

Appendix A

In order to give an overview over the available published literature on the cost-effectiveness of Remicade® in Europe, we have conducted a non-systematic literature review. The results are briefly summarized.

Rheumatoid arthritis

The cost-effectiveness of infliximab has been evaluated in a number of analyses. Table 1 gives an overview of available infliximab cost-effectiveness studies and their results. The estimates of cost-effectiveness vary widely, from being close to the cost-effectiveness threshold in one UK (1) and one Italian (2) study, whereas other studies conclude that Remicade is not cost-effective, with ICERs ranging from £36,200 to £116,000, costs per responder of up to €433,000.

Table 1: Analyses of the cost-effectiveness of infliximab (Remicade) in RA

Country	Reference	Analysis design	Result
UK	Kobelt, 2003 (1)	Cost/QALY gained with INX plus MTX compared with MTX alone, direct and indirect cost	Cost/QALY gained: <ul style="list-style-type: none"> 1 year of treatment: £21,600 (€34,800) 2 years of treatment: £29,900 (€48,200) Savings due to Remicade treatment did not offset treatment costs
	Jobanputra, 2002 (3)	Simulation model of introducing anti-TNF (INX) into the treatment algorithm (vs not introducing it)	For Remicade, base case ICERs were between £89,973 (discounted to start of program) and £115,937 (discounted to point of divergence)
	Malottki et al., 2011 (4)	Cost-effectiveness analysis from the UK NHS perspective, INX vs newly initiated DMARD	ICER for Remicade vs DMARD: £36,200
Germany	Gissel, 2013 (5)	Cost per responder analysis (direct cost only), vs conventional therapy	Cost per responder: €216,392 for ACR50 and €432,784 for ACR70 responses (40% overestimate due to taxes and mandatory rebate)
Italy	Cecchi, 2003 (2)	Economic appropriateness index (6).	Using this simple approach, the authors find that Remicade is not cost-effective at a WTP threshold of €10,000, but becomes cost-effective above a WTP threshold of about €24,000 [†]
The Netherlands	Nuijten, 2001 (7)	Cost-cost analysis comparing Remicade with etanercept; direct and indirect costs.	Direct drug costs comparable (US\$ 12,610 and US\$ 12,534), but Remicade more expensive due to administration costs of US\$ 5,048 (vs US\$ 107 with etanercept)

[†]Calculated from data given in Cecchi, 2003. Abbreviations: DMARD, disease-modifying anti-rheumatic agent; ICER, incremental cost-effectiveness ratio; MTX, methotrexate; QALY, quality-adjusted life-year; RA, rheumatoid arthritis; TNF, tumor necrosis factor; WTP, willingness to pay.

In addition to the analyses detailed in Table 1, there are three Swedish (8-10) and a Finnish (11) analysis, which (with the exception of Eriksson et al, 2014), concluded that Remicade is cost-effective (compared with standard treatment). Furthermore, infliximab has been the topic of economic reviews: Jobanaputra et al, 2002 (3) and Malottki¹ et al., 2011 (4) both identified a single manufacturer model for a NICE submission, where the ICER of Remicade vs placebo was £33,618. Chen et al, 2006 (12) identified some of the studies described in Table 1.

¹ In Malottki et al, 2011, no publications focusing on Remicade fulfilled the inclusion criteria.

Ankylosing spondylitis

Examples of publications on the cost-effectiveness of infliximab in AS are detailed in Table 2. The available data indicates that Remicade is costly, but could be cost-effective when compared with placebo (supported by one UK model) (13). It appears unlikely that Remicade could be cost-effective compared with other anti-TNF therapies, due to the more costly IV (compared with oral for other TNF inhibitors) administration: A UK, a Dutch and a French study support the view that, even though the drug costs of Remicade are comparable with those of adalimumab or etanercept, the additional administration costs make Remicade less cost-effective.

Table 2: Analyses of the cost-effectiveness of infliximab (Remicade) in AS

Country	Reference	Analysis design	Result
UK	McLeod et al, 2007 (14)	Economic evaluation of INX, adalimumab and etanercept	Due to extensive data gaps no definitive assessment could be made. The authors conclude that INX will be economically less favorable compared with adalimumab or etanercept, due to the method of administration
	Kobelt et al, 2004 (13)	Cost-effectiveness model based on cross-sectional retrospective observational study of resource consumption and utility. Societal perspective, INX vs placebo	Cost per QALY, vs placebo: £30,000 to £40,000 for up to two years, but could be below £10,000 long-term
The Netherlands	Boonen et al, 2006 (15)	Markov model, INX vs usual care	ICER of €67,207 to €237,010 for INX vs usual care
France	Fautrel et al, 2010 (16)	INX every 6 weeks (Q6) vs INX on demand (DEM) Based on dedicated RCT	INX Q6 is cost effective compared with INX DEM, but ICER~€50,760/QALY, i.e. close to the WTP threshold of €50,000

Abbreviations: ICER, incremental cost-effectiveness ratio; INX, Remicade/infliximab; QALY, quality-adjusted life-year; RCT, randomized controlled trial; WTP, willingness to pay.

Crohn's disease

Examples of publications on the cost-effectiveness of infliximab in Crohn's disease are detailed in Table 3. Evidence from UK studies supports the view that Remicade may be cost-effective for some treatment modalities (i.e. induction phase) and/or patient groups (e.g. luminal or fistulising Crohn's disease). Data from Germany favors adalimumab over infliximab, based on the cost per remitter, and a French analysis found the ICER for infliximab to be above €63,000. Resource use data from Italy highlights the increase in costs when switching from cDMARDs to infliximab.

Table 3: Analyses of the cost-effectiveness of infliximab (Remicade) in Crohn's disease

Country	Reference	Analysis design	Result
UK	Dretzke et al, 2011 (17)	Review and independent assessment: De novo Markov state transition model to calculate the ICER for infliximab compared with standard care.	Severe disease: Infliximab is dominant for induction ICER of £5 million for maintenance Moderate disease: ICER of £94,321 for induction ICER of £13.9 million for maintenance
	Sprakes et al, 2010 (18)	Crohn's disease-related costs of care and resource use in a single center cohort 12 months pre- and post infliximab therapy	Infliximab use led to mean total savings of £2,750 per patient after 12 months, which was insufficient to offset drug costs (mean £9,037, range: £874–£36,708).
	Lindsay et al, 2008 (19)	Cost-effectiveness analysis, Markov model, based on published trials.	ICER for infliximab vs standard care was £26,128 in luminal Crohn's disease and £29,752 in fistulising Crohn's disease at 5 years
Germany	Yang et al, 2012 (20)	Cost-effectiveness analysis of adalimumab vs standard care and cost per remitter of adalimumab vs infliximab.	Cost effectiveness for adalimumab in Germany shows lower costs per remitter than infliximab (£54,823 vs €88,506).
France	Jaisson-Hot et al, 2004 (21)	Life-time cost-utility analysis with an analytic Markov decision model from the perspective of the third-party payer system	ICER varied from €63,700.82 (episodic re-infusions) to >€762,245.09 (maintenance therapy).
Italy	Favalli et al, 2008 (22)	Retrospective, observational study on resource use	Annual costs per patient treated: Infliximab: from €6,593.50 to €8,655.82 DMARDs: €227.96. Infliximab plus DMARDs: from €6,821.46 to €8,893.78

Abbreviations: DMARD, disease-modifying anti-rheumatic agent; ICER, incremental cost-effectiveness ratio; QALY, quality-adjusted life-year; RA, rheumatoid arthritis; TNF, tumor necrosis factor; WTP, willingness to pay.

Ulcerative colitis

Examples of publications on the cost-effectiveness of infliximab in UC are detailed in Table 4.

Only evidence from the UK, as well as a single analysis from the Netherlands, could be identified.

Data on the cost-effectiveness in UC is limited and varies depending on the patient subgroup and comparator chosen. However, in all five of the identified publications (from Europe), the ICERs are well within the WTP threshold of £20,000 to £30,000 (€22,000 to €34,000) set by NICE. A US model, however, found an ICER of US \$1.5 million for medical therapy (including Remicade) compared with early colectomy.

Table 4: Analyses of the cost-effectiveness of infliximab (Remicade) in Ulcerative Colitis

Country	Reference	Analysis design	Result
UK	Bryan et al, 2010 (23) [NICE TA163 (24)]	ERG report summary; INX vs cyclosporine; NHS perspective	Manufacturer: ICER of £20,000 for INX vs cyclosporine ERG: ICER of £48,000 for INX vs cyclosporine (more appropriate evidence mix used)
	Punekar et al, 2010 (25)	Decision analysis model; INX vs standard care, cyclosporine and surgery; hospitalized patients with acute exacerbation; NHS perspective	ICER for INX was £19,545 per QALY vs cyclosporine. Cyclosporine dominated standard care.
	Hyde et al, 2009 (26) [NICE TA140 (27)]	ERG report summary; Markov model; INX vs standard care; NHS perspective	ICER for INX vs standard care between £25,044 and £33,866 (manufacturer, different scenarios)
	Tsai et al, 2008 (28)	Markov model. INX vs standard care. NHS perspective. Two strategies: <ul style="list-style-type: none"> • Responders • Patients in remission 	ICER for INX vs standard care at 10 years: <ul style="list-style-type: none"> • £27,424 in the responder strategy • £19,696 in the remission strategy
The Netherlands	Chaudhary et al, 2013 (29)	Markov model. Cost-effectiveness of INX vs cyclosporine and surgery. Payer perspective	ICER per QALY for INX: <ul style="list-style-type: none"> • €24,277 vs cyclosporine • €14,639 vs surgery
US	Park et al, 2012 (30)	LifETIME Markov model, comparing early colectomy with IPAA strategy to the standard medical therapy strategy (including INX); societal perspective.	ICER for medical therapy (including INX) compared with early colectomy with IPAA was \$1.5 million

Abbreviations: ERG, evidence review group; ICER, incremental cost-effectiveness ratio; INX, infliximab; IPAA, ileal pouch anal anastomosis; NICE, National Institute for Health and Care Excellence; QALY, quality-adjusted life-year; TA, technology appraisal.

Psoriasis

Examples of publications on the cost-effectiveness of infliximab in psoriasis are detailed in Table 5. In the available studies from the UK, Germany and Italy, infliximab was considered cost-effective for the treatment of severe psoriasis compared with etanercept. However, Italian data suggests that infliximab is not cost-effective compared with all dosing regimens of etanercept or compared with adalimumab.

Table 5: Analyses of the cost-effectiveness of infliximab (Remicade) in Psoriasis

Country	Reference	Analysis design	Result
UK	Loveman et al, 2009 (31)	Cost-effectiveness of INX vs continuous etanercept in severe psoriasis; NHS perspective	Base-case ICER for INX vs continuous etanercept was £26,095/QALY
Germany	Schmitt-Rau et al, 2010 (32)	Cost-effectiveness of biologics; German payer perspective; outcome: cost/patient achieving PASI-75 compared with placebo.	INX (3 mg/kg) most cost-effective, followed by adalimumab, INX (5 mg/kg) and ustekinumab. Etanercept (2 x 50 mg/week) was least cost-effective. Differences were small.
Italy	de Portu 2010 (33)	Cost-effectiveness of INX vs other anti-TNF agents; ICER for 75% PASI improvement, payer perspective.	INX dominates etanercept 50 mg twice weekly, but not other doses and not adalimumab.

Abbreviations: ICER, incremental cost-effectiveness ratio; INX, Remicade/infliximab; NHS, National Health Service; PASI, Psoriasis Area and Severity Index; QALY, quality-adjusted life-year; TNF, tumor necrosis factor.

Psoriatic arthritis

Examples of publications on the cost-effectiveness of infliximab in psoriatic arthritis are detailed in Table 6. Results from UK models are inconclusive, with two studies suggesting that Remicade is cost-effective vs palliative care and vs etanercept for moderate to severe disease, respectively, whereas two other studies found Remicade to be associated with ICERs above £165,000 vs etanercept and to be dominated by etanercept, respectively. In Germany, the cost per responder was found to be lower for adalimumab than for Remicade. Data from Italy suggests an ICER of €41,000 for the introduction of TNF-inhibitors, assumes however that only a small percentage of patients will use infliximab, the majority using etanercept.

Table 6: Analyses of the cost-effectiveness of infliximab (Remicade) in psoriatic arthritis

Country	Reference	Analysis design	Result
UK	Cummins et al, 2011 (34)	Decision analytic model, NHS perspective, comparing infliximab, etanercept, adalimumab and cDMARDs.	ICER of infliximab vs palliative care with cDMARDs: £16,942–£23,022.
	Rodgers et al, 2011 (35)	Infliximab vs etanercept, different degrees of skin involvement.	The ICER for infliximab vs etanercept becomes more favorable with increasing skin involvement: Negligible skin involvement £65,000 Mild to moderate skin involvement £44,000 Moderate to severe skin involvement £26,000
	Bravo Vergel et al, 2007 (36)	NHS perspective, probabilistic decision analytical model, comparing etanercept vs infliximab vs palliative care.	ICER for infliximab vs etanercept ranges from £165,363 to £205,345
	Woolacott et al, 2006 (37)	NHS perspective, decision tree cohort model, comparing etanercept vs infliximab vs palliative care.	With regard to the ICER, infliximab is dominated by etanercept.
Germany	Kirson et al, 2013 (38)	Cost-per-responder analysis for adalimumab vs etanercept and infliximab. Clinical data from a trial were used.	The cost per responder was significantly lower ($p < 0.05$) for adalimumab vs infliximab for all outcomes tested (except PASI-90 at Week 14).
Italy	Olivieri et al, 2008 (39)	Cost-of-care analysis, societal perspective, comparing treatment with or without TNF-inhibitors (mostly etanercept, but some patients received infliximab or adalimumab)	Introduction of TNF-inhibitors (with most patients using etanercept and only some using infliximab or adalimumab) would be associated with costs/QALY of €40,877 for the NHS and of €37,591 for society.

Abbreviations: cDMARD, conventional disease-modifying anti-rheumatic agent; ICER, incremental cost-effectiveness ratio; NHS, National Health Service; QALY, quality-adjusted life-year; TNF, tumor necrosis factor.

Appendix B

Table 12: Projected drug cost savings due to the introduction of Remsima in the first year after launch; number of additional patients that could be treated if the savings made were used; combined for switch and naïve patient populations

	RA	AS	CD	UC	PsA	Psoriasis	Total
Budget impact with list price, million €†							
Total	3.98	4.11	19.34	8.96	5.53	3.21	45.13
Number of additional patients							
Total	580	314	1,537	741	454	276	3,900

† UK costs were converted to € using a conversion rate of 1.127278 (http://stats.oecd.org/Index.aspx?datasetcode=SNA_TABLE4#)

References

1. Kobelt G, Jonsson L, Young A, Eberhardt K. The cost-effectiveness of infliximab (Remicade) in the treatment of rheumatoid arthritis in Sweden and the United Kingdom based on the ATTRACT study. *Rheumatology (Oxford)*. 2003 Feb;42(2):326-35.
2. Cecchi M. Economic appropriateness of the expenditure for infliximab in rheumatoid arthritis: analysis of national prescription data in Italy. 2003. <http://www.bmj.com/rapid-response/2011/10/30/economic-appropriateness-expenditure-infliximab-rheumatoid-arthritis-analy> Accessed June 2014.
3. Jobanputra P, Barton P, Bryan S, Burls A. The effectiveness of infliximab and etanercept for the treatment of rheumatoid arthritis: a systematic review and economic evaluation. *Health Technol Assess*. 2002;6(21):1-110.
4. Malottki K, Barton P, Tsourapas A, Uthman AO, Liu Z, Routh K, et al. Adalimumab, etanercept, infliximab, rituximab and abatacept for the treatment of rheumatoid arthritis after the failure of a tumour necrosis factor inhibitor: a systematic review and economic evaluation. *Health Technol Assess*. 2011 Mar;15(14):1-278.
5. Gissel C, Repp H. Cost per responder of TNF-alpha therapies in Germany. *Clin Rheumatol*. 2013 Dec;32(12):1805-9.
6. Messori A, et al. Economic appropriateness of the expenditure for coxibs: cost-effectiveness analysis of national prescription data in Italy. 2003. <http://www.bmj.com/rapid-response/2011/10/30/economic-appropriateness-expenditure-coxibs-cost-effectiveness-analysis-na> Accessed June 2014.
7. Nuijten MJ, Engelfriet P, Duijn K, Bruijn G, Wierz D, Koopmanschap M. A cost-cost study comparing etanercept with infliximab in rheumatoid arthritis. *Pharmacoeconomics*. 2001;19(10):1051-64.
8. Eriksson JK, Karlsson JA, Bratt J, Petersson IF, van Vollenhoven RF, Ernestam S, et al. Cost-effectiveness of infliximab versus conventional combination treatment in methotrexate-refractory early rheumatoid arthritis: 2-year results of the register-enriched randomised controlled SWEFOT trial. *Ann Rheum Dis*. 2014 Apr 15.
9. Kobelt G, Eberhardt K, Geborek P. TNF inhibitors in the treatment of rheumatoid arthritis in clinical practice: costs and outcomes in a follow up study of patients with RA treated with etanercept or infliximab in southern Sweden. *Ann Rheum Dis*. 2004a Jan;63(1):4-10.
10. Lekander I, Borgstrom F, Svarvar P, Ljung T, Carli C, van Vollenhoven RF. Cost-effectiveness of real-world infliximab use in patients with rheumatoid arthritis in Sweden. *Int J Technol Assess Health Care*. 2010 Jan;26(1):54-61.
11. Virkki LM, Konttinen YT, Peltomaa R, Suontama K, Saario R, Immonen K, et al. Cost-effectiveness of infliximab in the treatment of rheumatoid arthritis in clinical practice. *Clin Exp Rheumatol*. 2008 Nov-Dec;26(6):1059-66.
12. Chen YF, Jobanputra P, Barton P, Jowett S, Bryan S, Clark W, et al. A systematic review of the effectiveness of adalimumab, etanercept and infliximab for the treatment of rheumatoid arthritis in adults and an economic evaluation of their cost-effectiveness. *Health Technol Assess*. 2006 Nov;10(42):iii-iv, xi-xiii, 1-229.
13. Kobelt G, Andlin-Sobocki P, Brophy S, Jonsson L, Calin A, Braun J. The burden of ankylosing spondylitis and the cost-effectiveness of treatment with infliximab (Remicade). *Rheumatology (Oxford)*. 2004b Sep;43(9):1158-66.
14. McLeod C, Bagust A, Boland A, Dagenais P, Dickson R, Dundar Y, et al. Adalimumab, etanercept and infliximab for the treatment of ankylosing spondylitis: a systematic review and economic evaluation. *Health Technol Assess*. 2007 Aug;11(28):1-158, iii-iv.
15. Boonen A, van der Heijde D, Severens JL, Boendermaker A, Landewe R, Braun J, et al. Markov model into the cost-utility over five years of etanercept and infliximab compared

- with usual care in patients with active ankylosing spondylitis. *Ann Rheum Dis*. 2006b Feb;65(2):201-8.
16. Fautrel B, Benhamou M, Breban M, Roy C, Lenoir C, Trape G, et al. Cost effectiveness of two therapeutic regimens of infliximab in ankylosing spondylitis: economic evaluation within a randomised controlled trial. *Ann Rheum Dis*. 2010 Feb;69(2):424-7.
 17. Dretzke J, Edlin R, Round J, Connock M, Hulme C, Czczot J, et al. A systematic review and economic evaluation of the use of tumour necrosis factor-alpha (TNF-alpha) inhibitors, adalimumab and infliximab, for Crohn's disease. *Health Technol Assess*. 2011 Feb;15(6):1-244.
 18. Sprakes MB, Ford AC, Suares NC, Warren L, Greer D, Donnellan CF, et al. Costs of care for Crohn's disease following the introduction of infliximab: a single-centre UK experience. *Aliment Pharmacol Ther*. 2010 Dec;32(11-12):1357-63.
 19. Lindsay J, Puneekar YS, Morris J, Chung-Faye G. Health-economic analysis: cost-effectiveness of scheduled maintenance treatment with infliximab for Crohn's disease--modelling outcomes in active luminal and fistulizing disease in adults. *Aliment Pharmacol Ther*. 2008 Jul;28(1):76-87.
 20. Yang M, et al. Cost-Effectiveness of Adalimumab for Treatment of Crohn's Disease in Germany. 15th Annual European Conference of the International Society for Pharmacoeconomics and Outcomes Research: abstr. PGI20, 3 Nov 2012. .
 21. Jaisson-Hot I, Flourie B, Descos L, Colin C. Management for severe Crohn's disease: a lifetime cost-utility analysis. *Int J Technol Assess Health Care*. 2004 Summer;20(3):274-9.
 22. Favalli EG, Marchesoni A, Colombo GL, Sinigaglia L. Pattern of use, economic burden and vial optimization of infliximab for rheumatoid arthritis in Italy. *Clin Exp Rheumatol*. 2008 Jan-Feb;26(1):45-51.
 23. Bryan S, Andronis L, Hyde C, Connock M, Fry-Smith A, Wang D. Infliximab for the treatment of acute exacerbations of ulcerative colitis. *Health Technol Assess*. 2010 May;14 Suppl 1:9-15.
 24. National Institute for Health and Care Excellence. TA163: Infliximab for acute exacerbations of ulcerative colitis. 2008. <http://www.nice.org.uk/nicemedia/pdf/TA163Guidance.pdf> Accessed May 2014.
 25. Puneekar YS, Hawkins N. Cost-effectiveness of infliximab for the treatment of acute exacerbations of ulcerative colitis. *Eur J Health Econ*. 2010 Feb;11(1):67-76.
 26. Hyde C, Bryan S, Juarez-Garcia A, Andronis L, Fry-Smith A. Infliximab for the treatment of ulcerative colitis. *Health Technol Assess*. 2009 Oct;13 Suppl 3:7-11.
 27. National Institute for Health and Care Excellence. TA140: Infliximab for subacute manifestations of ulcerative colitis. 2008. <http://publications.nice.org.uk/infliximab-for-subacute-manifestations-of-ulcerative-colitis-ta140> Accessed May 2014.
 28. Tsai HH, Puneekar YS, Morris J, Fortun P. A model of the long-term cost effectiveness of scheduled maintenance treatment with infliximab for moderate-to-severe ulcerative colitis. *Aliment Pharmacol Ther*. 2008 Nov 15;28(10):1230-9.
 29. Chaudhary MA, Fan T. Cost-Effectiveness of Infliximab for the Treatment of Acute Exacerbations of Ulcerative Colitis in the Netherlands. *Biol Ther*. 2013;3:45-60.
 30. Park KT, Tsai R, Perez F, Cipriano LE, Bass D, Garber AM. Cost-effectiveness of early colectomy with ileal pouch-anal anastomosis versus standard medical therapy in severe ulcerative colitis. *Ann Surg*. 2012 Jul;256(1):117-24.
 31. Loveman E, Turner D, Hartwell D, Cooper K, Clegg A. Infliximab for the treatment of adults with psoriasis. *Health Technol Assess*. 2009 Jun;13 Suppl 1:55-60.
 32. Schmitt-Rau K, Rosenbach T, Radtke MA, Augustin M. Cost-effectiveness of biological therapy in remission induction of moderate to severe plaque psoriasis. *Dermatology*. 2010;221(3):236-42.

33. de Portu S, Del Giglio M, Altomare G, Arcangeli F, Berardesca E, Calzavara-Pinton P, et al. Cost-effectiveness analysis of TNF-alpha blockers for the treatment of chronic plaque psoriasis in the perspective of the Italian health-care system. *Dermatol Ther*. 2010 Jan-Feb;23 Suppl 1:S7-13.
34. Cummins E, Asseburg C, Puneekar YS, Shore E, Morris J, Briggs A, et al. Cost-effectiveness of infliximab for the treatment of active and progressive psoriatic arthritis. *Value Health*. 2011 Jan;14(1):15-23.
35. Rodgers M, Epstein D, Bojke L, Yang H, Craig D, Fonseca T, et al. Etanercept, infliximab and adalimumab for the treatment of psoriatic arthritis: a systematic review and economic evaluation. *Health Technol Assess*. 2011 Feb;15(10):i-xxi, 1-329.
36. Bravo Vergel Y, Hawkins NS, Claxton K, Asseburg C, Palmer S, Woolacott N, et al. The cost-effectiveness of etanercept and infliximab for the treatment of patients with psoriatic arthritis. *Rheumatology (Oxford)*. 2007 Nov;46(11):1729-35.
37. Woolacott N, Bravo Vergel Y, Hawkins N, Kainth A, Khadjesari Z, Misso K, et al. Etanercept and infliximab for the treatment of psoriatic arthritis: a systematic review and economic evaluation. *Health Technol Assess*. 2006 Sep;10(31):iii-iv, xiii-xvi, 1-239.
38. Kirson NY, Rao S, Birnbaum HG, Kantor E, Wei RS, Cifaldi M. Matching-adjusted indirect comparison of adalimumab vs etanercept and infliximab for the treatment of psoriatic arthritis. *J Med Econ*. 2013;16(4):479-89.
39. Olivieri I, de Portu S, Salvarani C, Cauli A, Lubrano E, Spadaro A, et al. The psoriatic arthritis cost evaluation study: a cost-of-illness study on tumour necrosis factor inhibitors in psoriatic arthritis patients with inadequate response to conventional therapy. *Rheumatology (Oxford)*. 2008 Nov;47(11):1664-70.