The effects of Janus kinase (JAK-)inhibitors on pain in rheumatoid arthritis: A sub-analysis of a network meta-analysis

MSR78

L van Esveld[1,2], **TM Kuijper**[1], **M van den Dikkenberg**[1,2], **TM Bosch**[1], **MQN Hackert**[1,2], **AEAM Weel-Koenders**[1,2]

[1] Maasstad Hospital, Rotterdam, the Netherlands

[2] Erasmus School of Health Policy & Management, Erasmus University Rotterdam, Rotterdam, the Netherlands

INTRODUCTION

- Despite low disease activity, many patients with rheumatoid arthritis continue to experience **pain**.
- **Head-to-head comparisons** of individual JAK-inhibitors on pain are **lacking**.
- **Network meta-analysis** enables such comparisons by integrating direct and indirect evidence.

OBJECTIVE

To evaluate the relative effects of **individual JAK-inhibitors** on **pain** compared with **each other** and with **adalimumab.**

METHODS

- **Sub-analysis of a previously published network meta-analysis.**[1]
  - Selected RCTs which included at least one JAK-inhibitor in a study arm.
  - Pain reported on the Visual Analogue Scale (VAS) or Numeric Rating Scale (NRS) (NRS was converted to VAS).
- **Network meta-analysis:** to evaluate direct and indirect evidence within the domain of pain.
  - **Network plots** to visualize network characteristics.
  - **Forest plots** presented relative effects of JAK-inhibitors compared with adalimumab.
  - **Surface under the cumulative ranking (SUCRA) table** to rank treatments according to their probability of being the most effective option.

RESULTS

- 34 RCTs included (I^2 ranged from 0 to 46%).
- **Upadacitinib** was **significantly better in reducing pain** than **adalimumab**, **baricitinib,** and **tofacitinib**, whereas other JAK-inhibitors did not differ significantly from ADA (Figures 1-2).
- **SUCRA rankings** indicated that **upadacitinib** had the **highest probability** of being among the **most effective** treatments (Table 1).

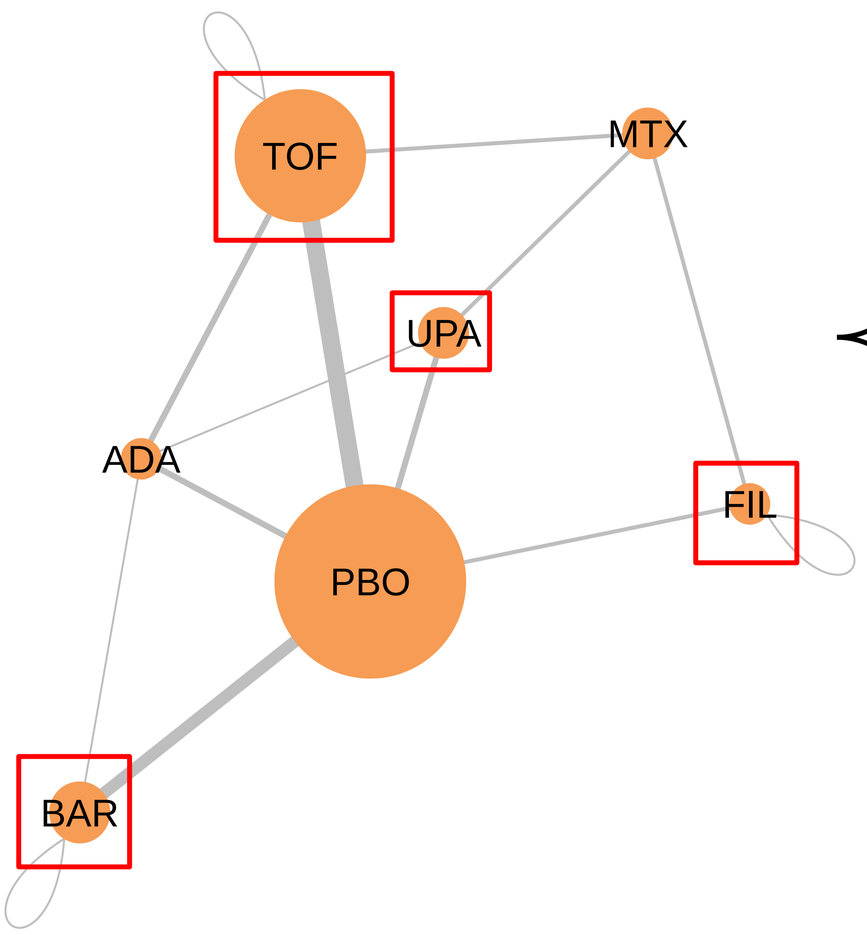


Figure 1. *Network diagram for VAS pain.*

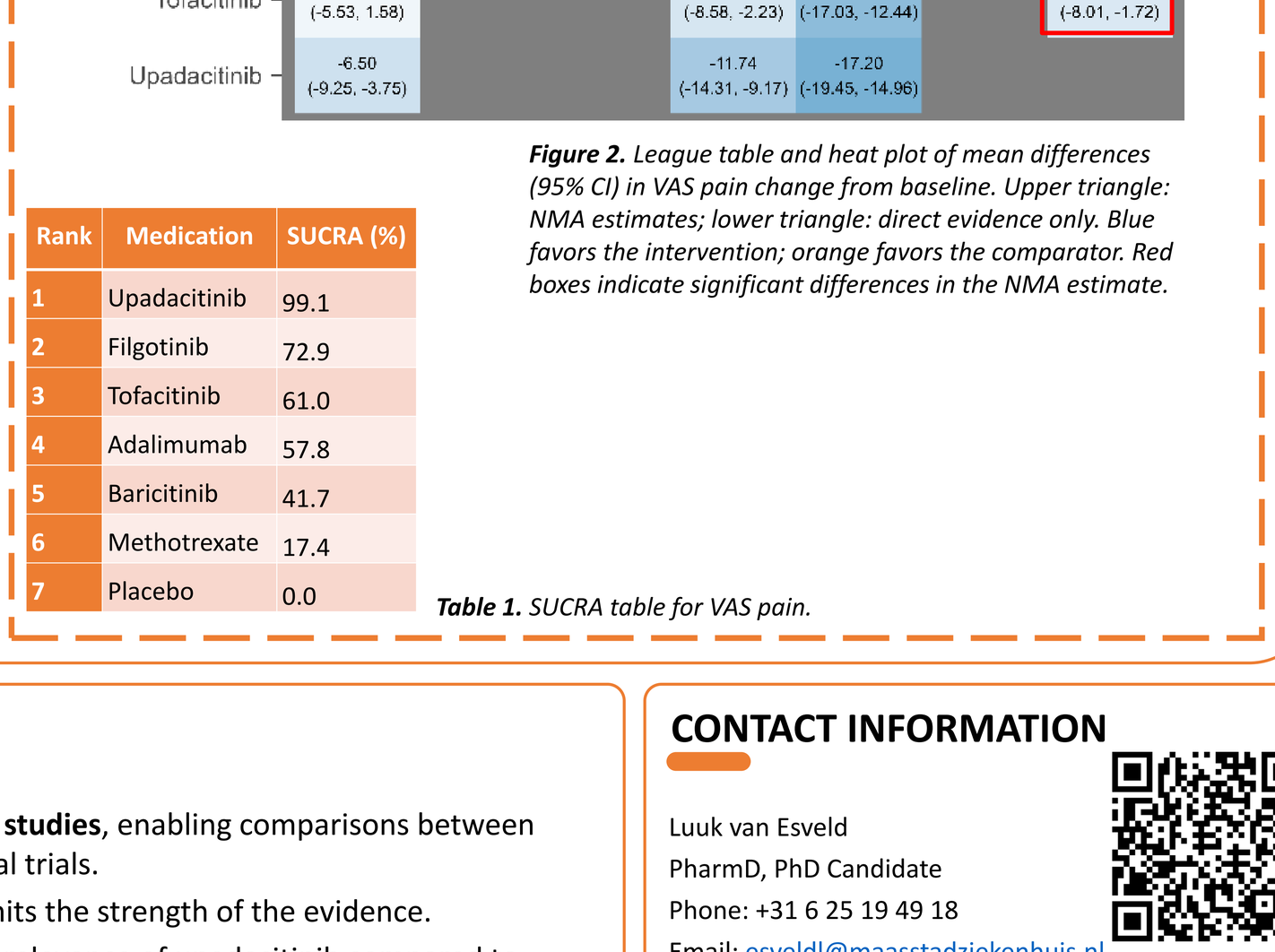


Figure 2. *League table and heat plot of mean differences (95% CI) in VAS pain change from baseline. Upper triangle: NMA estimates; lower triangle: direct evidence only. Blue favors the intervention; orange favors the comparator. Red boxes indicate significant differences in the NMA estimate.*

Rank	Medication	SUCRA (%)
1	Upadacitinib	99.1
2	Filgotinib	72.9
3	Tofacitinib	61.0
4	Adalimumab	57.8
5	Baricitinib	41.7
6	Methotrexate	17.4
7	Placebo	0.0

Table 1. *SUCRA table for VAS pain.*

CONCLUSIONS

- The use of **network meta-analysis** allows the inclusion of **more studies**, enabling comparisons between JAK-inhibitors that have not been directly compared in individual trials.
- However, **substantial heterogeneity** within the comparisons limits the strength of the evidence.
- **Future research** should focus on assessing the potential clinical relevance of upadacitinib compared to other JAK-inhibitors and biologics.

CONTACT INFORMATION

Luuk van Esveld
PharmD, PhD Candidate
Phone: +31 6 25 19 49 18
Email: esveldl@maasstadziekenhuis.nl
LinkedIn: https://www.linkedin.com/in/luukvanesveld

Literature

[1] van Esveld et al., 2026. https://doi.org/10.1136/rmdopen-2025-006578