Chronic kidney disease (stage 5): peritoneal dialysis

Clinical guideline
Published: 27 July 2011
nice.org.uk/guidance/cg125
Your responsibility

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.
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This guideline is the basis of QS72.

**Introduction**

This guidance has been incorporated into the chronic kidney disease NICE Pathway, along with other related guidance and products.

**Peritoneal dialysis for patients with chronic kidney disease stage 5**

At any one time in the UK, 400–800 people per million of the population need renal replacement in the form of dialysis. The prevalence of dialysis in the UK is highly age dependent – for adults aged 70–80 years it is between 1600 and 2000 people per million. Dialysis is needed to sustain life for patients with chronic kidney disease (CKD). For about 40% of adults on dialysis a kidney transplant is the treatment of choice; this percentage is higher in children. If patients do not have a kidney transplant, dialysis is needed for the rest of the patient's life.

Two main types of dialysis are available, haemodialysis and peritoneal dialysis. The main factors that determine what type of dialysis people with chronic kidney disease have are patient preferences about which treatment fits best within their lifestyle, availability of options within a service and clinical contraindications. Factors patients and carers may need to consider about peritoneal dialysis are: the ability to carry out dialysis themselves; the support services they need to carry out dialysis; integration of dialysis with work, school, hobbies, and social and family activities; opportunities to maintain social contacts; possible modifications to their home; the distance and time travelling to hospital; flexibility of daily treatment, diet and medication regimens; and possible changes to body image and physical activities because of dialysis access points.

Peritoneal dialysis can be delivered safely and effectively at home or at another location of the patient’s choice. Patients administer it themselves although children, and some adults, might need help from their families or carers. Patients must have a clean and hygienic place to exchange dialysis fluid and/or set up dialysis delivery devices either to have dialysis throughout the day (continuous ambulatory peritoneal dialysis [CAPD]) or overnight while they are asleep (automated peritoneal dialysis [APD] and assisted automated peritoneal dialysis [aAPD]). A small room or shed will be needed to store deliveries of dialysis fluid.

The proportion of people with chronic kidney disease (CKD) starting treatment on home- or hospital-based dialysis, and peritoneal or haemodialysis treatment, varies considerably. The
The proportion of people with chronic kidney disease using peritoneal dialysis ranges from 0–30% in adults, possibly because of variation in local practice and resources, and is as high as 56% in children.

There is currently no national guidance in England and Wales on supporting people to make informed decisions about renal replacement therapy, specifically peritoneal dialysis. Nor is there guidance on the role of APD in an integrated dialysis or renal replacement programme or individual patient pathway.

This short clinical guideline aims to improve the care of people with stage 5 CKD who need and want to receive dialysis, by making evidence-based recommendations on the role of peritoneal dialysis.

**Who this guideline is for**

This document is for healthcare professionals who support people with stage 5 CKD who need dialysis and other staff who care for people with stage 5 CKD who need renal replacement therapy (specifically peritoneal dialysis).
Patient-centred care

This guideline offers best practice advice on the care of adults, children and young people with stage 5 CKD.

Treatment and care should take into account patients' needs and preferences. People with CKD should have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals. If patients do not have the capacity to make decisions, healthcare professionals should follow the Department of Health's advice on consent and the code of practice that accompanies the Mental Capacity Act. In Wales, healthcare professionals should follow advice on consent from the Welsh Government.

If the patient is under 16, healthcare professionals should follow the guidelines in the Department of Health's Seeking consent: working with children.

Good communication between healthcare professionals and patients is essential. It should be supported by evidence-based written information tailored to the patient's needs. Treatment and care, and the information patients are given about it, should be culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English.

Families and carers should be given the information and support they need.

Care of young people in transition between paediatric and adult services should be planned and managed according to the best practice guidance described in Transition: getting it right for young people.

Adult and paediatric healthcare teams should work jointly to provide assessment and services to young people with CKD. Diagnosis and management should be reviewed throughout the transition process, and there should be clarity about who is the lead clinician to ensure continuity of care.
1 Guidance

The following guidance is based on the best available evidence. The full guideline gives details of the methods and the evidence used to develop the guidance.

1.1 List of all recommendations

Information and support

1.1.1 Offer patients with stage 5 chronic kidney disease (CKD) and their families and carers information and support in line with Chronic kidney disease (NICE clinical guideline 73, 2008).

1.1.2 Offer patients and their families and carers oral and written information about pre-emptive transplant, dialysis, and conservative care to allow them to make informed decisions about their treatment.

1.1.3 To enable patients to make informed decisions, offer balanced and accurate information about all dialysis options. The information should include:

- a description of treatment modalities (assisted automated peritoneal dialysis [aAPD], automated peritoneal dialysis [APD], continuous ambulatory peritoneal dialysis [CAPD], and home or in-centre haemodialysis) including:
  - efficacy
  - risks
  - potential benefits, based on the person's prognosis
  - potential side effects and their severity
  - changing the modality of dialysis and the possible consequences (that is, the impact on the person's life or how this may affect future treatment or outcomes)

- a discussion about how treatment fits into people's lives, including:
  - the patient's and/or carer's ability to carry out and adjust the treatment themselves
- integration with daily activities such as work, school, hobbies, family commitments and travel for work or leisure
- opportunities to maintain social interaction
- the impact on body image
- how the dialysis access point on the body may restrict physical activity
- if their home will need to be modified to accommodate treatment
- distance and time spent travelling for treatment
- flexibility of treatment regimen
- any additional support or services that might be needed from others.

1.1.4 Explain to patients and check they understand that CKD is a lifelong disease, and that during the course of renal replacement therapy they are likely to need to switch between treatment modalities depending on clinical or personal circumstances.

1.1.5 When providing information about treatment options, healthcare professionals should discuss and take into account any information the patient has obtained from other patients, families and carers and all other sources, and how this information has influenced their decision.

1.1.6 Make sure that healthcare professionals offering information have specialist knowledge about CKD and the necessary skills to support decision-making. This may include training in:

- using decision aids to help patients make decisions about their care and treatment
- presenting information to children in a form suitable for their developmental stage, such as play therapies.

1.1.7 Trained healthcare professionals (see recommendation 1.1.6) should be available to discuss the information provided both before and after the start of dialysis.

1.1.8 Offer all patients who have presented late, or started dialysis treatment urgently, an enhanced programme of information, at an appropriate time, that
offers the same information and choices as those who present at an earlier stage of chronic kidney disease.

Choosing dialysis

1.1.9 Offer all people with stage 5 CKD a choice of peritoneal dialysis or haemodialysis, if appropriate, but consider peritoneal dialysis as the first choice of treatment modality for:

- children 2 years old or younger
- people with residual renal function
- adults without significant associated comorbidities.

1.1.10 When discussing choice of treatment modalities, healthcare professionals should take into account that people's priorities are not necessarily the same as their own clinical priorities.

1.1.11 Before starting peritoneal dialysis, offer all patients a choice, if appropriate, between CAPD and APD (or aAPD if necessary).

1.1.12 For children for whom peritoneal dialysis is appropriate, offer APD in preference to CAPD if they are on a liquid diet, especially if they have low residual renal function.

Switching treatment modalities

1.1.13 Do not routinely switch patients on peritoneal dialysis to a different treatment modality in anticipation of potential future complications such as encapsulating peritoneal sclerosis. However, healthcare professionals should monitor risk factors such as loss of ultrafiltration and discuss with patients regularly the efficacy of all aspects of their treatment.

1.1.14 Consider switching treatment modality if the patient, their family or carer asks.

1.1.15 When considering switching treatment modality, offer information on treatment options described in recommendations 1.1.1–1.1.8. This should also include how any decision to switch may affect future treatment options.
1.1.16 Switching between treatment modalities should be planned if possible.
2 Notes on the scope of the guidance

NICE guidelines are developed in accordance with a scope that defines what the guideline will and will not cover. The scope of this guideline is available from our website – click on 'How this guidance was developed'.
3 Implementation

NICE has developed tools to help organisations implement this guidance.
4 Research recommendations

We have made the following recommendations for research, based on our review of evidence, to improve NICE guidance and patient care in the future.

4.1 Process of decision-making

How should the process of decision-making about the choice of dialysis modality, including peritoneal dialysis, be supported?

Why this is important

Various methods are used to support people making healthcare decisions through either formal or informal systems, but there was no evidence on which method is most effective in the choice of dialysis modality. Qualitative evidence showed that people were influenced by the experience of other patients. However, this also has the potential to harm informed decision-making, because this information is very subjective and can discourage patients from making a decision informed by their own values.

Further research is needed on how decisions about the modality of dialysis can be supported. Methods might include how you could use peer support to make decisions based on the patient’s own values, the use of a decision coach and the use of structured information for children. Research should also evaluate whether these methods vary in effectiveness at different stages of the pathway or for different decisions (for example, the start of dialysis or the decision to switch modality or not). The impact of the method or timing of information-giving on clinical outcomes should be assessed. Other outcomes should include whether the information given matched the actual experience of the patient after the decision was made.

4.2 Effectiveness of modality

What factors determine the effectiveness of any modality of dialysis, including peritoneal dialysis?

Why this is important

There are substantial barriers to using randomised controlled trials (RCTs) in research on dialysis modality. This is a particular challenge for dialysis in children because any UK study is unlikely to be adequately powered. Also, patient preference is such an important factor in the choice of modality that when RCTs have been set up recruitment targets have not been met, so results were uncertain and of limited value.
Qualitative evidence shows that patients and healthcare professionals perceive many factors as influencing the effectiveness of dialysis. These include age (specifically age 65 years and older), level of support and family functioning (relationships, organisation, coping strategies and life events). However, there is little robust qualitative evidence in this area.

Further research is needed to identify factors that predict treatment success or failure. Outcomes should include clinical outcomes (including preservation of renal function and rates of infection), dropout rates, psychosocial factors, quality of life, and adherence.

4.3 Treatment sequence

What is the most effective sequence of treatment?

Why this is important

There is limited high-quality evidence on the effectiveness of different sequencing of modalities, and specifically on the impact of starting peritoneal dialysis in people with residual renal function. There is also limited high-quality evidence on when people should be switched to or from peritoneal dialysis.

Further research is needed on sequencing of treatment, including the optimal time for switching.

4.4 Nutritional status

Is there any significant difference in nutritional status between people on the different dialysis treatment modalities?

Why this is important

Undernutrition is a frequent finding in people with established renal failure (present in 30–40% of patients) and is associated with reduced survival. Conversely, weight gain, or regain, is common after starting peritoneal dialysis and is associated with a worsening lipid profile. Very high and low serum phosphate concentrations are also associated with poor outcomes.

Clinical interventions are currently used to try to correct both abnormal phosphate levels and malnutrition.

A rigorous study, using validated methods, is needed to compare the effects of haemodialysis and peritoneal dialysis on markers of nutritional status and phosphate control.
There is no single gold standard measure of nutritional status, so a panel of measurements should be used, reflecting the various aspects of protein–energy malnutrition. These outcome measurements should include subjective global assessment, assessment of dietary intake, anthropometric measures, weight and body mass index, biochemical markers (including phosphate, calcium, serum creatinine and albumin), and estimation of dialysis adequacy and residual renal function.

4.5 **Evaluating effectiveness**

Which outcomes should be used in evaluating effectiveness?

**Why this is important**

Studies evaluating the effectiveness of different modalities report many different outcomes. However, it is not known which is the best measure to compare effectiveness between treatments.

Further research is needed to determine which outcomes are of most value to patients and healthcare professionals when deciding on dialysis modality.
5 Other versions of this guideline

5.1 Full guideline

The full guideline, Peritoneal dialysis: Peritoneal dialysis in the treatment of stage 5 chronic kidney disease, contains details of the methods and evidence used to develop the guideline.

5.2 Information for the public

NICE has produced information for the public explaining this guideline.

We encourage NHS and voluntary sector organisations to use text from this information in their own materials about stage 5 CKD.
6 Related NICE guidance

Published

- Chronic kidney disease. NICE clinical guideline 73 (2008)
- Guidance on home compared with hospital haemodialysis for patients with end-stage renal failure. NICE technology appraisal guidance 48 (2002).
7 Updating the guideline

NICE clinical guidelines are updated so that recommendations take into account important new information. New evidence is checked 3 years after publication, and healthcare professionals and patients are asked for their views; we use this information to decide whether all or part of a guideline needs updating. If important new evidence is published at other times, we may decide to do a more rapid update of some recommendations. Please see our website for information about updating the guideline.
Appendix A: The Guideline Development Group, the Short Clinical Guidelines Technical Team, the Short Clinical Guidelines Team and the Centre for Clinical Practice

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Chronic kidney disease (stage 5): peritoneal dialysis (CG125)
Appendix B: The Guideline Review Panel

The Guideline Review Panel is an independent panel that oversees the development of the guideline and takes responsibility for monitoring adherence to NICE guideline development processes. In particular, the panel ensures that stakeholder comments have been adequately considered and responded to. The panel includes members from the following perspectives: primary care, secondary care, lay, public health and industry.

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About this guideline

NICE clinical guidelines are recommendations about the treatment and care of people with specific diseases and conditions in the NHS in England and Wales.

The guideline was developed by the Short Clinical Guidelines Technical Team. The team worked with a group of healthcare professionals (including consultants, GPs and nurses), patients and carers, and technical staff, who reviewed the evidence and drafted the recommendations. The recommendations were finalised after public consultation.

The methods and processes for developing NICE clinical guidelines are described in The guidelines manual. This guideline was developed using the short clinical guideline process.

The recommendations from this guideline have been incorporated into a NICE Pathway. We have produced information for the public explaining this guideline. Tools to help you put the guideline into practice and information about the evidence it is based on are also available.

Changes after publication

December 2011: minor maintenance

March 2013: minor maintenance

Your responsibility

This guidance represents the view of NICE, which was arrived at after careful consideration of the evidence available. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. However, the guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer, and informed by the summary of product characteristics of any drugs they are considering.

Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to avoid unlawful discrimination and to have regard to promoting equality of opportunity. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties.