



Original Research

Clinical wastes in the community: Local authority management of clinical wastes from domestic premises

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Summary *Background:* The increasing numbers of patients receiving often complex home-based health care, and the growing number of insulin-dependent diabetic, home haemodialysis and continuous ambulatory peritoneal dialysis patients, contributes to the substantial volumes of clinical waste generated from domestic premises. Arrangements for the collection and safe disposal of these potentially hazardous wastes, generally managed by local authorities, may be inadequate and, in part, unsafe.

Methods: This study audited the websites of the 526 local authorities in England, Wales, Scotland and Northern Ireland. Websites were scrutinized for information concerning clinical waste collections from domestic premises, the limits and constraints on this service, service accessibility, the practical arrangements for collection of wastes, and the health and safety issues of clinical waste management for patients who manage their own care in the community.

Results: Two hundred and sixty-two of 526 (50%) local authorities provided information on their websites concerning the collection of clinical wastes from domestic premises. Others referred patients to a district or county council, to another agency or to private contractors ($n = 72$), while the remainder provided an in-house collection service. Weekly collections were most common, although several local authorities offered additional flexibility depending on need. Limits on the minimum or maximum volumes of waste to be collected, or on the types of clinical wastes accepted for disposal, do not support domiciliary health care and create an additional burden for patients and their carers. Of particular concern was the health and safety implication of instructions to place potentially hazardous clinical wastes in a freely accessible location outside the home, at the doorstep or on the footpath, as early as 4 am on the day of collection or the night before collection.

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Conclusions: The arrangements for local authority clinical waste collections from domestic premises are, in part, inadequate and may be unsafe. The arrangements do not properly support domiciliary patients or their carers.

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Introduction

Increasing numbers of individuals receive sometimes complex and often long-term health care in their own home. Visiting healthcare professionals may collect and remove small volumes of clinical wastes that otherwise might be discarded with domestic wastes. However, for many patients, large volumes of soft clinical wastes or the regular use of syringes and hypodermic needles requires frequent collection of these wastes to permit safe disposal. Insulin-dependent diabetics and others requiring regular injection therapy and those requiring home haemodialysis or continuous ambulatory peritoneal dialysis are the largest groups, but many other chronic conditions are now managed in the community and each may generate significant volumes of clinical waste that cannot be disposed in the normal domestic waste stream. Nationally, the volumes of clinical waste produced from home-based health care are largely unknown, but this is likely to be substantial. Estimates between 24,500 and 33,000 tons per annum have been proposed,¹ although these figures include sanitary (incontinence) wastes and may overestimate the amount of the more hazardous fractions arising as a direct consequence of healthcare activities.

Many hospitals and community health centres operate take-back schemes for filled sharps bins, where diabetic patients or others requiring regular self-administered injection therapy may deliver needle waste for disposal. Community nursing staff may assist in the collection and removal of clinical wastes from patients' homes, transporting this back to a clinic or hospital base for disposal. However, a changing legal framework that has imposed additional control and constraints on such arrangements, together with concern over escalating costs, has limited and, in part, reversed this arrangement. This leaves an increasing number of patients and their carers to manage their own clinical waste disposal who will be reliant on local authorities to collect and dispose of clinical wastes from domestic premises. Prompted by observations of bagged clinical wastes and filled sharps bins awaiting collection in unsafe locations outside residential properties, often on the curtilage or at

the kerbside, a comprehensive audit was conducted to assess the arrangements for clinical waste collections resulting from home-based health care.

Methods

The audit comprised a comprehensive review of the information presented on the publicly accessible websites of all of the county councils, borough and district councils and unitary authorities throughout England, Northern Ireland, Scotland and Wales. Each of these 526 sites, comprising the complete A–Z of local authorities listed on the UK Government DirectGov website (<http://www.direct.gov.uk>), was accessed on a single occasion between April and December 2006. For reasons of cost and practicality, the investigation was limited to the examination of local authority websites. Additional written requests for information or test calls to an information line or call centre, where available, were not made.

For each site, a search was made for information and advice relating to the collection and disposal of clinical wastes from domestic premises. Most sites for local authorities in Wales had Welsh language options, and a lesser number of Northern Ireland sites had mirror pages in Gaelic. Many sites displayed a limited number of additional European and Asian language pages, but these were generally limited to a brief outline of key services, with contact details for non-English speakers, and provided little detailed information. All websites were searched in English only, and non-English-language pages were excluded from the audit. Where a site search facility was available, searches were performed with the terms 'clinical', 'clinical waste', 'medical', 'medical waste' and 'healthcare waste'. When these search terms did not identify relevant information, a menu list of A–Z services and subsites or individual pages devoted to waste and refuse services or environmental services were reviewed for further information. Searches were restricted to information pages, and pages displaying committee minutes and related documents were disregarded.

The information provided on each website was reviewed for its accessibility and the ease of

locating advice and information. Booking arrangements, the clarity of the advice presented to users, safety and security guidance, and the service standards including response times, contact options and client care etc. were reviewed. Lastly, information was recorded concerning the arrangements for the supply of clinical waste containers to domestic users, any charges that may apply, service restrictions, and the practical arrangements for the collection of wastes.

Results

In total, 526 publicly accessible websites were examined, representing the county councils, borough and district councils and unitary authorities throughout England ($n = 439$), Northern Ireland ($n = 29$), Scotland ($n = 37$) and Wales ($n = 21$). Four websites did not have a site search system, and in a further three websites, the site search system was not working. Only 262 (50%) of local authorities provided information on their web sites concerning the collection of clinical wastes from domestic premises. Of these, 24 provided links to another district or county council website from where services could be arranged. A further 24 local authorities that did not provide clinical waste collection services offered an advice line for patients and their carers, or suggested that patients should contact their local hospital, general practitioner (GP) or community nursing service ($n = 17$), while seven other local authorities advised patients to seek a licensed contractor from the Yellow Pages or equivalent. All but six of the 262 local authorities indexed the relevant pages as 'clinical waste' that were located using site search facilities, from an A–Z list of services, or by scanning subsection headings of more general pages dealing with domestic refuse collection services. 'Medical waste' was the index term and description used by four local authorities, while one local authority used the newer term 'health-care waste'. One remaining site indexed information as 'clinical waste' [sic] although the body text

on the relevant information pages, once located, was free of spelling errors.

Where indicated on any website, the categorization of waste was, in each case, according to the five broad categories described in the 1999 Health Services Advisory Committee document 'Safe disposal of clinical waste' (Table 1). No local authority referred to the new waste classifications defined in the European Waste Catalogue 2000/532/EC (EWC) and its associated list of wastes² as applied by the Hazardous Waste Regulations 2005 (Table 2) that implement the European Hazardous Waste Directive 91/689/EC in the UK. Several local authorities required information concerning specific infection risks ($n = 29$), although seven would only accept 'low-grade' or 'non-infectious' waste. Many local authorities required prior approval for the commencement of domestic clinical waste collections ($n = 78$), usually from a GP, hospital doctor or community nurse. In most cases, request forms included a brief questionnaire or tick list to identify the volumes and categorization of waste to be collected, although only one required completion of a formal risk assessment before collections would commence.

Billing for clinical waste collection services was generally by a charge to the local National Health Service primary care trust or equivalent, although the service was generally free of charge at the point of care. Several local authorities failed to distinguish clearly the different charging arrangements for patients and for trade producers, implying erroneously that domiciliary patients may face direct charges for waste collections. Three local authorities 'reserved the right to levy a small charge to patients', while three others would levy charges to patients receiving private sector health care. This was taken still further by one local authority that would accept clinical wastes only from council tenants, and would levy charges for collections from any private household. Relatively few local authorities supplied containers for clinical wastes (Table 3). Several websites confused the different arrangements for chargeable clinical waste collections from trade producers, with four

Table 1 Categorization of clinical wastes (from 'Safe disposal of clinical waste').⁸

Group A	Soiled surgical dressings, swabs and all other contaminated waste from treatment areas; materials other than linen from cases of infectious disease; all human tissue (whether infected or not), animal carcasses and tissues from laboratories, and all related swabs and dressings
Group B	Discarded syringes, needles, cartridges, broken glass and any other sharp instrument
Group C	Laboratory and post-mortem waste other than waste included in Group A
Group D	Certain pharmaceutical and chemical waste (that falling within the definition of clinical waste)
Group E	Used disposable bedpan liners, urine containers, incontinence pads and stoma bags

Table 2 European Waste Catalogue categorization of clinical wastes.

18	Wastes from human and animal health care and/or related research (except kitchen and restaurant wastes not arising from immediate health care)	
18 01	Wastes from natal care, diagnosis, treatment or prevention of disease in humans	
18 01 01	Sharps (except 18 01 03)	
18 01 02	Body parts and organs including blood bags and blood preserves (except 18 01 03)	
18 01 03*	Wastes whose collection and disposal is subject to special requirements in order to prevent infection	A
18 01 04	Wastes whose collection and disposal is not subject to special requirements in order to prevent infection (e.g. dressings, plaster casts, linen, disposable clothing, nappies)	
18 01 06*	Chemicals consisting of or containing dangerous substances	M
18 01 07	Chemicals other than those mentioned in 18 01 06	
18 01 08*	Cytotoxic and cytostatic medicines	A
18 01 09	Medicines other than those mentioned in 18 01 08	
18 01 10*	Amalgam waste from dental care	A

Any waste whose six-digit code is marked with an asterisk (*) is a hazardous waste. Classification may be absolute (A), defining waste as hazardous regardless of the concentration of any 'dangerous substance' within it, or a 'mirror entry' (M), covering wastes having the potential to be hazardous or non-hazardous depending on their composition and the concentration of 'dangerous substances' within them. The hazard potential is determined by reference to published threshold limits or, for infection hazards, on risk assessment.

Table 3 Providing containers to domestic producers of clinical wastes.

Clinical waste sacks provided to user	54
Sharps bins provided to user	33
FP10 prescription ^a needed to obtain clinical waste sacks	5
FP10 prescription ^a needed to obtain sharps bins	24

^aUnless individuals qualify for exemption from payment, charges apply for the provision of medical supplies prescribed using FP10 prescriptions.

Table 4 Limits and constraints on qualifying clinical wastes.

Collect soft wastes only, no sharps collection	9
Collect sharps only	4
Collect dialysis waste only	5
Incontinence waste and disposable nappies ^a managed as clinical wastes	7
No colostomy wastes	12
No nappies	31
No adult incontinence waste	34

^aOnly included with clinical wastes if 'too many for regular domestic waste collections'.

implying erroneously that domestic producers would be required to purchase pre-paid sacks and sharps bins that also included an additional levy for disposal of wastes.

Clinical waste collections were generally weekly ($n = 32$), although some local authorities provided collections on 2 or 3 days each week and offered some flexibility depending on need. Others placed limits and constraints on the wastes that could be categorized and managed as clinical wastes (Table 4), requiring that wastes other than those

specified should be taken to a local chemist, GP surgery or hospital if necessary for safe disposal in circumstances where co-disposal with domestic refuse was unsafe and inappropriate. In two cases, however, blunt warnings were given of likely prosecution if these potentially hazardous wastes were permitted to enter the domestic waste stream, and these warnings were not tempered by any information concerning a more appropriate disposal option. Further limits were imposed on the volumes of clinical waste collected, with some local authorities

requiring a minimum of five sharps bins or three filled clinical waste sacks ($n = 6$), or no more than one clinical waste sack per week ($n = 2$).

A small number of local authorities recorded the use of unmarked vehicles for clinical waste collections ($n = 3$), with specially trained staff ($n = 4$) providing a discrete, courteous and confidential service ($n = 27$). Commercial contractors collected clinical wastes on behalf of 15 local authorities. Although the practical details of waste collection were rarely presented, 28 local authorities specifically instructed patients or their carers to place the filled clinical waste containers outside their homes to await collection, either by the front door, in the garden, on the curtilage or at the kerbside. Others required that wastes were outside the property in time for collection by 4 am, 5 am, 6 am, 6.30 am, 7 am or 7.30 am on the day of collection, or simply on the night before the day of collection, with collections occurring at unspecified times up to 8 pm ($n = 8$). Only three local authorities offered assisted collections for the elderly or infirm, with two others suggesting that assistance, if required, might be sought from friends or neighbours as collection staff were not permitted to enter the property for reasons of health and safety.

Web pages dealing with the collection of clinical wastes from domestic premises were badged with a waste recycling logo and related promotional text, or indexed as a subsection of waste reduction/recycling pages, on 13 local authority websites. In contrast, safety concerns associated with the segregation, packaging, storage and handling, or disposal of clinical wastes rarely featured on websites. Only 10 sites considered the safety implications for clinical waste disposal, and this was limited to the packaging of wastes and the effective closure of waste sacks to permit safe handling by collection staff, with no reference to any additional requirements for care in segregation, containment, storage or security. Reference is made in the EWC classification of wastes to wastes 'whose collection and disposal is subject to special requirements in order to prevent infection' (Table 2). However, no local authority identified a need for a clinical or other professional assessment of the risk of infection, and thereby of the correct EWC waste classification, or moderated their collection arrangements on the basis of risk.

Discussion

Local authority websites were notable for the general lack of information concerning arrangements for

the collection of clinical wastes from domestic premises. Other data routes exist and healthcare staff are likely to have additional information concerning the services that can be provided to patients receiving long-term care in their own homes. Access to this additional information by domiciliary patients and their support workers or carers may be restricted, but the Internet has become a preferred method of communication for many local authorities and this is likely to be the first stop information portal for many householders needing information about the collection of clinical wastes. This web-based audit provides evidence of sometimes inadequate, inefficient or unsafe services and must reflect, at least in part, local authority policy and practice. Although the results obtained were not confirmed by the use of test calls or online requests for clinical waste collections, they do reveal widespread and substantial deficiencies in the standards of both waste management and patient/client care.

Many local authorities failed to present information accurately or completely. Errors and omissions may be responsible for deficiencies in standards of waste management, may encourage patients or their carers to circumvent safe disposal practices, and may inadvertently promote the placement of potentially hazardous items within the domestic waste stream. This will compromise the safety of refuse collection staff who may be exposed to inadequately packaged clinical wastes within the domestic refuse stream, in contravention of both health and safety and environmental legislation. Safety is further compromised by the operational standards in those areas that require potentially hazardous clinical waste containers, including sharps bins, to be left outside a property for many hours, and possibly overnight, awaiting collection. Although several local authorities refer to the provision of an assisted collection service, or collections from some agreed safe location, this standard of service is not common. The current focus on environmental protection through waste recovery and recycling was no doubt responsible for the liberal use of recycling information on all of the waste-related web pages of many local authorities. Recycling is, however, entirely inappropriate for clinical and many other hazardous wastes, and the indiscriminate use of recycling images in this way is likely to further confuse or misinform viewers, and may result in potentially dangerous errors in waste management. Minimum or maximum limits on the volumes of clinical wastes collected from domestic producers are likewise inappropriate. Minimum limits may create unacceptable storage and odour problems in the domestic environment, while the

imposition of maximum limits for clinical waste collections imparts an unacceptable constraint on the delivery of care.

Soft clinical wastes are usually packaged in bright yellow heavy-gauge plastic sacks overprinted with a prominent hazard warning and printed description of the contents. Rigid sharps bins, usually closed with tamper-proof seals, are also bright yellow and carry relevant identification and hazard warnings. In addition to the obvious risk to health of those who may come into contact with these wastes, the requirement to leave these clearly identifiable clinical waste containers at the front of a residential property impacts upon social role valorization; the enablement, establishment, enhancement, maintenance and/or defence of valued social roles for individuals.³ These instantly recognizable waste containers identify and mark the individual as a patient receiving care, while additional markings that proclaim the content of these containers as 'hazardous' or 'infectious waste' further weaken their social role and status. Although the arrangements for clinical waste collections provided by several local authorities were described as 'discrete, courteous and confidential', the collection arrangements imposed by others are clearly discourteous to, and marginalize, this vulnerable and disadvantaged section of the community, and do not support their normalization.⁴

There is a substantial and growing trend towards community health care in order to reduce the burden of more costly hospital-based care.^{5,6} Together with advances in the complexity of long-term medical care that can now be delivered in the domestic environment, it is likely that there will be increasing numbers of home-based patients requiring collection of clinical wastes. It is clear that many local authorities fail to provide effective clinical waste collection services that properly support home-based patients and their carers. In some cases, this failure to plan and deliver safe and effective collection services results in potentially hazardous clinical wastes deliberately placed in the street in locations accessible to passers by. This has possibly serious health and safety implications, and is likely to be in breach of current legislation. The problem may be yet more widespread if these standards are also adopted for collections of clinical wastes from trade sources serviced by local authorities. Although specific guidance or good

practice guidelines dealing with clinical waste collections from domestic premises are not available, there is sufficient general guidance to ensure that local authorities have the information necessary to ensure that the fundamental errors noted in this audit can be eliminated.⁷⁻⁹ At present, however, there is clear evidence of the need for substantial improvement in the standards of collection and disposal of clinical wastes by local authorities.

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Ethical approval

Not required.

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Competing interests

None declared.

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