

The burden of blood monitoring for disease-modifying therapies on MS services in the UK: a review of costs and processes

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Introduction

- Disease-modifying therapy (DMT) monitoring services in the UK have grown organically to meet increasing demand, varying in approach & staffing structure. As a result of this the Neurology Academy sought to explore the impact of the routine blood monitoring requirements of DMTs on MS services.
- We aimed to develop a tool that can be used to describe the variability in delivery of DMT blood monitoring and to quantify this in terms of tasks, time taken, personnel deployment and costs.

Method

A data collection tool was developed and refined via 8 pilot sites. Invitations to further validate the tool were sent to HCPs registered with the Neurology Academy. 50 centres have downloaded the tool which seeks to elicit the process followed to provide the DMT monitoring service, grades of the staff involved and time taken for each step.

Utilising an excel modelling tool, data can be analysed to calculate time required per month to deliver services. This can then be costed by grade of staff undertaking the work to determine the annual operating cost of service delivery.

Data collated includes: number of patients on each DMT; steps involved in delivering the blood monitoring service; average time taken for each step; salary and grade of members of staff involved in the process.

Results

Validation data is from 8 centres treating 4,535 patients and delivering 1,480 blood tests per month.

Initial data from 4 centres treating 1,699 patients and carrying out 642 blood tests per month:

- An average of 118 hours per month spent on monitoring
- Variation of 56–170 hours per month
- Staff grade variation: Band 8a – Band 3
- 0.68–0.86 full-time equivalent staffing
- **Annual personnel cost: £28,525 – £54,966**

Based on these results we calculate that the cost of delivering 200 blood tests per month ranges between £28,525 and £54,966.

Costs include identifying patients requiring blood tests, arranging appointments, retrieving, recording, interpreting and acting on results.

This significant level of variation warrants further exploration.

Figure 1. Summary of blood test requirements for drugs

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Alemtuzumab	12	12	12	12	12	60
Dimethyl fumarate	5	4	4	4	4	21
Fingolimod	6	2	2	2	2	14
Interferon	2	2	2	2	2	10
Natalizumab	2	2	2	2	2	10
Teriflunomide	14	6	6	6	6	38
Glatiramer	1	1	1	1	1	5
Cladribine	2	2	2	2	2	10

Figure 2. Average number of blood tests per month for an anonymous trust

	No. of patients on DMT	Number of blood tests					
		Year 1	Year 2	Year 3	Year 4	Year 5	Years 1–5
Alemtuzumab	4	48	48	48	48	48	240
Dimethyl fumarate	127	635	508	508	508	508	2,667
Fingolimod	36	216	72	72	72	72	504
Interferon	235	470	470	470	470	470	2,350
Natalizumab	79	158	158	158	158	158	790
Teriflunomide	21	294	126	126	126	126	798
Glatiramer	119	119	119	119	119	119	595
Cladribine	4	8	8	8	8	8	40
Total	625	1,948	1,509	1,509	1,509	1,509	7,984
Average per year (all patients)							1,596.80
Average per month (all patients)							133.07

Modelling tool for blood monitoring



Our modelling tool calculates the time and cost of running a blood monitoring service. The tool is designed to benchmark a service's workforce and budgetary burden from blood monitoring, and to give insight into opportunities for creating efficiencies within the service.

Figure 3. A worked example of staffing costs for a trust using the modelling tool

Average number of blood tests per month	466																
Staff member, lookup bands and grades			MSNS: Band 5 4–5 years		Pharmacist: Band 8A 5+ years		MSNS: Band 7 8+ years		Consultant 5–4–8 years completed		All personnel						
Hourly cost			£19.11		£37.04		£31.90		£63.90								
Task	No. / month		Mins/ case	Total mins	Cost (£)	Mins/ case	Total mins	Phleb. cost (£)	Mins/ case	Total mins	Admin cost (£)	Mins/ case	Total mins	Cost (£)	Hrs/ month	£/ month	£/ year
Print labels (industry-sponsored phlebotomist) for alemtuzumab & teriflunomide patients requiring bloods	237		5	1,185	377	0	0	0	0	0	0	0	0	£0	19.8	377	4,529
Arranging blood tests on demand: 15 emails per day requiring phlebotomy appt. to be booked	223		5	1,115	355	0	0	0	0	0	0	0	0	0	18.6	355	4,262
Consultant ordering blood test and reviewing results	5%	23	0	0	0	0	0	0	0	0	0	3	70	74	1.2	74	893
B5 reviewing results blood tests for injectables: 8 tests per month		8	5	38	12	0	0	0	0	0	0	0	0	0	0.6	12	143
B7 reviewing results blood tests for other DMTs (not injectables)	86%	401	0	0	0	0	0	0	3	1,202	639	0	0	0	20.0	639	7,669
Report abnormal results to consultant (20% orals, 30% alemtuzumab) 14% of total patients	14%	65	0	0	0	0	0	0	15	978	520	0	0	0	16.3	520	6,242
Blood test results requiring further action (20% of 65)	20%	13	0	0	0	0	0	0	7	91	48	0	0	0	1.5	48	581
Reminder to patients who are non-compliant (%)	11%	51	15	769	245	0	0	0	0	0	0	0	0	0	12.8	245	2,938
Natalizumab - check, review/record blood (JCV) results for 330 natalizumab patients (55 per month) - takes 30 minutes per month		55	0	0	0	0.6	30	19	0	0	0	0	0	0	0.5	19	224
Retrieving blood results from GP surgery: 10% of 223 patients (excluding those managed by industry) on various schedules	5%	23	30	699	223	0	0	0	0	0	0	0	0	0	11.7	23	2,671
Dictate letter to GP	14%	65	0	0	0	0	0	0	10	652	347	0	0	0	10.9	0	0
Totals per organisation				3,805	1,212		30	18.68		2,923	1,554		70	74	114	2,513	30,152
FTE equivalent per month																	0.71

Conclusions

Blood monitoring services have been neither routinely commissioned nor described in service specifications. Service provision has often relies on good-will of staff and has evolved empirically. There is considerable variety of service design; the structure and processes currently deployed may not be an efficient or effective deployment of MS service providers' resources.



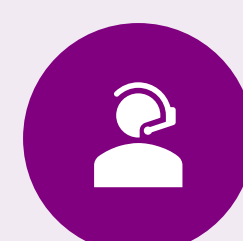
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