

Subcutaneous Methotrexate to Cut Costs?

To the Editor:

Methotrexate (MTX) is widely used as the drug of choice in the treatment of rheumatoid arthritis (RA) and it is advocated as such by the British Society for Rheumatology guidelines¹. To date, oral MTX has been used because of patient preference for its once-weekly dosing regime and low costs. Tumor necrosis factor- α inhibitors (anti-TNF- α) have become increasingly popular in treating RA². However, anti-TNF- α drugs are expensive and have been shown to increase the risk of skin and soft tissue infections and reactivation of tuberculosis and possibly malignancy³.

MTX is currently available for oral or parenteral administration. Although current guidelines encourage use of MTX as first-line therapy, they do not specify the route of administration^{1,4}. Several studies describe the increased efficacy⁵, tolerability⁶, and bioavailability^{7,8} of subcutaneous (SC) MTX compared with oral MTX. It is possible that patients may be successfully treated with SC MTX where oral MTX has failed, preventing the need for biologic therapy.

We carried out a retrospective analysis of records of 301 patients with RA at Gartnavel General Hospital, Glasgow, to determine the possible financial and health benefits of using SC MTX before resorting to anti-TNF- α therapy. From our cohort, a total of 256 patients had tried anti-TNF- α therapy and 68 had had SC MTX.

Most patients had switched to SC from oral MTX because it was ineffective or intolerable because of adverse effects. Of the 68 patients who had tried SC MTX, 29% had subsequently discontinued treatment, mostly as a result of adverse effects. Of the remaining patients still on SC MTX, 22% were also on anti-TNF- α therapy, while 49% were established with stable disease taking SC MTX alone. Therefore, we can take 49% as the success rate of SC MTX in our cohort.

One year of anti-TNF- α therapy for a single patient costs £9295 on average, while the equivalent dosage of SC MTX costs £927.68. Therefore, if a patient commenced SC MTX instead of anti-TNF- α therapy it would result in potential savings of £8367.32 per patient per year. Of the 256 patients with RA receiving anti-TNF- α therapy, 233 had never tried SC MTX. Using the success rate of 49%, we calculate that 114 of these patients may have been treated successfully with SC MTX alone, preventing the need for biologic therapy. This translates to an overall cost-saving per year of future treatment for this cohort of patients as follows: £8367.32 \times 114 = £953,874.48. We can also retrospectively calculate the potential savings for each year since 2001, based on the number of new anti-TNF- α patients each year (Table 1).

We have demonstrated that expenditure for anti-TNF- α therapy has been increasing since 2001. This is a cause for concern, given the current financial climate and recent figures published by the UK National Audit Office⁹. In November 2009, the chief executive of the UK National Health Service (NHS) stated that "the NHS and the Department of Health would need to deliver between £15–£20 billion in efficiency savings per year by 2013/14"⁹. In our study alone almost £1 million could have been saved per year if the patients in our cohort had received SC MTX before they were moved to more expensive anti-TNF- α therapies. We recognize that our data are from a local cohort but our findings represent a sample of the 1% of the total population diagnosed with RA¹⁰. If, as we suspect, the under-use of SC MTX is a national trend, the potential savings to the NHS could be hundreds of millions of pounds. We also recognize that the 49% success rate is a gross estimate; however, even with a figure of 25% the savings would still be substantial. Therefore, if national guidelines stipulated that SC MTX be tried before anti-TNF- α therapy, this could not only increase financial savings markedly but also improve patient safety.

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Table 1. Potential cost savings each year according to the number of patients started on anti-TNF- α therapy that year.

Year	No. Patients Newly Starting Anti-TNF- α Who Never Tried SC MTX	Average Cost of A Year of Treatment For The New Anti-TNF- α Patients*, £	No. Patients Who Could Have Been Successful Using SC MTX**	Potential Saving that Year, £
2001	12	130,130	6	50,203.92
2002	16	167,310	8	66,938.56
2003	23	223,080	11	92,040.52
2004	13	130,130	6	50,203.92
2005	17	158,015	8	66,938.56
2006	18	185,900	9	75,305.88
2007	19	185,900	9	75,305.88
2008	28	306,735	14	117,142.48
2009	39	418,275	19	158,979.08
2010	47	474,045	23	192,448.36

*Based on the 2010 price (£) for normal weekly dosage of 50 mg etanercept for 52 weeks. **Based on 49% success rate. SC: subcutaneous.

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