

# LONG-TERM EFFECTIVENESS AND SAFETY OF PROACTIVE THERAPEUTIC DRUG MONITORING OF INFLIXIMAB IN PAEDIATRIC INFLAMMATORY BOWEL DISEASE: A REAL-WORLD STUDY

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## BACKGROUND AND IMPORTANCE

Therapeutic drug monitoring (TDM) strategies can be categorized as **reactive** or **proactive**. Reactive TDM is used to assess loss of response, while proactive TDM guides dose individualization to reduce the risk of disease relapse, treatment failure (TF), and drug immunogenicity.

## AIM AND OBJECTIVE

To evaluate long-term **effectiveness** and **safety** of a multidisciplinary early **proactive TDM** programme combined with **Bayesian forecasting** for **infliximab (IFX)** dose adjustment in **children** with inflammatory bowel disease (IBD).

## MATERIALS AND METHODS

**Ambispective single-centre study**  
Third-level hospital

**Children with IBD treated with intravenous IFX**

September 2015 - August 2019: **Reactive TDM**  
(n=17)



September 2019 - September 2023: **Proactive TDM**  
(n=21)

- **IFX Cmin** and anti-infliximab antibodies (**ATI**) were determined by **ELISA** or **chemiluminescence**.
- **Proactive TDM**: Dose individualisation → population pharmacokinetic model of **Fasanmade et al.** (2011) → **NONMEM v7.4.3**. **IFX Cmin** was monitored at induction and every six months
- **Target Cmin** (µg/ml): 1-3 week(w): >25 ; 6-7w: > 15; maintenance: 5-8

We analysed: clinical, biological, and endoscopic **remission**, **TF**, **hospitalisations**, **emergency visits** and **adverse drug reactions**.

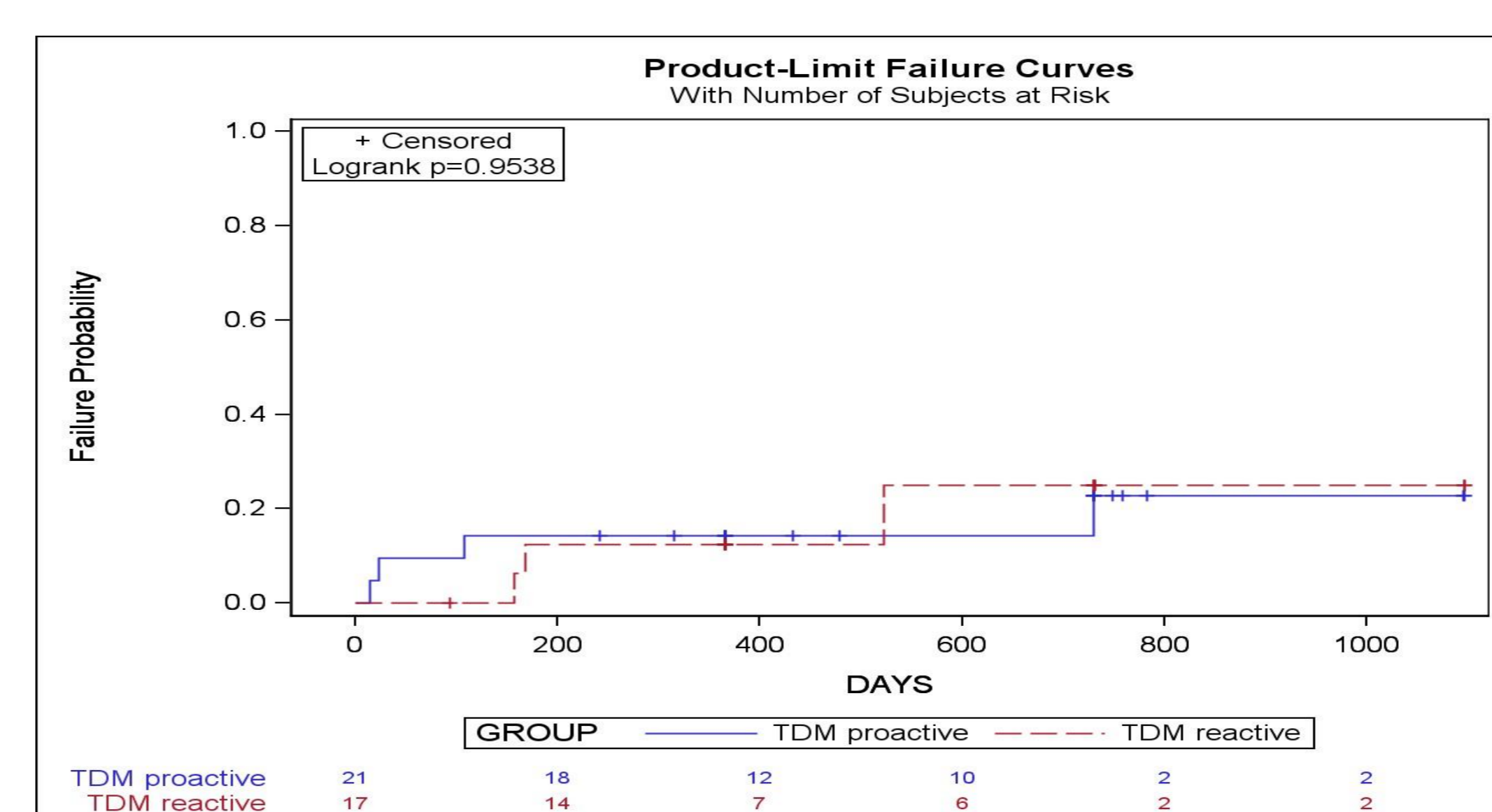
## RESULTS

**Baseline patient** characteristics were comparable between the proactive and reactive TDM groups ( $p > 0.05$ ), except for the number of severe very early onset (VEOIBD) ( $p=0.02$ ). Four patients with severe VEOIBD were monitored proactively. 🧑🏫🧑🏫🧑🏫🧑🏫

**IFX Cmin** (µg/ml) in maintenance; mean (SD): 6.83 (±5.66) (reactive) vs 12.38 (±9.24) (proactive) ( $p=0.08$ )

**Dosage** (mg/kg/month) in maintenance; mean (SD): 5.05(±2.82) (reactive) vs 9.09 (±5.91) proactive) ( $<0.01$ )

- No statistically significant differences between groups were found in **remission** rates and **TF**
- The proactive group had fewer **hospitalisations** (14.29% vs. 23.53%) and shorter median hospitalisation days (6 vs.19) ( $p>0.05$ )
- No statistically significant differences between groups were found in **emergency visits**.
- **Adverse reactions** were higher in the proactive group, mainly infections ( $p>0.05$ )



Kaplan–Meier cumulative probability curves for TF with IFX in children with IBD undergoing proactive or reactive TDM

## CONCLUSION AND RELEVANCE

Proactive TDM showed no significant differences in treatment outcomes compared to reactive TDM. However, the results in our reactive TDM group were similar to proactive TDM results reported in other studies which prevented us from observing significant differences. Further studies with larger samples are needed to optimise treatment strategies for paediatric IBD patients.

