NICE National Institute for Health and Care Excellence

Putting NICE guidance into practice

Resource impact report:
Renal replacement therapy (NG107)

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Summary

This report focuses on the recommendation from NICE's guideline on renal replacement therapy that we think may have the greatest resource impact nationally (for England), and may need the most additional resources to implement. It is for people who opt for dialysis via vascular access: consider haemodiafiltration (HDF) rather than haemodialysis (HD) if in centre (hospital or satellite unit).

There is uncertainty around the current level of HDF usage. Three scenarios have been modelled, with current HDF usage ranging from 25% to 60%.

Implementing the guideline is likely to increase costs to providers since HDF is more expensive to provide than HD.

The estimated annual cost of implementing this guideline for the population of England based on the 3 current usage scenarios, ranging between £0 and £4.6 million, is shown in table 1.

Table 1 Estimated annual cost of implementing the guideline in England

Scenario	Future uptake of HDF		
	60% £000s	75% £000s	90% £000s
1 – 25% HDF current uptake	2,480	3,540	4,610
2 – 40% HDF current uptake	1,420	2,480	3,540
3 – 60% HDF current uptake	0	1,060	2,130

This report is supported by a resource impact template which may be used to calculate the resource impact of implementing the guideline by amending the variables.

Renal replacement therapy services are commissioned by NHS England and transport related to dialysis services are commissioned by clinical commissioning groups. Providers are NHS hospital trusts.

Introduction

1.1 The guideline offers best practice advice on renal replacement therapy.

1.2 This report discusses the resource impact of implementing our guideline on renal replacement therapy in England. It aims to help organisations plan for the financial implications of implementing this NICE guideline.

1.3 A resource impact template accompanies this report to help with assessing the resource impact at a local level in England, Wales or Northern Ireland.

1.4 We have considered direct costs and savings to the NHS and not those for the individual, the private sector or the not-for-profit sector. Any cost savings arising from a change in practice have been offset against the cost of implementing the change.

1.5 Renal replacement therapy services are commissioned by NHS England and transport related to dialysis services are commissioned by clinical commissioning groups. Providers are NHS hospital trusts.

2 Background

2.1 People with chronic kidney disease (CKD) have an irreversible and progressive decrease in kidney function. CKD (stages 3–5) may affect up to 4–5% of the adult UK population (NICE final scope for NG107 renal replacement therapy). In 2% of people with CKD, the condition progresses to kidney failure, and RRT is needed for survival (NICE final scope for NG107 renal replacement therapy).

3 Significant resource impact recommendation

3.1 **Recommendation 1.3.11** For people who opt for dialysis via vascular access:

- consider haemodiafiltration (HDF) rather than haemodialysis (HD) if in centre (hospital or satellite unit).

Background

3.1.1 When people have renal replacement therapy, that is dialysis via vascular access in centre, they are currently offered either HD or HDF. Not all dialysis machines are able to offer both treatment choices.

3.1.2 The same tariff will be paid for treatment with either HD or HDF, NHS 2018/19 National tariff (LD01A-LD08A). This means a move to using HDF instead of HD may have a resource impact for providers (see table 3 for further details). Commissioners may wish to make arrangements with providers to share the resource impact and support the implementation of this guideline.

Assumptions made

3.1.3 Around 0.04% of the population of England have chronic kidney disease and have dialysis. This is based on The Renal Association's UK Renal Registry 19th Annual Report 2016. This is equivalent to around 24,700 people in England.

3.1.4 According to The Renal Association's UK Renal Registry 19th Annual Report 2016 around 87% of these people (21,500) are having dialysis via vascular access (HD or HDF) and around 95% (20,500) are having dialysis via vascular access in centre.

3.1.5 In the scenario that is modelled in the template, it is estimated that currently 60% of people have HDF and 40% have HD. This is based on information from an email survey of renal technologists to support the development of this guideline. The responses to the survey come from 9 providers and cover around 1,000 dialysis machines.

3.1.6 Expert clinical opinion is that providers are using High Flux HD when offering HD via vascular access in centre.

Scenarios

3.1.7 Based on the survey of renal technologists it is anticipated that currently around 60% of people having dialysis via vascular access in centre would have HDF. However other clinical expert opinion suggests that current HDF

usage could be as low as 25%. As there is uncertainty 3 different scenarios have been modelled:

3.1.8 Of the people who have dialysis via vascular access in centre:

- Scenario 1 – 25% of people currently have HDF
- Scenario 2 – 40% of people currently have HDF
- Scenario 3 – 60% of people currently have HDF

3.1.9 It is assumed that in all 3 scenarios, the future proportion of people having HDF could be 60%, 75% and 90% respectively. The resource impact of the 3 scenarios is shown in table 2.

Table 2. Resource impact of the different scenarios for current usage of HDF in centre

Scenario	**Future uptake of HDF**		
	60% £000s	**75% £000s**	**90% £000s**
1 – 25% HDF current uptake	2,480	3,540	4,610
2 – 40% HDF current uptake	1,420	2,480	3,540
3 – 60% HDF current uptake	0	1,060	2,130

Costs

3.1.10 Implementing this guideline is likely to increase costs for providers. HDF requires more expensive blood lines and uses more water than HD. These additional costs are partly offset by a reduced cost of erythropoietin stimulating agent (ESA). The differential cost of HDF and HD is shown in table 3.

Table 3 Differential cost of HDF compared to HD

Description	Annual cost per person (£)
Average additional cost of bloodlines for HDF	440
Additional water for HDF (15 litres per session)	6
Reduction in ESA usage	-99
Total increased cost per person per annum of HDF	**347**

The resource impact of offering HDF in centre for each scenario at the midpoint future uptake is summarised in table 4.

Table 4 Estimated annual cost of HDF in centre and the number of people having HDF in centre

	Current practice	2018/19	2019/20	2020/21	2021/22	2022/23
Scenario 1 – 25% current usage of HDF and future uptake of 75% HDF usage						
Resource impact each year for HDF in centre (£000)		440	1,230	2,010	2,800	3,540
Number of people who will have HDF	5,100	6,400	8,600	10,900	13,200	15,300
Scenario 2 – 40% current usage of HDF and future uptake of 75% HDF usage						
Resource impact each year for HDF in centre (£000)		230	800	1,370	1,950	2,480
Number of people who will have HDF	8,200	8,900	10,500	12,100	13,800	15,300
Scenario 3 – 60% current usage of HDF and future uptake of 75% HDF usage						
Resource impact each year for HDF in centre (£000)		100	350	600	850	1,060
Number of people who will have HDF	12,300	12,600	13,300	14,000	14,700	15,300

3.1.11 There may be additional costs for providers where HDF-capable machines are not currently used. Most centres already have some HDF-capable machines and the committee agreed that it is likely that these will be able to accommodate any initial increase in demand.

3.1.12 When replacement dialysis machines are needed, HDF-capable machines can be purchased. Providers should be aware that HDF-capable machines may cost more than HD machines.

Benefits

3.1.13 HDF in centre has important clinical benefits for patients over haemodialysis. HDF removes substances in a broader range of molecular size compared to conventional HD.

3.1.14 Studies suggest that there may be a survival benefit of using HDF when compared to HD. The template and this report do not include any additional costs relating to increased life expectancy.

4 Implications for commissioners

4.1 Renal replacement therapy falls under programme budgeting category 17B renal problems.

4.2 Haemodialysis and haemodiafiltration are both coded to the same Healthcare Resource Group (HRG) codes, as a result of this, there may be additional costs for providers. Commissioners may want to discuss the additional costs for implementing the guideline with providers. .

5 Other considerations

5.1 High flux Haemodialysis (HD) and haemodiafiltration (HDF) machines require an ultra-pure water system. Where an ultra-pure water system is not already in place, there may be additional costs for the provider to install one. There are no differences in costs for testing water for HD and HDF once high quality water is established.

6 Sensitivity analysis

6.1 There are some assumptions in the model for which no empirical evidence exists, so we cannot be as certain about them. Appropriate minimum and maximum values of variables were used in the sensitivity analysis to assess

which variables have the biggest impact on the net cost or saving. This enables users to identify the significant cost drivers.

Appendix A is a table listing all variables modified. The sensitivity analysis is based on scenario 3 – 60% current usage and future haemodiafiltration (HDF) uptake of 75%. The key conclusions are discussed below.

6.2 Varying the current uptake of HDF from 25% to 70% leads to a resource impact from between £3.5 million and £350,000.

6.3 Varying the future uptake of HDF to 90% leads to a resource impact of £2.1 million.

6.4 The value used for additional annual cost of bloodlines for HDF is an estimate based on a range of costs between £0 and £897. The additional cost of bloodlines is based on the specific machines that are used in the centre. Varying the cost between £0 and £897 leads to a resource impact from a saving of around £300,000 to a cost of £2.5 million.

Appendix A. Results of sensitivity analysis

Individual variable sensitivity

				Recurrent resource impact				
	Baseline value	**Minimum value**	**Maximum value**	**Baseline resource impact (£000s)**	**Minimum resource impact (£000s)**	**Maximum resource impact (£000s)**	**Change (£000s)**	**Sensitivity ratio**
People having HDF in current practice	60.0%	25.0%	70.0%	1,063	3,543	354	-3,189	0.80
People having HDF in future practice	75.0%	60.0%	90.0%	1,063	0	2,126	2,126	1.00
Additional annual cost of bloodlines for HDF	440	0	897	1,063	-287	2,465	2,752	0.25

About this resource impact report

This resource impact report accompanies the NICE guideline on renal replacement therapy and should be read in conjunction with it. See terms and conditions on the NICE website.