in new users of infliximab, assessing risk factors and comparing biosimilar and originator exposures.

## Methods

- We used MarketScan administrative health data to create a cohort of new users of infliximab (originator or biosimilar), between Jan.-Dec. 2017.
- The first infusion was the cohort entry date. A 90-day current exposure period was assigned for each infusion and individuals could contribute person-time through the observation period.
- We assessed frequency and time to first serious infection, defined as those associated with hospitalization.
- Crude incidence rates were generated to compare infection risk between originator and biosimilar infliximab users.
- Multivariate Cox proportional hazards regression models were to identify factors associated with serious infections:
  - Biosimilar vs biologic current infliximab, prior biologics, prior and current DMARDs and systemic glucocorticoids
  - Age, sex, past hospitalized infection, age-adjusted Charlson comorbidity index (CCI), underlying conditions (rheumatoid arthritis, ankylosing spondylitis, psoriasis/psoriatic arthritis, Crohn's, ulcerative colitis).

## Results

- We studied 2676 infliximab initiators, 2584 originator and 92 biosimilar. Most (60%) were women and the mean age was 44±15 years. Baseline characteristics (stratified by initial treatment) are shown in Table 1.
- We identified 115 hospitalized infections during follow-up. Infection rates were 5.5/1000 person-years (95% confidence interval, CI 1.4-22.1) for current biosimilar and 8.5 (95% CI 7.0-10.3) for originator infliximab.
- We were unable to distinguish differences in hospitalized infection risks between users of biosimilar versus originator. Age-adjusted CCI, past hospitalized infection, and prior and current use of glucocorticoids were associated with risk of hospitalized infection (Table 2).

**Table 1 – Baseline characteristics of infliximab initiators**

| Characteristic | Biosimilar (n=92) | Originator (n=2584) |
|---|---|---|
| Female sex, N (%) | 56 (60.9) | 1556 (60.2) |
| Mean age (Standard Deviation, SD) | 48.3 (15.8) | 43.9 (15.0) |
| Mean age-adjusted CCI (SD) | 1.9 (2.3) | 1.4 (2.0) |
| Past hospitalized infection N (%) | 5 (5.4) | 265 (10.3) |
| Underlying disease[1] N (%) | | |
| RA | 34 (38.2) | 546 (22.5) |
| AS | 4 (4.5) | 107 (4.4) |
| Psoriasis/PsA | 13 (14.6) | 260 (10.7) |
| IBD | 38 (42.7) | 1517 (62.4) |
| Any DMARD use (%) | 46 (50.0) | 876 (33.9) |
| Any systemic glucocorticoid use (%) | 80 (87.0) | 2082 (80.8) |
| Past biologic use (%) | | |
| adalimumab | 24 (26.0) | 662 (25.6) |
| etanercept | 8 (8.7) | 185 (7.1) |
| abatacept | 2 (2.2) | 27 (1.0) |
| certolizumab | 3 (3.3) | 76 (2.9) |
| rituximab | 1 (1.1) | 25 (1.0) |
| tocilizumab | 0 (0) | 22 (0.9) |

[1]Based on the date of diagnosis closest to the start of treatment.
CCI: Charlson comorbidity index; RA: rheumatoid arthritis, AS: ankylosing spondylitis, PsA: psoriatic arthritis, IBD: inflammatory bowel disease, including Crohn's disease and ulcerative colitis.

**Table 2 – Risk factors associated with hospitalized infections**

| Variable | HR | 95% CI |
|---|---|---|
| Infliximab biosimilar | 0.75 | 0.18-3.07 |
| Female sex | 0.91 | 0.61-1.35 |
| Age | 0.99 | 0.98-1.01 |
| Age-adjusted CCI score | 1.17 | 1.07-1.27 |
| Past hospitalized infection | 3.69 | 2.44-5.58 |
| Underlying disease[1] | | |
| RA | 0.23 | 0.03-1.66 |
| AS | 0.48 | 0.20-1.17 |
| Psoriasis/PsA | 0.72 | 0.39-1.33 |
| Past use of DMARD | 0.97 | 0.56-1.68 |
| Current use of DMARD | 0.78 | 0.38-1.61 |
| Past systemic glucocorticoid | 1.77 | 0.93-3.37 |
| Current systemic glucocorticoid | 1.59 | 1.04-2.41 |
| Any prior biologic use | 1.06 | 0.70-1.60 |

[1]IBD was the reference category.

## Conclusions

- In initiators of infliximab, we were unable to detect differences in hospitalized infections between users of biosimilar versus originator.
- High comorbidity score, occurrence of past infections and use of glucocorticoids were associated with increased risk of hospitalized infections. Additional long-term studies would be of additional help in establishing safety profiles.

## Disclosures

**CS Moura,** None; **JR Curtis,** (AbbVie, Amgen, Bristol-Myers Squibb, Corrona, Lilly, Janssen, Myriad, Pfizer, Regeneron, Roche, and UCB); **D Choquette,** (AbbVie, Amgen, BMS, Celgene, Eli-Lilly, Merck, Novartis, Pfizer, Sanofi-Genzyme); **G Boire,** (AbbVie, Amgen, BMS, Celgene, Eli-Lilly, Merck, Novartis, Pfizer); **VP Bykerk,** (AbbVie, Amgen, Brainstorm Therapeutics, BMS, Genentech, Gilead, NIH, Pfizer, Regeneron, Sanofi, Scipher, The Cedar Hill Foundation, UCB)**; C Thorne,** (Amgen, AbbVie, CaREBiodam, Celgene, Centocor, Janssen, Eli-Lilly, Medexus/Medac, Merck, Novartis, Sandoz, Pfizer); **WP Maksymowych**, (AbbVie, Amgen, Boehringer, CARE Arthritis, Celgene, Eli Lilly, Janssen, Merck, Pfizer, Synarc, Sanofi, UCB Pharma); **PL Lakatos,** (Abbvie, Arena Pharmaceuticals, Celltrion, Falk Pharma GmbH, Ferring, Genetech, Janssen, Merck, MSD, Pfizer, Pharmacosmos, Roche, Shire, Takeda); **L Svenson,** None; **L Targownik,** None; **W Afif,** (Abbvie, Ferring, Janssen, Novartis, Pfizer, Prometheus, Takeda, Theradiag); **S Bernatsky,** None.

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