Comparison of staff resources and patient time required for rituximab and infliximab administration in 3 UK NHS hospitals

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Background

- Rituximab and infliximab are biologic disease modifying anti-rheumatic drugs (DMARDs) used to treat rheumatoid arthritis (RA).
- Rituximab is commonly re-dosed when signs and symptoms return, but infliximab has fixed dosing intervals.
- Results from a recent single centre study suggest that the different administration requirements do have an impact on resource use[1].
- The secondary care resource and patient time implications of this difference were determined in this 3-centre observational study.

Objectives

The purpose of this study was to fulfil the following objectives:

- To describe the treatment pathways for patients receiving rituximab and infliximab in RA.
- To determine the secondary healthcare resource use associated with each treatment pathway.

Methods

- Medical records of 44 patients with RA, treated with infliximab (n=26) or at least 2 courses of rituximab (n=18) were reviewed retrospectively to determine:
  - Mean time between end of 1st rituximab course and start of the 2nd
  - Numbers of visits and investigations for both drugs
- Staff and patient time required for drug administration was measured prospectively by direct observation of 25 patients receiving infliximab (n=13) or rituximab (n=12).

Results

Table 1: Description of patient characteristics

	Infliximab (n=26)	**Rituximab** (n=18)
Mean age (years)	58.8	54.9
Age Range (years)	34-78	38 - 73
% Male	4%	17%
Mean number (range) of concomitant RA drugs at initiation	2.5 (1–3)	2.2 (1–3)
Mean number (range) of concomitant tDMARDs at initiation	0.9 (0-1)	0.8 (0-1)
Mean number (range) of previous biologic DMARDs	0.2 (0-1)	1.8 (0-4)
Mean dose of Study Drug (mg)	212.3	1000
Mean number of dose modifications over 43 week period	3.6	N/A

Table 2: Periodicity of rituximab courses

	Mean time between rituximab courses
All centres	43.0 weeks

Table 3: Number of infusions in 43 week assessment period

	Mean no. infliximab infusions in 43 weeks	**Mean no. rituximab infusions in 43 weeks**
All centres	6.9 infusions	2.0 infusions

Table 4: Mean total NHS staff time in 43 week assessment period

	Infliximab (I) (minutes)	**Rituximab (R)** (minutes)	**Difference (R-I)** (minutes)
All centres	317.4	174.4	-142.9

Table 5: Mean patient visit duration

	Infliximab (n=13) (minutes)				**Rituximab (n=12)** (minutes)			
	Min	Max	Mean	St Dev	Min	Max	Mean	St Dev
Time from arrival to commence study drug	20.5	218.0	60.8	53.1	19.1	202.3	105.5	60.0
Study drug infusion time	85.0	180.8	130.9	27.7	232.3	332.9	284.5	32.1
Time from infusion stop to depart	5.2	83.0	28.3	20.8	14.8	85.0	31.7	21.4
Total time on unit	169.0	393.0	220.0	62.8	326.5	525.0	421.8	64.3

The data for all centres shows the mean patient visit duration (minutes) is greater for a single rituximab infusion (421.8 minutes) compared with a single infliximab infusion (220.0 minutes).

Table 6: Mean patient attendance time in 43 week assessment period

Centre	**Infliximab (I)** (minutes)	**Rituximab (R)** (minutes)	**Difference (R-I)** (minutes)
All	1518.3	843.5	-674.8

Mean total patient time in the unit per 43 weeks was 14.1 hours for rituximab vs 25.3 hours for infliximab.

Conclusion

In the 3 centres observed:

- Although rituximab requires twice as much resource per visit, over the 43 week assessment period was 142.9 minutes less.
- This study demonstrated benefits from rituximab in terms of:
  - Patient convenience
  - Staff resource (time saving)
- This can inform NHS planning of service delivery and quality standards for patient with RA.

References

[1] Somerville *et al*. The impact of rituximab on resource use in a UK NHS rheumatology day care service. Rheumatology 47(2): ii116-ii (2008) (http://rheumatology.oxfordjournals.org/cgi/reprint/47/suppl_2/ii116?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&fulltext=%22the+impact+of+rituximab%22&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT)

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