

ASEPTIC PREPARATION AND USE AT TRUSTS IN TWO DIFFERENT AREAS OF ENGLAND

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OBJECTIVE - To determine the number and type of aseptic products produced and used at trusts in the West Midlands, and to compare the results with those previously determined for trusts in the north west of England.

DESIGN - Survey and analysis, using the methods previously developed during work at trusts in the north west of England.

SUBJECTS AND SETTING - Aseptic dispensing units at trusts in the West Midlands (excluding those dedicated to radiopharmaceuticals).

RESULTS - The results showed significant differences in the number and types of aseptic products produced and used at trusts in the West Midlands, compared with those produced and used at trusts in the north west of England.

CONCLUSIONS - The differences in the number of products produced at trusts in the West Midlands, compared to the north west of England, could not be accounted for by differences in population or inpatient workload.

Determining the number and type of products produced in aseptic units gives important information to chief pharmacists and trust managers about the use of these facilities. This enables risk management to be made about the preparation of intravenous products within hospitals. Comparisons can also be drawn between trusts in different geographical areas, enabling staff to learn from the practices and experiences of those at trusts elsewhere, where policies may be different.

As part of a local risk management initiative, managers and pharmacists at trusts in the West Midlands commissioned a survey of aseptic production at units in their area. With this data, local aseptic preparation strategies can be developed and a comparison made with results previously obtained at trusts in the north west of England, in order to see if there are differences in approach and practices between trusts in different areas of the country. Carrying out the survey at trusts in the West Midlands will also determine whether the methods developed for use at trusts in the north west of England can be applied elsewhere.

METHODS

The design of the survey was essentially the same as that used to analyse the production and use of aseptic products at trusts in the north west of England.¹ Briefly, the survey comprised two forms:

- Form 1, on which data about the number and type of products prepared in aseptic preparation units were recorded
- Form 2, on which data about the source and type of aseptically prepared products used in the trust were recorded

Form 2, together with guidance documents, was sent to staff at each of the 24 trusts in the West Midlands. In addition, form 1, together with guidance documents, was sent to those 23 trusts with units that

prepared aseptic products (excluding radiopharmaceuticals). Trusts were asked to collect data for the financial year 2000–01. The data were then evaluated and analysed.

The degree of collaboration between trusts in producing aseptic products was measured using methods previously developed during work at trusts in the north west of England.² Briefly, the percentage measure of imports (indicator I) and the percentage measure of exports (indicator II) were established for each of the trusts in the West Midlands.

RESULTS

All of the trusts that were sent survey forms returned them completed. The number of products of each type produced and used at trusts in the West Midlands during the financial year 2000–01 are shown in Tables 1 and 2 (p404). The figures for the total number of products (of all types) produced and used at trusts in the north west of England during the financial year 1998–99 (reproduced from reference 1) are shown in Panel 1 (p405) for comparison. The range in the number of products produced by individual trusts is shown in Table 3 (p405).

Regarding collaboration, the average export figure (ie, indicator II) across the 23 trusts that produced aseptic products was 13 per cent. For 17 trusts, the value of indicator II was less than 10 per cent. For the other six trusts, the value of indicator II was greater than 15 per cent.

DISCUSSION

The total number of products produced at units in the West Midlands was about 30 per cent of the amount produced at trusts in the north west of England. The population served by the trusts in the West Midlands was approximately 80 per cent of that served by those in the north west of England (5,335,598 people compared with 6,595,330, in 1999). Measures of inpatient workload, for example, admissions, at trusts in the West Midlands were approximately two thirds of the value they were for trusts in the north west of England (data not shown).

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Table 1: Total number of products prepared in aseptic units at trusts in the West Midlands, with information as to end-user

Product	Number used within trust	Number used by other NHS user	Number used by non-NHS user	Total
Cytotoxics	151,624 (94)	7,624 (5)	2,062 (1)	161,310
TPN:adult compounded	7,654 (76)	1,798 (18)	589 (6)	10,041
TPN:adult simple	2,824 (66)	1,468 (34)	7 (0)	4,299
TPN:neonatal/paediatric	15,081 (93)	1,076 (7)	0 (0)	16,157
Cardioplegia solutions	0 (0)	0 (0)	0 (0)	0
Epidural injections	3,901 (70)	1649 (29)	60 (1)	5,610
Minibag plus	0 (0)	0 (0)	0 (0)	0
Minibag/infusion	24,123 (76)	6,543 (21)	954 (3)	31,620
Injection devices	5,920 (74)	1,154 (14)	908 (11)	7,982
Prefilled syringes	33,364 (87)	3,987 (10)	956 (2)	38,607
Eye drops/eye irrigations	1,294 (20)	4,783 (72)	553 (8)	6,630
Irrigations (non-ophthalmic)	565 (65)	298 (35)	0 (0)	863
Other	933 (85)	160 (15)	0 (0)	1,093
Total	247,583 (87)	30,540 (11)	6,089 (2)	284,212

For TPN (total parenteral nutrition), the "adult compounded" category is where there is aseptic transfer of fluids and injections from original containers into a previously empty 2L or 3L polyvinylchloride or ethyl vinyl acetate bag and the "adult simple addition" is where there is a previously prepared product consisting of stable bulk fluids to which low numbers of injections are added. Figures in parentheses indicate the percentage (to the nearest whole number) of products of that particular type that are prepared by the trusts and used by the particular user, compared with all users

Table 2: Total number of products used by trusts in the West Midlands, with information as to source

Product	Number acquired from own trust	Number acquired from licensed unit at other trust	Number acquired from unlicensed unit at other trust	Number of unlicensed products acquired from commercial source	Total
Cytotoxics	151,624 (90)	8,263 (5)	0 (0)	7,975 (5)	167,862
TPN:adult compounded	7,654 (81)	329 (4)	1,417 (15)	0 (0)	9,400
TPN:adult simple	2,824 (77)	850 (23)	0 (0)	0 (0)	3,674
TPN:neonatal/paediatric	15,081 (93)	498 (3)	600 (4)	0 (0)	16,179
Cardioplegia solutions	0 (0)	0 (0)	0 (0)	220 (3)	0
Epidural injections	3,901 (50)	3,748 (48)	0 (0)	0 (0)	7,869
Minibag plus	0 (0)	200 (100)	0 (0)	0 (0)	200
Minibag/infusion	24,123 (91)	2,112 (8)	262 (1)	0 (0)	26,497
Injection devices	5,920 (82)	967 (13)	374 (5)	3,921 (10)	7,261
Prefilled syringes	33,664 (87)	1,070 (3)	4 (0)	11 (0)	38,659
Eye drops/eye irrigations	1,294 (20)	5,037 (79)	0 (0)	0 (0)	6,342
Irrigations (non-ophthalmic)	565 (62)	45 (5)	298 (33)	695 (7)	908
Other	933 (9)	8,623 (83)	160 (2)		10,411
Total	247,583 (84)	31,742 (11)	3,115 (1)	12,822 (4)	295,262

For TPN (total parenteral nutrition), the "adult compounded" category is where there is aseptic transfer of fluids and injections from original containers into a previously empty 2L or 3L polyvinylchloride or ethyl vinyl acetate bag and the "adult simple addition" is where there is a previously prepared product consisting of stable bulk fluids to which low numbers of injections are added. Figures in parentheses indicate the percentage (to the nearest whole number) of products of that particular type that are used by the trusts and acquired from that particular source, compared with all sources.

Hence differences in population and workload cannot fully account for the differences in production between the two areas. It is also unlikely that differences in the years that the surveys were carried out (ie, the financial years 1998–99 and 2000–01) could account for the variations seen. It therefore appears that a dif-

ferent emphasis was placed on producing aseptic products by trusts in the two areas.

The size of production for individual units in the West Midlands was also generally smaller than for individual units at trusts in the north west of England.¹ The relatively low number of products prepared in aseptic

units at trusts in the West Midlands [together with the fact that relatively few (unlicensed) products were bought in from commercial sources (4 per cent as opposed to 11 per cent, from Table 2 and reference 1)] suggests that many products were being made up on wards.

Panel 1: Total numbers of products (of all types) produced and used at trusts in the north west of England during the financial year 1998–99

Product	Number produced	Number used
Cytotoxics	110,816	173,109
TPN:adult compounded	30,241	21,353
TPN:adult simple	14,022	16,420
TPN:neonatal/paediatric	19,659	18,704
Cardioplegia solutions	709	109
Epidural injections	9,001	20,760
Minibag plus	307,435	290,429
Minibag/infusion	240,785	251,475
Injection devices	5,981	8,494
Prefilled syringes	219,525	248,316
Eye drops/eye irrigations	9,961	14,550
Irrigations (non-ophthalmic)	17,909	37,520
Other	11,234	5,770
Total	997,188	1,107,009

In local work following on from the original survey carried out at trusts in the north west of England,³ it was established that a total of 4.8 million products were used by wards each year, with around 1 million (21 per cent) being prepared at aseptic units under pharmacy control. Extrapolating these figures to the West Midlands, using admission data, suggests that around 3.2 million products were used by trusts in the West Midlands with only 9 per cent of these being prepared under pharmacy control. This clearly has implications regarding the increased risks associated with contamination and error that preparing products on wards brings, as opposed to preparing them under pharmacy control.⁴⁻⁷

As well as differences in the numbers of products produced, there was considerable variation in the types of products produced between the trusts in the two areas of England. For example, cytotoxics accounted for 57 per cent of all products produced at trusts in the West Midlands but only 11 per cent of all products produced at trusts in the north west. The most widely produced product at trusts in the north west was minibag plus, but none of these were produced at trusts in the West Midlands during the survey period. It seems likely that much of this variation results from historical differences in practice within trusts in different areas of the country, caused by the mainly independent development of pharmacy policy within the then regions.

There was limited collaboration in producing products between trusts in the West Midlands. This may be due to the geography of the West Midlands, which was likely to have acted against collaboration. This is because there are a number of reasonably

large centres (for example, Stoke, Hereford and Worcester) that are relatively isolated both from each other and from the main conurbation (ie, Birmingham), which could create a need for self-sufficiency. Most of the collaboration that there was focused around the Birmingham area.

In the north west of England, although collaboration was initially comparable to that for trusts in the West Midlands, a programme to replace units and otherwise promote collaboration was able to increase collaboration markedly² – the average value of indicator II had increased from 15 to 27 per cent even when only some of the scheduled changes had occurred. This may be because many of the reasonably large centres in the north west of England (for example, Preston and Blackburn) are relatively close both to each other and to one of the main conurbations of Merseyside or Greater Manchester, and so there is greater potential for enhancing collaboration.

CONCLUSIONS

Even accounting for differences in population and workload, there were considerably fewer products produced at aseptic units at trusts in the West Midlands than in the north west of England. This suggests that an even higher proportion of aseptic products used at trusts in the West Midlands are made up on wards than is the case for trusts in the north west of England. This clearly has implications regarding risk management.

Collaboration between trusts in the West Midlands was generally low, as it was originally for trusts in the north west of England. There was also considerable variation in the types of products produced at aseptic units at the trusts in the two areas. This suggests that there may be wide variations across the country, and highlights the value of comparative work, because it enables trusts to review local practice and policy. That the survey could be conducted at trusts in the West Midlands demonstrates that the methods developed for use at trusts in the north west of England could be applied elsewhere.

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Table 3: Number of products produced at individual trusts in the West Midlands, compared with the north west of England

Number of products	Number of units producing that number of products at trusts in the West Midlands	Number of units producing that number of products at trusts in the north west of England
More than 50,000	0	7
25,000 to 50,000	4	6
18,000 to 25,000	1	6
9,000 to 18,000	5	0
Fewer than 9,000	13	15
Total	23	34