Effectiveness of Sequential Lines of Biologic and Targeted Synthetic Drugs in Psoriatic Disease: A Systematic Review and Meta-Analysis

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Introduction

- 60 million people are affected by psoriatic disease (PsD) worldwide
- PsD→ significant morbidity and a reduction in QOL
- Biologics and targeted small molecule disease modifying anti-rheumatic drugs (b/tsDMARDs) licensed over the past 20 years have been shown to be highly effective when used firstline in RCTs
- A proportion of patients need to switch treatment for example due to adverse effects and inefficacy

Objective To analyse current evidence of effectiveness of lines of b/tsDMARDs beyond first line in PsD

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Methods

- A systematic search of the literature was undertaken in October and December 2022
- Medline, Embase and bibliographic searches
- To find all studies assessing effectiveness of b/tsDMARDs used in PsA and psoriasis beyond first line
- Data extraction and a bias assessment (ROBINS-I or Cochrane RoB2) were undertaken for all included studies by two independent reviewers

Study Selection



Results

Psoriatic arthritis

12 studies were included, 11 observational and one sub analysis of an RCT; n=16,081 (average age 49.5 years, female 53.3%). Five studies assessed second-line, seven studies assessed third+ line b/tsDMARDs. In all studies comparing first- and second-line, a reduced response was found in second-line. Responses varied from third-line onwards.

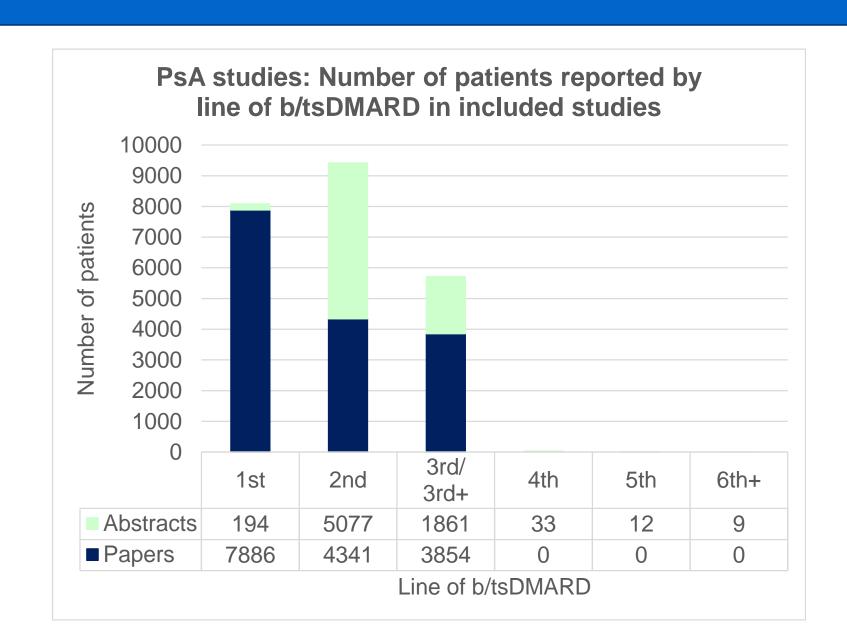
Psoriasis

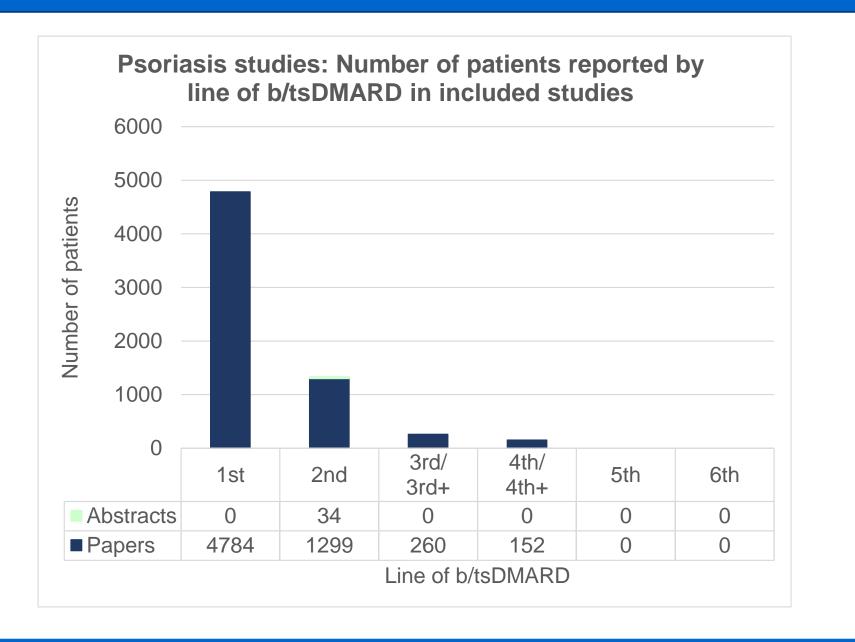
20 studies were included, 19 observational and one sub analysis of an RCT; n=6495 (average age 49.7 years, female 35.1%). 11 studies assessed second line b/tsDMARD, nine assessed third+ line. A meta-analysis of PASI75 at 12-16 weeks did not find a diminishment in effectiveness with sequential lines of b/tsDMARD.

Effectiveness of b/tsDMARDs in psoriatic arthritis reduces after first line.

Effectiveness of b/tsDMARDs in psoriasis does not reduce with subsequent lines.

Current evidence is at high risk of bias, and there is very little available evidence beyond third line.

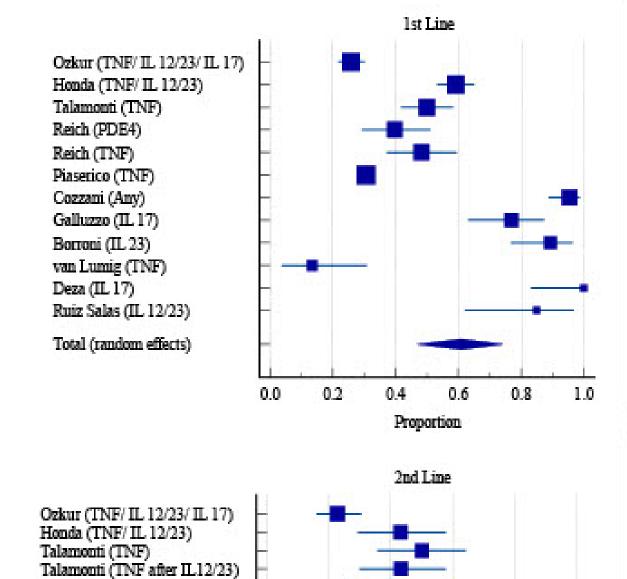


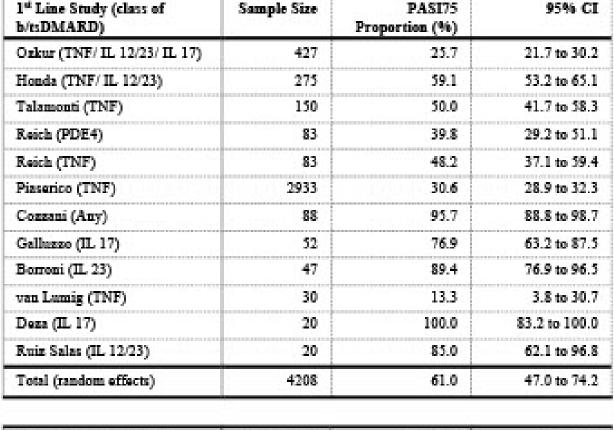


Meta-analysis of proportion of participants achieving PASI75 at 12-16 weeks with 1st, 2nd, 3rd and 4th line b/tsDMARDs

2nd Line Study (class of

3rd/3rd+ Line Study (class of





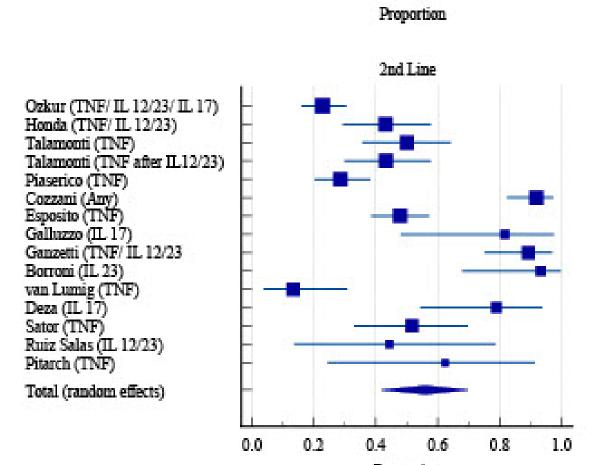
Sample size

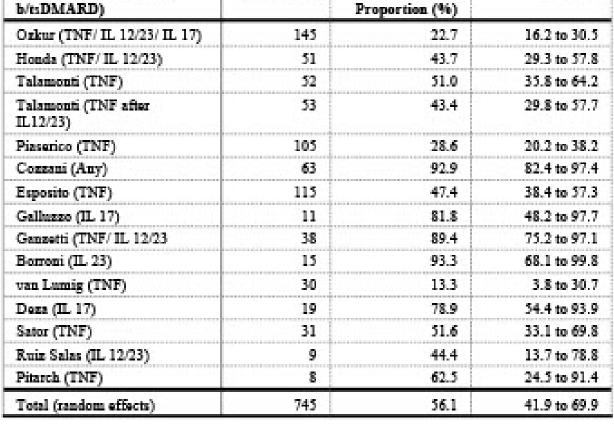
95% CI

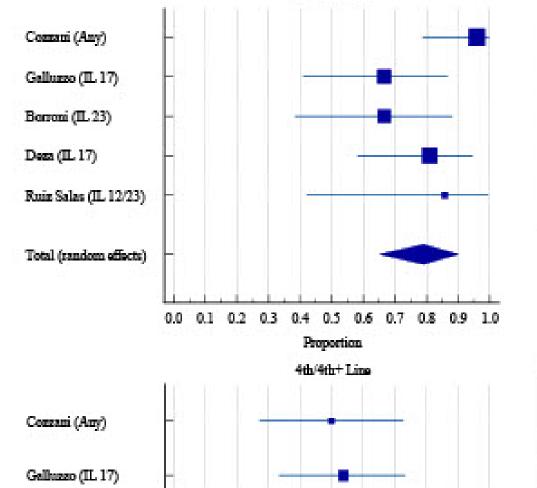
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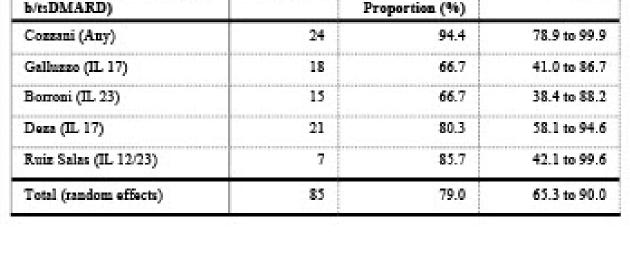
PASI75

PASI75

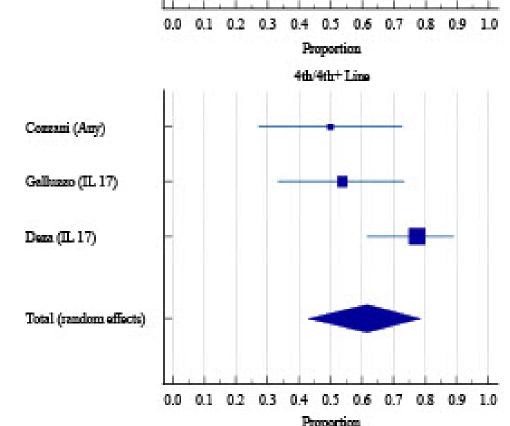








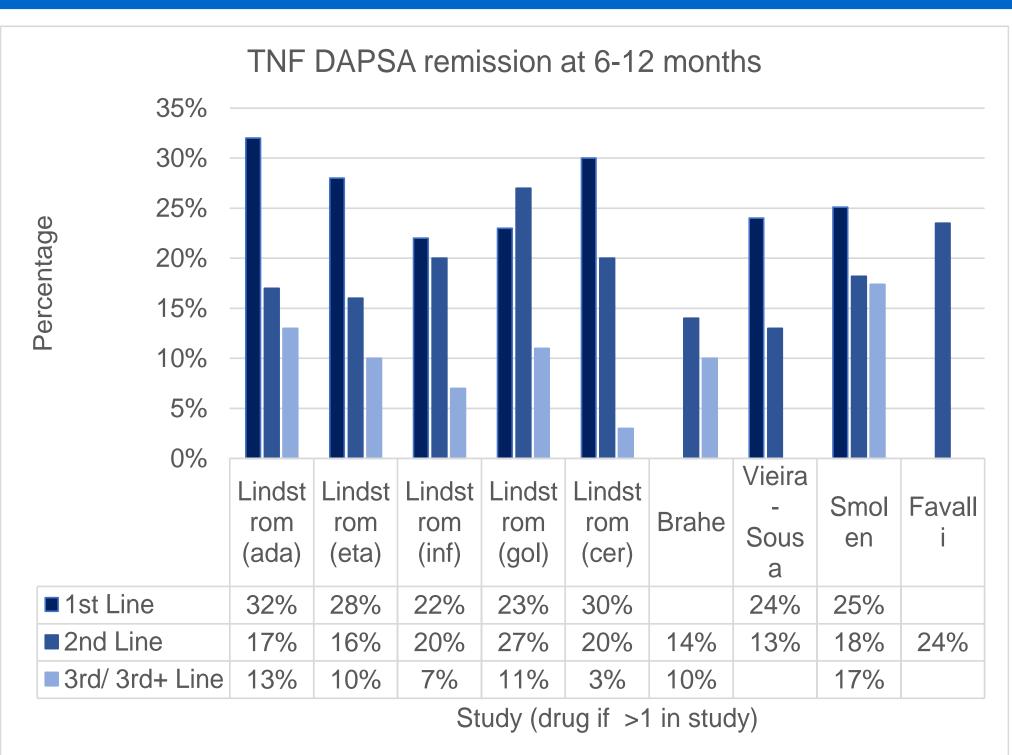
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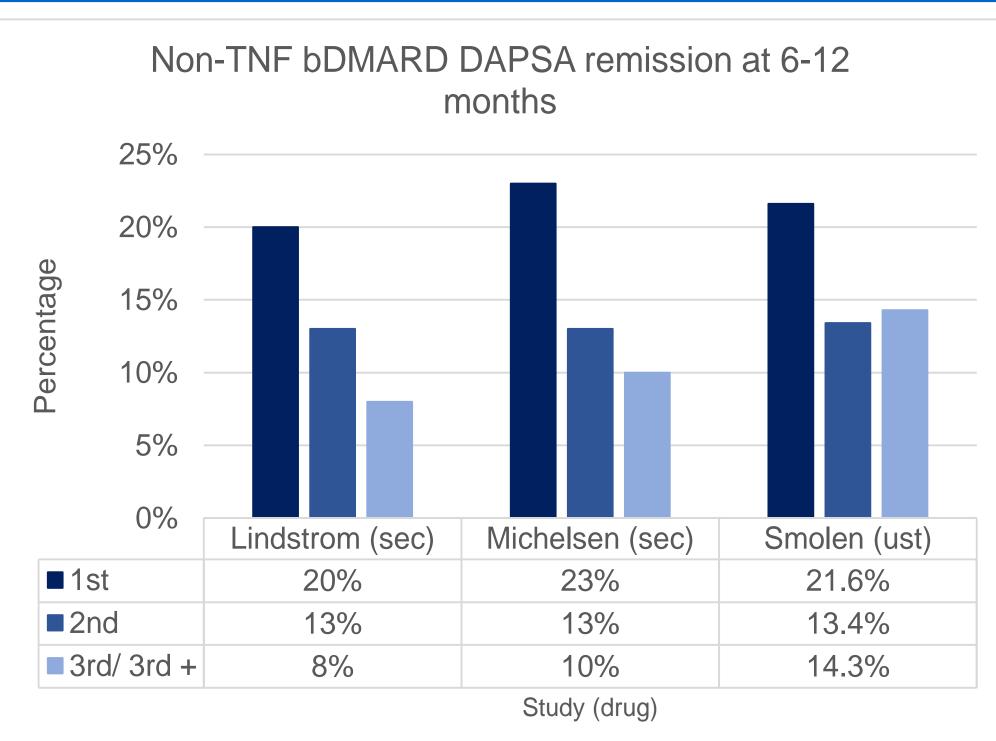


4 th /4 th + Line Study (class of b/tsDMARD)	Sample size	PASI75 proportion (%)	95% CI
Cozzani (Any)	20	50.0	27.2 to 72.8
Galluzzo (IL 17)	26	55.6	33.4 to 73.4
Deza (IL 17)	40	77.5	61.5 to 89.1
Total (random effects)	86	61.6	43.1 to 78.5

Abbreviations: CI confidence interval, TNF Tumour necrosis factor- alpha inhibitor, IL Interleukin inhibitor, PDE4 Phosphodiesterase 4 inhibitor

DAPSA remission at 6-12 months in 1st, 2nd and 3rd line b/tsDMARDs reported in included studies





Conclusions

- Current available evidence for effectiveness of second and beyond lines of b/tsDMARD in PsD is primarily observational and at high risk of bias
- There is very little evidence for effectiveness beyond second line in psoriasis and beyond third line in PsA
- On a case-by-case basis, there is evidence of potential benefit to patients in later lines of treatment
- Prospective studies are required to build an understanding of response to third+line b/tsDMARDs in PsD



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