# THE ECONOMIC IMPACT OF THE INTRODUCTION OF INFLIXIMAB-BIOSIMILAR: AN EMPIRICAL ANALYSIS USING THE TUSCANY HEALTHCARE ADMINISTRATIVE DATABASES


PBI90

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**Key message:** A preliminary evaluation of the "actual" economic impact of a mandatory non-medical switch to infliximab biosimilars, suggests a favourable impact on overall costs related to patients management induced by lower inflixamab costs.
Anyway the switch induced higher costs for specialists visits and ED visits that could be attributed to a precautionary approach of patients and clinicians.

## Objective

To evaluate the economic implication following a mandatory non-medical switch to Infliximab (IFX) biosimilar in a population of IFX user in Tuscany, central Italy, valuing resource use related to medical direct costs retrieved trough a retrospective analysis of regional administrative databases.

## Methods

Prevalent users of infliximab on January 1st, 2013 (only infliximab-originator available, group: IFX-OR) and on January 1st, 2016 (infliximab-biosimilar recommended, group: IFX-BIorOR) were identified trough the Tuscan healthcare administrative databases. No restriction of about the type of indication was used thus prevalent IFX users were identified according to the following criteria: 1) at least one prescription of infliximab in the look back period; 2) at least one record related to rheumatoid arthritis, ankylosing spondylitis, psoriatic arthritis, Crohn's disease, ulcerative colitis and psoriasis in the look-back period. Baseline characteristics were collected using 3 years of lookback, and time from first treatment with IFX was identified from all the available history. For both IFX-OR and IFX-BIorOR, resources utilization related to IFX and other biologic disease modifying antirheumatic drugs (DMARDs), hospital admissions, emergency department (ED) visits and specialist visits were retrospectively collected over 2 years. The two groups were matched using the propensity score (PS) method based on a logistic model and considering gender, age, diagnoses and treatment history as covariates, then direct costs were compared between groups using generalized linear regression model based on the gamma distribution with log link, adjusting for covariates and considering robust standard error to account for subjects included in both groups.

## Results

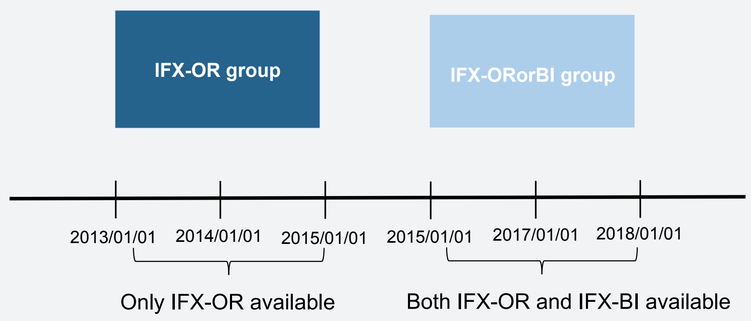
Out of 454 IFX-OR and 434 IFX-BIorOR users retrieved, after the PS matching the study cohort was composed by 303 cases in each group and patients were well matched.
Over 2 years median per-patients overall costs were significantly lower in the IFX-BIorOR group (16,186€ [10,230-23,334€] vs 17,900[12,101-25,925€], p=0.011).
In particular IFX costs were also significantly lower in that group (10,210€ [2,792-16,333€] vs 13,155€ [4,872-20,463€], p<0.001).
At multivariable analysis the IFX-BIorOR group showed significantly lower overall costs (p=0.047). Indeed in the IFX-BIorOR costs were significantly lower (p<0.001), costs for ED and specialist visits were higher (p>0.001 for both) while hospitalization costs were similar between groups (p=0.472).

## Conclusion

Results showed that the introduction of IFX biosimilar significantly reduced overall costs of patients management. The magnitude of reduction on the overall costs was about 8% as savings induced by lower costs for IFX when biosimilar became available were partially compensated by higher costs for specialist and ED visits. Further studies are needed to clarify mechanisms underlining the economic impact highlighted in this preliminary evaluation.

## Additional Information

***Schema of the study design***



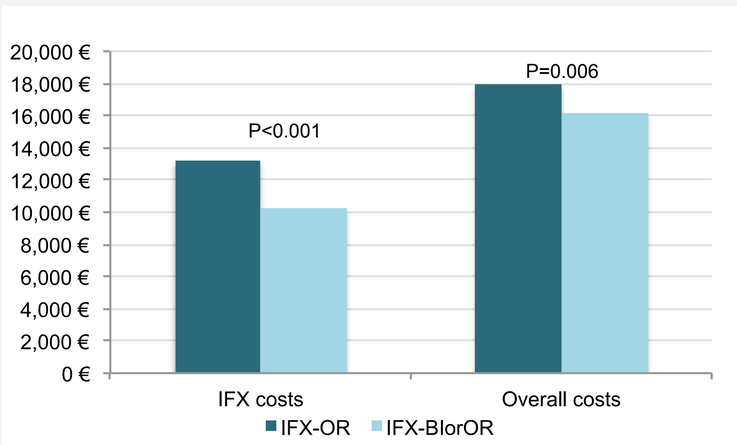

***Baseline patients' characteristics before matching***

| | Unmatched | | p-value |
|---|---|---|---|
| | IFX-OR group | IFX-BIorOR ¶ | |
| *Patients, n* | 454 | 434 | |
| *Male, n (%)* | 268 (59.0) | 256 (59.0) | 1.000 |
| *Age, mean (SD)* | 39.22 (17.23) | 40.03 (17.75) | 0.493 |
| *Duration of treatment in years, mean (SD)* | 1.81 (1.91) | 3.07 (2.76) | <0.001 |
| *Disease, n (%)* | | | 0.005 |
| *Only one disease* | | | |
| *Rheumatoid arthritis* | 57 (12.6) | 47 (10.8) | |
| *Psoriatic arthritis* | 39 (8.6) | 35 (8.1) | |
| *Ankylosing spondylitis* | 81 (17.8) | 79 (18.2) | |
| *Ulcerative colitis* | 41 (9.0) | 48 (11.1) | |
| *Crohn's disease* | 35 (7.7) | 53 (12.2) | |
| *Psoriasis* | 34 (7.5) | 12 (2.8) | |
| *Two diseases* | | | |
| *Two gastroenterological diseases* | 31 (6.8) | 48 (11.1) | |
| *Two rheumatologic diseases* | 33 (7.3) | 33 (7.6) | |
| *Gastroenterological and dermatological diseases* | 4 (0.9) | 2 (0.5) | |
| *Rheumatologic and dermatological diseases* | 40 (8.8) | 23 (5.3) | |
| *Rheumatologic and gastroenterological diseases* | 34 (7.5) | 24 (5.5) | |
| *≥ 3 diseases* | | | |
| *Multiple diseases* | 25 (5.5) | 30 (6.9) | |

***Baseline patients' characteristics after matching***

| | Matched | | |
|---|---|---|---|
| | IFX-OR group | IFX-BIorOR ¶ | p-value |
| *Patients, n* | 303 | 303 | |
| *Male, n (%)* | 178 (58.7) | 162 (53.5) | 0.220 |
| *Age, mean (SD)* | 38.90 (17.55) | 39.65 (18.34) | 0.606 |
| *Duration of treatment in years, mean (SD)* | 2.12 (2.17) | 2.41 (2.44) | 0.131 |
| *Disease, n (%)* | | | 0.956 |
| *Only one disease* | | | |
| *Rheumatoid arthritis* | 35 (11.6) | 42 (13.9) | |
| *Psoriatic arthritis* | 21 (6.9) | 26 (8.6) | |
| *Ankylosing spondylitis* | 43 (14.2) | 45 (14.9) | |
| *Ulcerative colitis* | 41 (13.5) | 32 (10.6) | |
| *Crohn's disease* | 35 (11.6) | 34 (11.2) | |
| *Psoriasis* | 10 (3.3) | 11 (3.6) | |
| *Two diseases* | | | |
| *Two gastroenterological diseases* | 31 (10.2) | 37 (12.2) | |
| *Two rheumatologic diseases* | 20 (6.6) | 16 (5.3) | |
| *Gastroenterological and dermatological diseases* | 3 (1.0) | 2 (0.7) | |
| *Rheumatologic and dermatological diseases* | 23 (7.6) | 21 (6.9) | |
| *Rheumatologic and gastroenterological diseases* | 19 (6.3) | 37 (12.2) | |
| *≥ 3 diseases* | | | |
| *Multiple diseases* | 22 (7.3) | 23 (7.6) | |

***Median per-patient costs***

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