

MANAGEMENT OF HOME DIALYSIS WASTES IN NSW

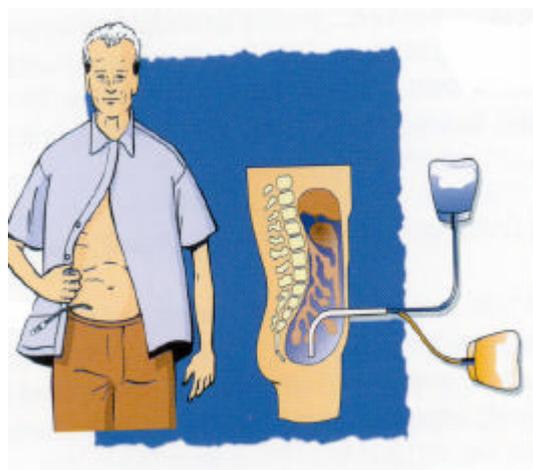
Dialysis

- The two treatment options used when kidneys fail are dialysis (haemodialysis and peritoneal) and transplantation. Dialysis is the medical treatment for eliminating waste and extra fluids from the blood stream that the kidneys can no longer remove.
- Due to the limited number of donor kidneys the vast majority of people with chronic renal failure or end-stage renal disease rely on some form of dialysis.

Peritoneal dialysis (PD)

Peritoneal dialysis is a home-based treatment that removes extra fluids and waste from the blood using the body's own peritoneal membrane, or abdominal lining, as the filter. This membrane lines the abdominal cavity, which holds the stomach, spleen, liver and intestines.

Unlike haemodialysis, in this therapy blood never leaves the body. A clear dialysis fluid enters the peritoneal cavity through a catheter surgically inserted in the abdomen. Whilst the fluid is inside the peritoneal cavity excess fluid and waste products travel across the peritoneal membrane into the dialysis fluid, which is then drained from the abdomen into an empty fluid bag. The plastic bag containing the used fluid should then be drained by emptying the contents to sewer.



Continuous Ambulatory Peritoneal dialysis (CAPD)

Depending on the type of treatment, dialysis fluid may be introduced into the

body and drained up to 5 times daily (Continuous Ambulatory Peritoneal Dialysis or CAPD) resulting in an empty fluid bag, a used fluid bag and a tubing set on each occasion.

The other form of Peritoneal Dialysis is Automated Peritoneal Dialysis (APD) that is performed at night with the help of a machine. There is only one larger 6 litre plastic bag and one tubing set utilised for this treatment. The used fluid should also be discarded into the sewer at the end of treatment. Approximately 50% of PD patients are on each type of treatment (ANZ Data, 2000).



Machine used for Automated Peritoneal Dialysis (APD)

Peritoneal dialysis waste management in the home

People on home dialysis treatment incorrectly place a significant amount of peritoneal dialysis waste into council recycling services, particularly fluid bags and tubing. In a 2004 survey of NSW material recovery facilities (MRFs), 70% of operators reported problems with this type of household medical waste.

No products used in peritoneal dialysis treatment in the home are suitable for council recycling services. Clean cardboard packaging may be flattened and recycled.

- Peritoneal dialysis solution bag **OUTER ENVELOPE** – although typically manufactured from high density polyethylene (HDPE) they should NOT be placed into council recycling services. Outer envelopes should be disposed of as household garbage.



Outer plastic envelope

- Peritoneal dialysis **FLUID BAGS & TUBING SETS** – these materials are **NOT SUITABLE** to be placed into council recycling services, regardless of whether they have been in direct contact with waste body fluids. Bags should be slit and drained to sewer, and bags and tubing sets then wrapped and disposed of as household garbage.



Dialysis fluid bag before draining



Drained solution & waste fluid bags and tubing set

- While peritoneal dialysis does not usually generate community sharps, any needles, syringes, lancets, cannulas etc resulting from the treatment of an associated medical

condition should be disposed of at a community sharps disposal facility. Community sharps should never be disposed of into council recycling or waste services.

Haemodialysis (HD)

Haemodialysis involves removing waste products and fluids directly from the bloodstream, rather than through the peritoneal membrane.

Most patients on haemodialysis go to a dialysis clinic three to four times a week for treatment. A small proportion of haemodialysis patients are suitable for home dialysis. A dialysis machine pumps the blood from a special vascular access (fistula or graft) in the arm of the patient via two inserted needles. The needles are attached to tubing (bloodlines) that carry the blood from the patient into a dialyser, or artificial kidney that separates the waste metabolic products and fluid from the blood. The cleansed blood is then returned to the patient, and both needles are removed at the end of the dialysis session.

Each patient requires 6-7 haemodialysis sessions per fortnight, which last approximately 3-5 hours at a time.



One type of machine used for home haemodialysis showing liquid concentrate container, bi-carb bag (centre), bloodlines, and dialyser (at right).

Haemodialysis waste management in the home

Recycling contractors have reported that medical wastes such as bloodlines, which may have resulted from haemodialysis, are occasionally present in kerbside recycling services.

No products used in haemodialysis treatment in the home which have been in contact with blood or body fluids are suitable for council recycling services.

While some of the products used in home haemodialysis treatments are supplied in containers that may be “potentially” recyclable, they are NOT ACCEPTED in council recycling services. Some councils MAY accept plastic liquid concentrate containers (see below). Clean cardboard packaging may be flattened and recycled.

- Haemodialysis liquid concentrate **CONTAINER** – typically semi-opaque 5 litre plastic containers manufactured from HDPE and marked with the No. 2 polymer number on the base of the container. Rinsed containers MAY be accepted by some kerbside recycling services – CHECK WITH YOUR LOCAL COUNCIL before placing in recycling. If not accepted dispose of containers as household garbage.



One brand of 5 Litre liquid concentrate container

- Dry powder sodium bicarbonate **CARTRIDGE** – typically a semi-opaque cone-shaped plastic cylinder manufactured from polypropylene and marked on the label with the No. 5 polymer number. Cartridges are NOT SUITABLE for council recycling services, and should be disposed of as household garbage.



Dry powder sodium bicarbonate cartridge

- Dry powder sodium bicarbonate **PLASTIC BAG** – marked with the No. 7 polymer number (Other) and NOT SUITABLE for council recycling services. Dispose of as household garbage.



Plastic bag containing sodium bicarbonate

- **DIALYSER** (artificial kidney) and **BLOODLINES** – the dialyser and bloodlines are contaminated with blood and should NEVER be placed into council recycling services. After flushing with saline this equipment should be sealed, then **DOUBLE-BAGGED** and disposed of as household garbage.



Dialyser and bloodline circuit

- **COMMUNITY SHARPS** – haemodialysis generates needles and syringes from injection of local anaesthetic and cannulation (connecting to blood supply). Haemodialysis patients on home dialysis are provided with a regular supply of sharps containers by the dialysis unit, and are instructed to return full containers to their nearest public hospital for disposal. Sharps containers should never be placed into household garbage or recycling.
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Note 1 – disposing of dialysers and bloodlines as household waste after flushing with saline and then double-wrapping in plastic (two bags) is considered to represent no greater hazard to waste workers than other materials present in municipal waste, and to be the most viable method of disposing of this material.

Note 2 – the Waste Contractors & Recyclers Association of NSW recommends that all plastic packaging materials used in, or associated with, home dialysis treatments should be disposed of as household garbage. These materials are not considered appropriate for domestic recycling services due to the potential for the presence of products used in medical applications to cause confusion or concern for transporters and sorters in the recycling industry.

Note 3 – waste materials generated in the home as a result of **self-administration** of dialysis treatments by the patient are classified as municipal waste under the NSW Protection of the Environment Operations Act 1997.

Note 4: - people on home dialysis treatments can generate significant amounts of waste packaging. One reason they may be disposing of this material into recycling services is insufficient space in their household garbage bin. To reduce the potential for dialysis fluid bags, tubing and other unacceptable materials being placed into recycling services, councils should consider the benefits of providing additional garbage capacity to households with a person on home dialysis.