

Nursing Practice Review Renal care

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Ward nurses who have not specialised in renal care must understand chronic kidney disease and peritoneal dialysis to successfully care for patients on PD while in hospital

PART 2 OF 2: PERITONEAL DIALYSIS

Peritoneal dialysis: a guide for non-renal nurses

In this article...

- › Observations that must be recorded
- › What to look out for when managing patients
- › How to respond to common problems

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Peritoneal dialysis allows patients living with Stage 5 chronic kidney disease to manage their disease at home. However, such patients may be admitted to hospital with various health problems and be cared for by ward nurses who have not specialised in renal care. Part 1 of this series outlined the causes of chronic kidney disease and described how PD works; this article provides the information nurses need to better support such patients.

Out of the 27,000 reported adult patients on dialysis in the UK today, nearly 4,000 have chosen to treat their chronic kidney disease (CKD) with peritoneal dialysis (PD) (Rao et al, 2014). Patient training, support and day-to-day management are all managed by PD specialist nurses. However, patients undergoing PD can experience a wide range of medical and surgical issues, and may be admitted to non-renal areas. Care management can be daunting to non-renal nurses but, with background knowledge and support from the PD team, ward nurses can be significant contributors to a successful inpatient PD regimen.

Liase with renal team

The renal medical team should be made aware of any patients on PD; if a team of PD nurses is available, they will manage the patient's dialysis. If the hospital has no

renal unit, the renal team at the nearest unit and the patient's home unit should be contacted. Plans need to be made about the patient's dialysis regimen, supply of fluid and ancillary items.

Observations and records

Patients may bring their own fluid input/output diary with them; if not, the PD nurses will provide one. Observe:

- › Daily patient weight;
- › Blood pressure (at least once daily);
- › A fluid balance using a ward fluid balance chart

The aim to ensure the patient is euvolemic (neither fluid overloaded nor dehydrated). If there is good residual urine output, daily fluid intake may be unrestricted and the patient can drink freely. If oliguria or anuria are present, the basic rule of oral intake over 24 hours is the equivalent of the patient's daily urine output + 500ml - this means all fluid, including water absorbed into food during cooking, such as cooking water absorbed into pasta.

These observations are vital in maintaining residual renal function. This is important to any patient with CKD but especially those who wish to continue on PD for as long as possible. Volume control in PD patients is vital to managing hypertension. Hypertension could result in further loss of residual renal function (Marron, 2008). Hypotension and dehydration can also damage any remaining kidney function in patients on PD (Ryckelynck et al, 2013; Liao et al, 2009).

Medications

The patient's drug chart may show medication prescribed in unusually low doses; this

5 key points

1 Nearly 4,000 patients in the UK dialyse every day using a home-based PD system

2 The most common risk to patients on PD is peritonitis caused by bacteria entering the peritoneum, generally due to catheter contamination

3 Maintenance of residual renal function is a huge factor for successful patient outcomes in those undergoing PD

4 Patients on PD may be administered drugs in low or unfamiliar doses

5 Blood samples should always be taken from the patient's dominant arm



A patient on peritoneal dialysis

TABLE 1. PROBLEM SOLVING

Symptom	Action
Cloudy dialysis fluid or other signs/symptoms of peritonitis	Samples of effluent fluid should be sent to microbiology for red and white cell counts plus culture and sensitivities.
Blood in effluent dialysis fluid	Consider the extent of the bleed, recent surgery, injury or menstruation. Do not discard the effluent as this will be assessed for severity by the renal team.
Inflamed/exuding PD exit site	Take a swab for microscopy, culture and sensitivity. Topical and oral antibiotics may be required.
Dialysate leaking from PD exit site	Do not attempt to drain fluid into the patient and report to the renal team.
Hernias due to increased intraperitoneal pressure	May require surgical correction.
A cut or split PD catheter	Advise patient to drain out but do not drain fresh fluid back in. Clamp the catheter above the leak.
Touching the exposed tip of PD catheter when its protective cap has been removed	Drain fluid out and clamp catheter.
Difficulty draining in/out/both	The PD catheter may be blocked with fibrin or the inner tip has migrated upwards. Do not drain more fluid in. An abdominal X-ray will be required to check the position of the catheter.
Hyper/hypotension	This requires medical review, fluid status assessment and alteration to the dialysis regime or medication.
Dehydration/fluid overload	As above

is because some drugs are excreted by the kidney so will accumulate easily. There can be dangerous consequences for the patient if a full non-renal dose is given. The patient must maintain frequent bowel movements, so it is vital they are given daily laxatives. This is especially important if the patient is taking opiate-based pain relief or is immobile. Patients on PD generally take other medications, which should all be continued (Levy et al, 2009).

Blood tests

Blood should be drawn from the patient's dominant arm, from the back of the hand and definitely avoiding the cephalic vein. The dominant arm is used because veins in the non-dominant arm may be required for HD arteriovenous fistula (AVF) formation in the future. Patients may need to be monitored for hypo- or hyperkalaemia. If they have had a general anaesthetic, potassium should be checked immediately on their return to the ward. Serum albumin levels are often low in patients on PD, so they will need to maintain a good protein intake. Should the haemoglobin level drop,

bleeding and infection must be excluded, and check to ensure the patient has not missed any scheduled erythropoietin injections. Unless vital, blood transfusions are avoided in patients hoping for a transplant (Mahon et al, 2013) as they can result in human leukocyte antigen sensitisation.

Problem solving

Patients may present with a range of problems (Table 1). If observed, report them to the on-call renal team immediately.

Patient outcomes

Outcomes for patients on PD are positive. In 2013 the one-year patient survival for new patients (to age 60) was 93.7% in PD compared with 89.2% in HD (Steenkamp et al, 2014). Most studies show similar patient survival on PD and HD; PD may hold the advantage in the first year or two (Ellam and Wilkie, 2011). Outcome are driven mainly by patient comorbidity, and the level of residual renal function is significant. Many studies (Vonesh et al, 2004; Brown et al 2003) indicate better preservation of residual renal function with PD compared

with HD. Good patient outcomes on PD are reliant on many factors, including:

- » Excess fluid removal;
- » Nutrition;
- » Cardiovascular health;
- » Infection rates;
- » Individualised dialysis prescription.

A study from the 1990s suggested there is an important relationship between small solute peritoneal clearance and patient outcomes (Bargman et al, 2001). However, this could not be reproduced in later studies (Ellam and Wilkie, 2011; Vonesh et al, 2004; Bargman et al, 2001).

Conclusion

It is important general ward nurses understand how PD works – only in doing so, can they ensure patients on PD retain residual renal function. **NT**

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The data reported here has been supplied by the UK Renal Registry of the Renal Association. The interpretation and reporting of this data are the responsibility of the authors and should not be seen as an official policy or interpretation of the UK Renal Registry or the Renal Association (Rao A et al, 2014)

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