

## Practice Research

# Vitamin B<sub>12</sub> injections: considerable source of work for the district nurse

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### Abstract

Between June and September 1984, district nurses who worked in Coventry were asked to submit returns giving details of the patients for whom they administered vitamin B<sub>12</sub> injections. Of 492 patients identified, 382 (78%) were receiving injections more frequently than the recommended three monthly dose of hydroxycobalamin. An extra 3751 injections are being administered a year. Four hundred and thirty (88%) of these patients have conditions for which the drug is of proven benefit, so the increased frequency of injections accounts for most of the observed excess. A total of 2000 hours a year of district nurse time is spent with these patients. The nursing service is under increasing strain. Changes in vitamin B<sub>12</sub> prescribing alone could make between 600 and 1470 hours available for other patient needs.

### Introduction

*Drugs and Therapeutics Bulletin* recently reviewed the use of hydroxycobalamin (Neo-Cytamen, Cobalin H) and cyanocobalamin (Cytamen, Hepacon B<sub>12</sub>) in vitamin B<sub>12</sub> supplement treatment.<sup>1</sup> It confirmed hydroxycobalamin as the drug of choice. Only a three monthly dose is needed.<sup>2,3</sup> It is therefore more convenient for the patient and cheaper by dosage regimen and in the time required of nursing staff to administer injections.

Pressure on district nursing services in Coventry has led to a review of their work. If, as has been suggested, half of the British patients on vitamin B<sub>12</sub> are still on cyanocobalamin<sup>1</sup> this might affect the workload of the district nurse considerably. We therefore analysed the management of patients who receive vitamin B<sub>12</sub> supplement.

### Patients, method, results

Eighty district nurses serve a population of roughly 310 000, with 44 000 people aged over 65. Between June and September 1984, the nurses were asked to submit returns, based on their daily work lists, giving details of all patients to whom they administer vitamin B<sub>12</sub>. Four hundred and ninety two patients were identified. Their mean age was 75.7 years (range 34-100). The mean duration of treatment was 3.75 years (range three months-25 years). The ratio of males to females was 1.2:6.

Table I gives the principal diagnoses for these patients. Table II shows that although 389 (79%) of the 492 patients now receive vitamin B<sub>12</sub> in the form of hydroxycobalamin, they receive it in the frequency recommended for the cyanocobalamin form. Only 90 (18%) patients receive hydroxycobalamin three monthly. Of the patients on this form of treatment, 299 (78%) of 389 have injections more frequently than three monthly. At the recommended frequency these patients would expect 1295 visits and injections a year. They are getting 4225 visits and injections a year: a difference of 2930.

TABLE I—Principal diagnoses of patients receiving B<sub>12</sub> injections from district nurses in Coventry

	Men	Women	Total
Pernicious anaemia	74	180	254
Anaemia, unspecified	29	95	124
B <sub>12</sub> deficiency, including dietary	8	32	40
Macrocytic anaemia, cause unspecified	5	3	7
Gastric carcinoma	5	2	7
Gastrectomy	2	2	2
Colitis or Crohn's disease	1	2	3
Arthritis, including rheumatoid	1	7	7
Multiple sclerosis	2	1	3
Congestive cardiac failure	4	1	3
Unknown, unspecified	4	18	22
Miscellaneous conditions*	9	10	19
Totals	135	357	492

\*There were two patients each with the following diagnoses: dementia, Parkinson's disease, depression, and transverse colectomy, and one patient each with the following diagnoses: bronchitis, Wernicke's encephalopathy, alcoholism, lung cancer, stroke, lethargy, systemic lupus erythematosus, angina, psoriasis, transurethral resection of the prostate, and thalassaemia.

TABLE II—Patients who receive vitamin B<sub>12</sub> injections from district nurses in Coventry: formulation of B<sub>12</sub> and interval of treatment

	Twice weekly	Intervals of treatment (weeks)							Total
		1	2	3	4	6	8	12	
No of patients on hydroxycobalamin	2	4	15	5	236	11	26	90	389
No of patients on cyanocobalamin		3	3	3	63	2	9	20	103
Total	2	7	18	8	299	13	35	110	492

Twenty patients receive three monthly doses of cyanocobalamin; the metabolic value of this is questionable. The other 83 patients on cyanocobalamin could be receiving 359 injections of three monthly hydroxycobalamin. They are getting 1180 injections: an extra 821.

It might be expected that the patients who receive injections more often than monthly were on loading doses, prior to maintenance treatment. Only 12 of 35, however, had been on the drug for under six months. Of the seven patients on weekly injections, four had been receiving them for more than 10 years and one had started treatment 25 years ago. Many of these patients may be expected to have multiple problems, medical and social. They are more

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elderly and less likely to be able to attend the surgery for their injection. Only 44 (9%) did not receive injections at home.

The nurses were asked to indicate how much time they expected to spend with each patient. Table III gives the number of patients in each time allocation. The total time given to each of these groups has been worked out from the frequencies of visits per patient a year. The expected amount of time that would have been used if these patients had received only 15 minute visits for three monthly injections is given: 1467 hours—that is nearly one whole time equivalent—would be available for other patients if this (extreme) were the case.

TABLE III—Amount of time nurses expect to spend with patients who require vitamin B<sub>12</sub> injections: numbers of patients and observed total time used a year in each category, and an "ideal" estimate based on three monthly 15 minute visits

	Expected time with patient (h)				Total
	¼	½	¾	1	
No of patients	334	144	13	1	492
Observed total time used a year for patients in each category (h)*	991	863	133	13	2000
"Ideal" expected time a year for three monthly 15 minute visits (h)	362	156	14	1	533
Difference per year (h)	629	707	119	12	1467

\*Calculation based on frequencies of visits in each time allocation (calculation not included here).

## Discussion

We did not verify the haematological diagnoses of these patients. An estimate, however, of the prevalence of vitamin B<sub>12</sub> deficiency anaemia from the data is 1.34/1000, consistent with national findings.<sup>4</sup>

Conditions for which vitamin B<sub>12</sub> supplements are of proven value are deficiency owing to failure of absorption from the gut, as in intrinsic factor deficiency (pernicious anaemia), gastrectomy, and total ileal resection or Crohn's disease. Nutritional deficiency is rare. At most, about 430 (88%) of 492 patients seem to be receiving appropriate treatment according to these indications. The use of the drug seems to be declining for conditions such as multiple sclerosis, postherpetic neuralgia, and tiredness (table I).<sup>5</sup> No value has been shown for the drug in such conditions.<sup>1</sup> Urticaria, local pain, and anaphylactic reactions to vitamin B<sub>12</sub> have been reported.<sup>6</sup> Doctors should avoid starting new patients on the drug unless there is a proven indication, and they should review carefully patients who are already on it.

Psychological dependence is often mentioned as a reason for more frequent dosage. Fraser *et al*, however, reported no resistance by patients to reducing the frequency of their injections.<sup>7</sup> Careful explanation was sufficient reassurance that there would be no untoward effects.

Cochrane compared observed prescription of vitamin B<sub>12</sub> to "ideal" and "reasonable" prescription and found ratios of 8.6:1 and 3.2:1 respectively.<sup>8</sup> Comparable ratios from this study are 3.2:1 for "ideal" and 2.8:1 for "reasonable" prescribing. Though practice has clearly changed since 1966, there is still scope for improvement.

The 3751 extra injections represents £640 for the drug and £600 for syringes and needles. The question of how much nursing time might be saved is more difficult: 3751 extra visits of ¼ hour requires 940 hours at a cost of about £4500. From table III, however, it might be suggested that patients who require visits of more than ¼ hour are higher dependency patients, needing more than vitamin B<sub>12</sub> injections. Only the 629 hours of excess time spent on lower dependency patients could become available for sharing with other needy patients. The question also arises: Could more of the lower dependency patients receive their injections at the surgery?

Pressure on district nursing services in Coventry means that there is rationing by decreasing the time available to each patient and by longer patient waiting times. Optimising treatment should be a more acceptable means of rationing.

Even if treatment for such conditions was given "ideally" the saving would be roughly only 18 hours per nurse a year. This is a small absolute amount for an initially understaffed group who cope

with an expanding elderly population as well as the consequences of changes in hospital practice. Allied to other improvements in the use of the district nurse's time it might contribute to appreciable savings.

District nurses are respected and trusted members of the community health services. Their role in supporting elderly people in their own homes and in preventing handicap is largely undervalued—and unmeasured. Overall, costs for the population of patients in this study are about £18 000 a year. For patients with proven indications for vitamin B<sub>12</sub> supplements this represents roughly £42 a year each. In times of high technology medicine and economic appraisal of health care this is a small cost indeed "to save a life."<sup>9</sup>

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## 100 YEARS AGO

An unfortunate conflict of jurisdiction is reported to have taken place between the deputy coroner for Westminster, Mr. A. Braxton Hicks, and the authorities of the Charing Cross Hospital, as to the right of the coroner's officer to search dead bodies. On the 1st instant, Mr. Braxton Hicks was holding an inquest at the hospital, when it was stated that the policeman who conveyed the deceased to the institution was not allowed to search the body, as the hall-porter stated that he had orders not to allow anybody to search bodies but himself. The coroner's officer also said that he went to the hospital to search the body, but was met by the warden, who told him that it was one of the standing orders of the hospital that the porter was to perform the duty. The coroner called the warden, and asked him whether it was by his instructions that the porter had refused to allow the officer to search the body. The warden replied that it was by the orders of the committee. The deputy coroner thereupon asked him whether he was aware that he had given strict orders, on December 27th, that his officer was to search the bodies. The warden said he had consulted the committee, who quite approved of his (the warden's) conduct. Mr. Hicks repeated the order he had given, and said he should expect to be obeyed.

This collision is a matter of regret. No doubt the hospital authorities have good reasons for objecting to a coroner's officer searching bodies lying in the hospital without the sanction of the warden; and, indeed, in many instances when a crime has been committed, the examination of a body by the average coroner's officer might lead to grave disaster; neither do we conceive that a hall-porter should alone be entrusted with so responsible a duty. The search should always be made in the presence of some person responsible and competent to observe any marks or injuries of the dress or person, having a bearing upon the cause of death. The legality of the position taken up by the hospital authorities is questionable; and as much may probably be affirmed with respect to the mandate of the coroner. This official is endowed with the powers of a magistrate, and, in virtue of this office, he perhaps has the right to himself search bodies; but it is very doubtful whether the coroner's subordinate officer has this right on the general instructions of the coroner. We trust that good sense and good feeling will prevail, and that an amicable arrangement may be made, enabling the coroner's officer and a hospital official to make a joint search of dead bodies in the hospital. (*British Medical Journal* 1885;i:101.)