Erratum to Assessment Report

”Adalimumab, etanercept, infliximab, certolizumab pegol, golimumab, tocilizumab and abatacept for the treatment of rheumatoid arthritis not previously treated with disease-modifying anti-rheumatic drugs and after the failure of conventional disease-modifying anti-rheumatic drugs only: systematic review and economic evaluation”

ScHARR-TAG

October 2013

Description of the amendments made within this erratum.

In the period between submitting the report and the Appraisal Committee a number of errors within tables and figures were identified. These were as follows:

- Table 3 contained typographical errors. These were confined to the written report and were not propagated to the cost effectiveness analyses.
- Figure 101 was incorrectly labelled and depicted the cost per QALY values rather than discounted costs.
- Errors were identified in the calculation of the median ICERs (Tables 194 and 195)
- Table 212 contained undiscounted, rather than discounted costs and QALYs (these are marked as commercial-in-confidence data) although discounted cost per QALY values were provided.
- Section 6.3.22.7 was a replicate of Section 6.3.22.6 rather than including the correct data. This affected Tables 246-253 and Figure 109
- Section 6.3.22.8 was a replicate of Section 6.3.22.6 rather than including the correct data. This affects Tables 254-261 and Figure 110
- Table 290 contained erroneous data. These data have been corrected.
- It was observed that sensitivity analyses using previous discount rates had been run using the current discount rates. This affected Tables 300 and 308. These sensitivity analyses have now been run correctly.

The corrected tables and figures follow.

Table 3: The assumed mean acquisition costs for each intervention

Treatment	Dose regimen	Details of PAS if applicable	Cost per cheapest available dose (dose)	Cost per weight-adjusted dose [1] / standard regimen	Administration costs per treatment	Cost per Year (including admin costs) [2]	Additional Costs in Year 1
Abatacept (intravenous)	500 mg below 60 kg, 750 mg between 60-100 kg, 1000 mg above 100 kg; 0, 2 and 4 weeks then every 4 weeks thereafter	[redacted]	[redacted] (250mg)	[redacted]	£154	[redacted]	[redacted]
Abatacept (subcutaneous)	125mg weekly following loading dose 500 mg below 60 kg, 750 mg between 60-100 kg, 1000 mg above 100 kg.	[redacted]	[redacted] (125mg)	[redacted]	£3.05	[redacted]	[redacted]
Adalimumab	40 mg; every other week	N/A	£352.14 (40mg)	£352.14	£3.05	£9234.94	£-
Certolizumab pegol	400 mg per week initially, repeated at weeks 2and 4 weeks followed by a maintenance dose of 200 mg every 2 weeks	Initial 10 doses free	£357.50 (200 mg)	£357.50	£3.05	£9374.30	-£2523.85 [3]
Etanercept	50 mg; every week	N/A	£178.75 (50mg)	£178.75	£3.05	£9453.60	£-
Golimumab	50 mg below 100 kg, 100 mg above 100 kg, per month	100mg dose provided at the same price as the 50mg dose	£762.97 (50mg)	£762.97 [4]	£3.05	£9192.24	£-
Infliximab [5]	3 mg/kg: 0, 2, 6 then every 8 weeks	N/A	£419.62 (100mg)	£1110.98	£154	£8222.37 [6]	£1820.47
Tocilizumab	8 mg/kg every four weeks	[redacted]	[redacted] (80mg)	[redacted]	£154	[redacted]	£-

[1]Assuming the weight distribution of patients from the BSRBR and choosing the least expensive method of meeting the requirement. The correct dose for a specific patient is calculated within the model. [2]Assuming no vial sharing [3]This value has been simplified for clarity and is negative due to assuming 10 free doses in year 1 as detailed in the patient access scheme. The model calculates the timing and number of doses correctly. [4]Assuming that the cost of 100mg syringes are set to the price of 50mg syringes as per the previously agreed patient access scheme. [5]These values have been simplified for clarity, assuming 8 doses in year 1 and 6.5 in each subsequent year. The model calculates the timing and number of doses correctly. [6]Assuming no increase in dose requiring additional vials, - if the response is inadequate after 12 weeks, the dose may be increased in steps of 1.5 mg/kg every 8 weeks, up to max. 7.5 mg/kg every 8 weeks; alternatively, 3 mg/kg may be given every 4 weeks.

N/A – not applicable

Figure 101 **Discounted Costs from two runs of 10,000 simulated patients**

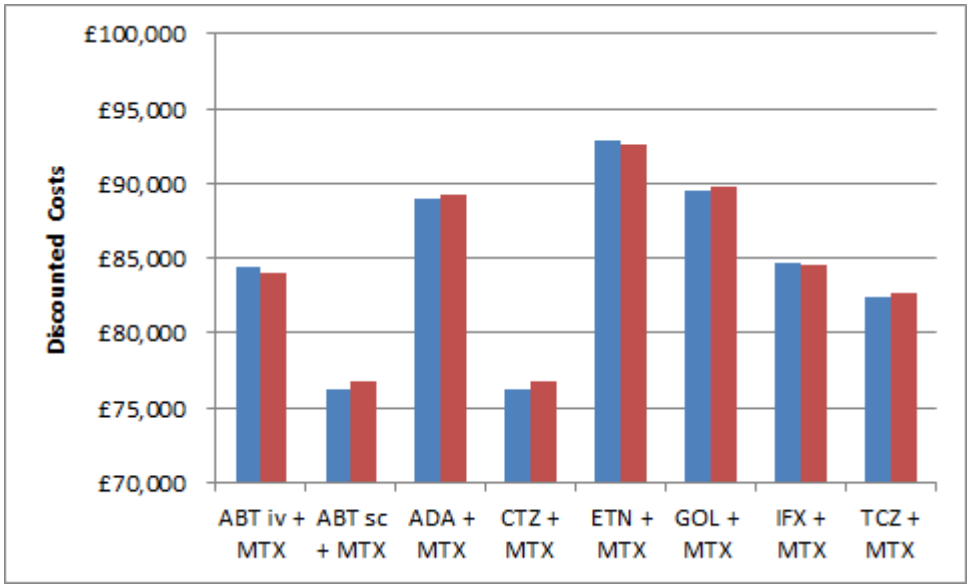


Table 194: Summarised results: Median ICERs for all bDMARD strategies compared with the MTX alone strategy. Populations 2 and 3 who can receive MTX

			Base Case +								
	Response Measure	Assumed HAQ Progression		RCTs with small %ge of bDMARD prior use , adequate MTX-history	RCTs with small %ge of bDMARD prior use (irrespective of MTX-history)	Trials with inadequate MTX history	Malottki mapping of HAQ to utility	Discount rates (6% costs, 1.5% QALYs)	Impact of AEs assumed to be 100-fold higher	Relationship between HAQ and pain taken from ERAS	PSA
Population 2 (severe MTX – experienced)	EULAR	ERAS	£56,500	£56,000	£56,800	No data	£60,700	£41,200	£58,400	£97,200	£56,700
		Linear	£33,000	£33,600	£33,200	No data	£36,100	£23,400	£34,000	£63,800	£33,300
	ACR	ERAS	£52,800	£53,400	£55,100	£53,400	£58,900	£38,800	£54,800	£89,500	£53,200
		Linear	£32,100	£31,700	£31,700	£31,700	£34,300	£22,500	£33,100	£59,900	£31,400
Population 3 (moderate MTX-experienced)	EULAR	ERAS	£61,700	£61,700	£65,000	No Data	£65,600	£45,000	£63,400	£68,300	£61,900
		Linear	£34,900	£33,800	£34,300	No Data	£35,400	£21,400	£35,900	£44,300	£33,900
	ACR	ERAS	£61,100	£57,900	£61,100	£74,700	£60,800	£42,300	£63,000	£67,500	£60,100
		Linear	£31,800	£31,100	£31,100	£33,400	£33,400	£22,600	£32,600	£42,700	£31,900
All numbers rounded to the nearest £100.											

Table 195: Summary of median ICERs for all bDMARDs compared with the MTX alone strategy. Populations 2 and 3 who are treated with monotherapy

			Base Case +								
	Response Measure	Assumed HAQ Progression		RCTs with small %ge of bDMARD prior use , adequate MTX-history	RCTs with small %ge of bDMARD prior use (irrespective of MTX-history)	Trials with inadequate MTX history	Malottki mapping of HAQ to utility	Discount rates (6% costs, 1.5% QALYs)	Impact of AEs assumed to be 100-fold higher	Relationship between HAQ and pain taken from ERAS	PSA
Population 2 (severe MTX – experienced)	EULAR	ERAS	£73,500	£76,600	£79,800	No data	£80,700	£54,200	£75,700	£125,700	£76,100
		Linear	£38,500	£38,300	£39,000	No data	£41,600	£27,300	£38,500	£74,800	£39,700
	ACR	ERAS	£65,600	£65,000	£76,700	£65,600	£70,300	£46,200	£67,400	£110,900	£65,300
		Linear	£36,400	£35,800	£35,200	£35,200	£38,300	£24,900	£36,400	£69,200	£35,500
Population 3 (moderate MTX-experienced)	EULAR	ERAS	£75,700	£81,500	£80,000	No data	£75,000	£54,500	£77,800	£95,000	£76,400
		Linear	£36,900	£38,600	£35,600	No data	£38,200	£26,000	£37,800	£55,300	£37,700
	ACR	ERAS	£69,600	£69,700	£83,500	£70,000	£68,800	£50,000	£71,300	£80,300	£73,500
		Linear	£35,800	£36,700	£35,000	£35,700	£37,700	£24,600	£35,800	£50,100	£50,100
All numbers rounded to the nearest £100.											

Table 212: Deterministic base case results using ACR data mapped to EULAR data – ERAS cDMARD HAQ progression and a severe, MTX-experienced, RA population

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 52,857	Ext Dominated
ABT_MTX	[redacted]	[redacted]	£ 48,730	£ 44,835
IFX_MTX	[redacted]	[redacted]	£ 49,829	£ 121,276
ABTS_MTX	[redacted]	[redacted]	£ 52,694	Ext Dominated
CTZ_MTX	[redacted]	[redacted]	£ 54,043	Dominated
GOL_MTX	[redacted]	[redacted]	£ 52,748	Ext Dominated
ADA_MTX	[redacted]	[redacted]	£ 53,778	Dominated
ETN_MTX	[redacted]	[redacted]	£ 54,201	£ 214,864

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

Section 6.3.22.7

Deterministic results using ACR data mapped to EULAR data and assuming ERAS cDMARD HAQ progression and a moderate, MTX-experienced, RA population

Table 246: Deterministic base case results using ACR data mapped to EULAR data – ERAS cDMARD HAQ progression and a moderate, MTX-experienced, RA population.

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 61,004	Ext Dominated
ABT_MTX	[redacted]	[redacted]	£ 56,200	£ 56,200
IFX_MTX	[redacted]	[redacted]	£ 57,560	Dominated
CTZ_MTX	[redacted]	[redacted]	£ 61,443	Dominated
ADA_MTX	[redacted]	[redacted]	£ 61,264	Dominated
ABTS_MTX	[redacted]	[redacted]	£ 60,060	Dominated
GOL_MTX	[redacted]	[redacted]	£ 61,122	Dominated
ETN_MTX	[redacted]	[redacted]	£ 61,640	Dominated

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

It is seen that the ICERs of all the bDMARDs compared with the MTX strategy are in the region of £56,000 to £62,000

Table 247: Deterministic results having included RCTs with a small proportion of previous bDMARD use (with adequate prior MTX exposure) using ACR data mapped to EULAR data – ERAS cDMARD HAQ progression and a moderate, MTX-experienced, RA population.

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 56,204	Ext Dominated
ABT_MTX	[redacted]	[redacted]	£ 55,497	£ 55,497
IFX_MTX	[redacted]	[redacted]	£ 56,881	Dominated
ADA_MTX	[redacted]	[redacted]	£ 58,836	Dominated
GOL_MTX	[redacted]	[redacted]	£ 58,987	Ext Dominated
ABTS_MTX	[redacted]	[redacted]	£ 57,758	Ext Dominated
ETN_MTX	[redacted]	[redacted]	£ 58,081	£ 104,821
CTZ_MTX	[redacted]	[redacted]	£ 60,831	Dominated

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

Table 248: Deterministic results having included RCTs with a small proportion of previous bDMARD use (irrespective of prior MTX exposure) using ACR data mapped to EULAR data – ERAS cDMARD HAQ progression and a moderate, MTX-experienced, RA population.

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 60,748	Ext Dominated
ABT_MTX	[redacted]	[redacted]	£ 54,197	£ 54,197
IFX_MTX	[redacted]	[redacted]	£ 55,722	£ 131,872
ADA_MTX	[redacted]	[redacted]	£ 61,591	Dominated
ABTS_MTX	[redacted]	[redacted]	£ 60,717	Dominated
GOL_MTX	[redacted]	[redacted]	£ 61,440	Dominated
ETN_MTX	[redacted]	[redacted]	£ 62,458	Ext Dominated
CTZ_MTX	[redacted]	[redacted]	£ 63,310	£ 160,490

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

Table XXX: Deterministic results having included RCTs with potentially low prior MTX exposure using ACR data mapped to EULAR data – ERAS cDMARD HAQ progression and a moderate, MTX-experienced, RA population.

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
CTZ_MTX	[redacted]	[redacted]	£ 67,451	£ 67,451
TCZ_MTX	[redacted]	[redacted]	£ 76,261	Dominated
ABTS_MTX	[redacted]	[redacted]	£ 76,466	Dominated
GOL_MTX	[redacted]	[redacted]	£ 87,311	Dominated
ABT_MTX	[redacted]	[redacted]	£ 72,829	Ext Dominated
ADA_MTX	[redacted]	[redacted]	£ 69,592	£ 88,918
ETN_MTX	[redacted]	[redacted]	£ 75,616	Dominated
IFX_MTX	[redacted]	[redacted]	£ 73,848	Dominated

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

Table 249: Deterministic results having used the mapping of HAQ to utility from Malottki et al rather than Hernandez et al using ACR data mapped to EULAR data – ERAS cDMARD HAQ progression and a moderate, MTX-experienced, RA population.

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 60,952	Ext Dominated
IFX_MTX	[redacted]	[redacted]	£ 56,985	£ 56,985
ABT_MTX	[redacted]	[redacted]	£ 59,557	Dominated
ADA_MTX	[redacted]	[redacted]	£ 60,566	Dominated
CTZ_MTX	[redacted]	[redacted]	£ 62,017	Dominated
ABTS_MTX	[redacted]	[redacted]	£ 60,949	Ext Dominated
GOL_MTX	[redacted]	[redacted]	£ 60,150	£ 198,695
ETN_MTX	[redacted]	[redacted]	£ 62,953	Dominated

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

Table 250: Deterministic results having used discount rates of 6% per annum for costs and 1.5% per annum for QALYs and using ACR data mapped to EULAR data – ERAS cDMARD HAQ progression and a moderate, MTX-experienced, RA population.

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with the MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 42,787	Ext Dominated
ABT_MTX	[redacted]	[redacted]	£ 38,060	£ 38,060
IFX_MTX	[redacted]	[redacted]	£ 38,926	£ 75,574
ADA_MTX	[redacted]	[redacted]	£ 42,323	Dominated
CTZ_MTX	[redacted]	[redacted]	£ 42,287	Dominated
ABTS_MTX	[redacted]	[redacted]	£ 42,701	Dominated
GOL_MTX	[redacted]	[redacted]	£ 41,026	£ 115,908
ETN_MTX	[redacted]	[redacted]	£ 42,693	Dominated

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; CTZ – certolizumab pegol; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained; Ext - extendedly

Table 251: Deterministic results assuming 100-fold increased impact of adverse events and using ACR data mapped to EULAR data – ERAS cDMARD HAQ progression and a moderate, MTX-experienced, RA population.

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 63,085	Ext Dominated
ABT_MTX	[redacted]	[redacted]	£ 57,887	£ 57,887
IFX_MTX	[redacted]	[redacted]	£ 59,295	Dominated
CTZ_MTX	[redacted]	[redacted]	£ 63,264	Dominated
ADA_MTX	[redacted]	[redacted]	£ 63,053	Dominated
ABTS_MTX	[redacted]	[redacted]	£ 61,794	Dominated
GOL_MTX	[redacted]	[redacted]	£ 62,881	Dominated
ETN_MTX	[redacted]	[redacted]	£ 63,386	Dominated

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

Table 252: Deterministic results having used the relationship between HAQ and pain derived from ERAS – ERAS cDMARD HAQ progression and a moderate, MTX-experienced, RA population.

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 69,043	Ext Dominated
ABT_MTX	[redacted]	[redacted]	£ 61,441	£ 15,344
IFX_MTX	[redacted]	[redacted]	£ 62,293	£ 103,633
CTZ_MTX	[redacted]	[redacted]	£ 70,693	Dominated
ADA_MTX	[redacted]	[redacted]	£ 67,278	Ext Dominated
GOL_MTX	[redacted]	[redacted]	£ 66,345	£ 276,815
ABTS_MTX	[redacted]	[redacted]	£ 67,703	Dominated
ETN_MTX	[redacted]	[redacted]	£ 68,805	£ 742,133

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

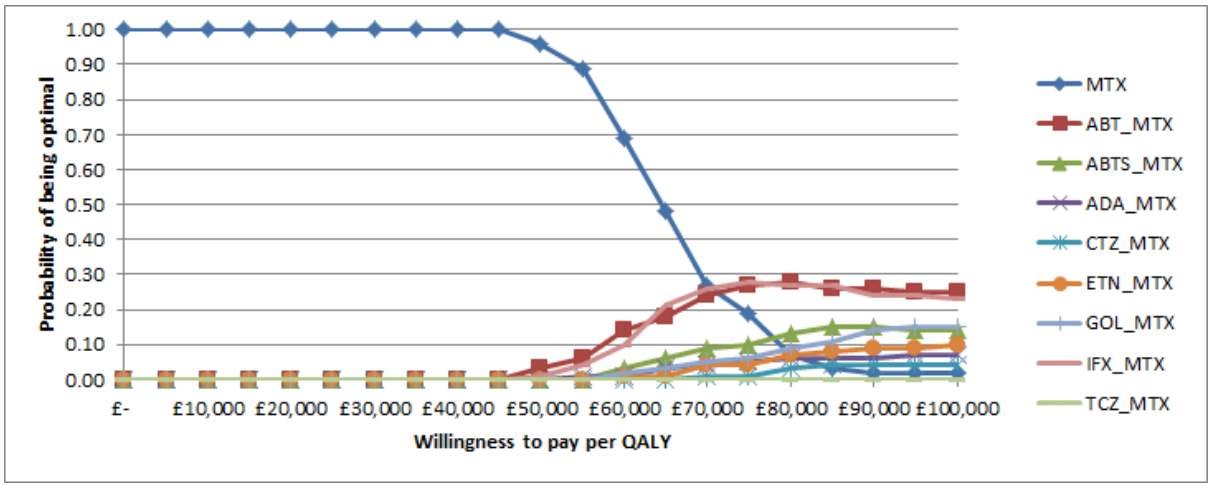
Probabilistic results using ACR data mapped to EULAR data and assuming ERAS cDMARD HAQ progression and a moderate, MTX-experienced, RA population.

Table 253: Probabilistic base case results using ACR data mapped to EULAR data – ERAS cDMARD HAQ progression and a moderate, MTX-experienced, RA population.

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 60,353	Ext Dominated
ABT_MTX	[redacted]	[redacted]	£ 55,450	£ 55,450
IFX_MTX	[redacted]	[redacted]	£ 55,699	Ext Dominated
ADA_MTX	[redacted]	[redacted]	£ 60,308	Dominated
GOL_MTX	[redacted]	[redacted]	£ 59,807	Ext Dominated
ABTS_MTX	[redacted]	[redacted]	£ 59,315	Ext Dominated
CTZ_MTX	[redacted]	[redacted]	£ 60,715	Dominated
ETN_MTX	[redacted]	[redacted]	£ 61,111	£ 236,026

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

Figure 109: The CEAC when using ACR data mapped to EULAR data – ERAS cDMARD HAQ progression and a moderate, MTX-experienced, RA population.



It is seen that at a willingness to pay of £30,000 that MTX strategy has a very high probability of being optimal.

Section 6.3.22.8

Deterministic results using ACR data mapped to EULAR data, assuming linear cDMARD HAQ progression and a moderate, MTX-experienced, RA population

Table 254: Deterministic base case results using ACR data mapped to EULAR data – Linear cDMARD HAQ progression and a moderate, MTX-experienced, RA population

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 31,218	Ext Dominated
IFX_MTX	[redacted]	[redacted]	£ 28,930	Ext Dominated
ABT_MTX	[redacted]	[redacted]	£ 28,838	£ 28,838
ADA_MTX	[redacted]	[redacted]	£ 31,560	Dominated
ABTS_MTX	[redacted]	[redacted]	£ 31,994	Dominated
CTZ_MTX	[redacted]	[redacted]	£ 32,458	Dominated
GOL_MTX	[redacted]	[redacted]	£ 31,996	Dominated
ETN_MTX	[redacted]	[redacted]	£ 32,732	Dominated

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

It is seen that the ICERs of all the bDMARDs compared with the MTX strategy are in the region of £28,000 to £33,000

Table 255: Deterministic results having included RCTs with a small proportion of previous bDMARD use (with adequate prior MTX exposure) using ACR data mapped to EULAR data – Linear cDMARD HAQ progression and a moderate, MTX-experienced, RA population

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 31,131	Ext Dominated
ABT_MTX	[redacted]	[redacted]	£ 28,754	Ext Dominated
IFX_MTX	[redacted]	[redacted]	£ 28,445	£ 28,445
ABTS_MTX	[redacted]	[redacted]	£ 30,755	Ext Dominated
ADA_MTX	[redacted]	[redacted]	£ 31,370	Dominated
GOL_MTX	[redacted]	[redacted]	£ 31,098	Dominated
ETN_MTX	[redacted]	[redacted]	£ 31,844	Ext Dominated
CTZ_MTX	[redacted]	[redacted]	£ 32,032	£ 114,154

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

Table 256: Deterministic results having included RCTs with a small proportion of previous bDMARD use (irrespective of prior MTX exposure) using ACR data mapped to EULAR data – Linear cDMARD HAQ progression and a moderate, MTX-experienced, RA population

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
CON_DMARD	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 31,813	Ext Dominated
ABT_MTX	[redacted]	[redacted]	£ 29,282	Ext Dominated
IFX_MTX	[redacted]	[redacted]	£ 29,141	£ 29,141
ADA_MTX	[redacted]	[redacted]	£ 31,042	Dominated
ABTS_MTX	[redacted]	[redacted]	£ 31,076	Dominated
GOL_MTX	[redacted]	[redacted]	£ 31,150	Ext Dominated
ETN_MTX	[redacted]	[redacted]	£ 32,139	Ext Dominated
CTZ_MTX	[redacted]	[redacted]	£ 32,406	£ 68,881

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

Table XXX: Deterministic results having included RCTs with potentially low prior MTX exposure using ACR data mapped to EULAR data – Linear cDMARD HAQ progression and a moderate, MTX-experienced, RA population

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 33,542	Ext Dominated
IFX_MTX	[redacted]	[redacted]	£ 30,816	£ 30,816
ABT_MTX	[redacted]	[redacted]	£ 31,437	£ 107,408
ADA_MTX	[redacted]	[redacted]	£ 33,506	Dominated
GOL_MTX	[redacted]	[redacted]	£ 33,393	£ 174,625
CTZ_MTX	[redacted]	[redacted]	£ 33,616	Dominated
ABTS_MTX	[redacted]	[redacted]	£ 33,697	Dominated
ETN_MTX	[redacted]	[redacted]	£ 34,522	Dominated

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

Table 257: Deterministic results having used the mapping of HAQ to utility from Malottki et al rather than Hernandez et al using ACR data mapped to EULAR data – Linear cDMARD HAQ progression and a moderate, MTX-experienced, RA population

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 34,626	Ext Dominated
ABT_MTX	[redacted]	[redacted]	£ 30,220	£ 30,220
IFX_MTX	[redacted]	[redacted]	£ 31,171	Dominated
ADA_MTX	[redacted]	[redacted]	£ 33,135	Dominated
CTZ_MTX	[redacted]	[redacted]	£ 33,805	Dominated
GOL_MTX	[redacted]	[redacted]	£ 33,250	Ext Dominated
ABTS_MTX	[redacted]	[redacted]	£ 33,611	Dominated
ETN_MTX	[redacted]	[redacted]	£ 33,860	£ 140,107

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

Table 258: Deterministic results having used discount rates of 6% per annum for costs and 1.5% per annum for QALYs and using ACR data mapped to EULAR data – Linear cDMARD HAQ progression and a moderate, MTX-experienced, RA population

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with the MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 23,753	Ext Dominated
ABT_MTX	[redacted]	[redacted]	£ 21,098	£ 21,098
IFX_MTX	[redacted]	[redacted]	£ 21,191	£ 42,502
ADA_MTX	[redacted]	[redacted]	£ 22,893	Dominated
GOL_MTX	[redacted]	[redacted]	£ 22,211	Ext Dominated
CTZ_MTX	[redacted]	[redacted]	£ 23,132	Dominated
ABTS_MTX	[redacted]	[redacted]	£ 22,448	£ 89,334
ETN_MTX	[redacted]	[redacted]	£ 22,852	£ 100,773

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; CTZ – certolizumab pegol; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained; Ext - extendedly

Table 259: Deterministic results assuming 100-fold increased impact of adverse events and using ACR data mapped to EULAR data – Linear cDMARD HAQ progression and a moderate, MTX-experienced, RA population

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with the MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 32,224	Ext Dominated
IFX_MTX	[redacted]	[redacted]	£ 29,782	Ext Dominated
ABT_MTX	[redacted]	[redacted]	£ 29,675	£ 29,675
ADA_MTX	[redacted]	[redacted]	£ 32,417	Dominated
ABTS_MTX	[redacted]	[redacted]	£ 32,858	Dominated
CTZ_MTX	[redacted]	[redacted]	£ 33,333	Dominated
GOL_MTX	[redacted]	[redacted]	£ 32,857	Dominated
ETN_MTX	[redacted]	[redacted]	£ 33,591	Dominated

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; CTZ – certolizumab pegol; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained; Ext - extendedly

Table 260: Deterministic results having used the relationship between HAQ and pain derived from ERAS – Linear cDMARD HAQ progression and a moderate, MTX-experienced, RA population.

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with the MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 41,482	Ext Dominated
IFX_MTX	[redacted]	[redacted]	£ 39,352	£ 39,352
ABT_MTX	[redacted]	[redacted]	£ 40,888	Dominated
ABTS_MTX	[redacted]	[redacted]	£ 42,849	Dominated
ADA_MTX	[redacted]	[redacted]	£ 42,879	Dominated
GOL_MTX	[redacted]	[redacted]	£ 42,594	£ 240,275
CTZ_MTX	[redacted]	[redacted]	£ 42,840	Dominated
ETN_MTX	[redacted]	[redacted]	£ 43,418	Dominated

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; CTZ – certolizumab pegol; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained; Ext - extendedly

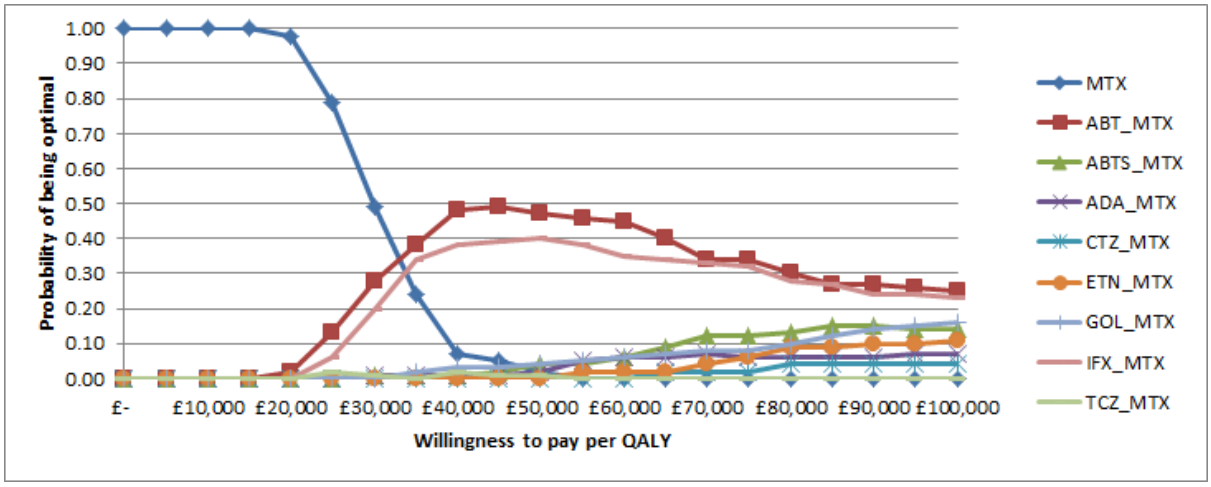
Probabilistic results using ACR data mapped to EULAR data and assuming linear cDMARD HAQ progression

Table 261: Probabilistic base case results using ACR data mapped to EULAR data – Linear cDMARD HAQ progression and a moderate, MTX-experienced, RA population

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
MTX	[redacted]	[redacted]	-	-
TCZ_MTX	[redacted]	[redacted]	£ 31,987	Ext Dominated
ABT_MTX	[redacted]	[redacted]	£ 29,346	£ 29,346
IFX_MTX	[redacted]	[redacted]	£ 29,813	Dominated
GOL_MTX	[redacted]	[redacted]	£ 31,867	Ext Dominated
ABTS_MTX	[redacted]	[redacted]	£ 31,886	£ 212,513
ADA_MTX	[redacted]	[redacted]	£ 31,979	Dominated
CTZ_MTX	[redacted]	[redacted]	£ 32,782	Dominated
ETN_MTX	[redacted]	[redacted]	£ 33,064	£ 225,165

ABT iv – abatacept intravenous; ABT sc – abatacept subcutaneous; ADA – adalimumab; ETN – etanercept; GOL – golimumab; IFX – infliximab; MTX – methotrexate; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

Figure 110: The CEAC using ACR data mapped to EULAR data and assuming linear CDMARD HAQ progression.



The CEAC shows only the probability of being optimal and inferences regarding relative cost-effectiveness shown be made with caution. It is seen however that in the willingness to pay region of £30,000 to £40,000 per QALY there are multiple bDMARDs with similar probabilities of being optimal.

Table 290: Deterministic results having included RCTs with potentially low prior MTX exposure using ACR data mapped to EULAR data – ERAS cDMARD HAQ progression and a severe, MTX-experienced, RA population treated with monotherapy

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
SSZ	[redacted]	[redacted]		
TCZ	[redacted]	[redacted]	£ 32,025	£ 32,025
ETN	[redacted]	[redacted]	£ 35,214	£ 77,823
ADA	[redacted]	[redacted]	£ 35,883	Dominated

ADA – adalimumab; ETN – etanercept; SSZ = sulfasalazine; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

Table 300: Deterministic results having used discount rates of 6% per annum for costs and 1.5% per annum for QALYs and using EULAR data directly – ERAS cDMARD HAQ progression and a moderate, MTX-experienced, RA population treated with monotherapy

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
SSZ	[redacted]	[redacted]		
TCZ	[redacted]	[redacted]	£ 50,811	£ 73,526
ADA	[redacted]	[redacted]	£ 54,536	Ext Dominated
ETN	[redacted]	[redacted]	£ 56,511	£ 91,610

ADA – adalimumab; ETN – etanercept; SSZ = sulfasalazine; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly

Table 308: Deterministic results having used discount rates of 6% per annum for costs and 1.5% per annum for QALYs and using EULAR data directly – LINEAR cDMARD HAQ progression and a severe, MTX-experienced, RA population treated with monotherapy

First Intervention in the strategy	Discounted Costs	Discounted QALYs	CPQ compared with MTX strategy	CPQ (fully incremental analyses)
SSZ	[redacted]	[redacted]		
TCZ	[redacted]	[redacted]	£ 23,762	£ 23,762
ADA	[redacted]	[redacted]	£ 26,670	Ext Dominated
ETN	[redacted]	[redacted]	£ 25,982	£ 57,155

ADA – adalimumab; ETN – etanercept; SSZ = sulfasalazine; TCZ – tocilizumab
CPQ – cost per QALY gained. Ext - extendedly