

Healthcare Associated Costs for IgA Nephropathy at a Tertiary Renal Centre in the UK, 2015-2021

Joshua Storrar

josh.storrar@nca.nhs.uk

Donal O'Donoghue Renal Research Centre

Thomas Allen

University of Manchester

Smeeta Sinha

Donal O'Donoghue Renal Research Centre

Philip A Kalra

Donal O'Donoghue Renal Research Centre

Research Article

Keywords: IgA nephropathy, Health economics, Novel therapies, Retrospective study

Posted Date: October 6th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10166725/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License. [Read Full License](#)

Additional Declarations: Competing interest reported. JS and TA have no competing interests SS has the following competing interests: speaker/lecture fees from AstraZeneca, Bayer, Sanofi-Genzyme, Novartis, CSL Vifor Pharma, GSK, Menarini, Medscape; Advisory boards: Novartis, Bayer, Sanofi-Genzyme, Vifor Pharma, Boehringer Ingelheim, AstraZeneca and GSK; Clinical consultancy: Sanifit, Inozyme Pharma inc; Grants from Amgen, JnJ, AstraZeneca, CSL Vifor, Sanofi Genzyme. PAK has the following competing interests: grant funding from Vifor and Astellas, consulting fees from Astra Zeneca, Vifor, Unicyte and UCB, honoraria from Vifor, Astra Zeneca and Pfizer, support for attending meetings from Pharmacosmos and Vifor.

Abstract

Background

Immunoglobulin A nephropathy (IgAN) is a progressive kidney condition in which abnormal immune complexes form in the circulation and are deposited in the glomeruli of kidneys. For decades, the mainstay of management has been with conservative care. There are many novel therapies in various stages of clinical trials. This potentially has the scope to change the landscape of treatment for IgAN in the coming years. There has been little reported on the healthcare associated costs for patients with IgAN, but this is likely to become increasingly important as novel therapies become available for use clinically.

Methods

We identified 110 patients diagnosed with IgAN at Salford Royal Hospital, UK, between January 2015 and December 2019 from our biopsy database and electronic record. Data was collected for age, sex, ethnicity, progression to need for kidney replacement therapy (KRT) and mortality. We used the NHS National Cost Collection for the relevant years to determine hospital admission costs, and the costs for various forms of KRT by year. It was not possible to include the costs for low cost items such as medications. The total cohort was divided into subgroups by age, sex, ethnicity and mortality status.

Results

The mean total cost per patient over the study period was £23,333. Of the total cost, the majority (69%) was due to KRT. The mean annual cost increased across the 6 age groups up to a peak of £47,929 for those aged ≥ 66 years. There were similar costs amongst males and females. There were greater mean annual and total costs amongst those patients who died during the study period compared to those who were still alive.

Conclusions

We report here a comprehensive study of healthcare associated costs in a large cohort of patients with IgAN. This is important and relevant in an era of novel therapies for use in IgAN. Commissioners and clinicians are likely to need to make decisions about treatment based on the relative cost effectiveness of these treatments. With knowledge of existing healthcare associated costs of IgAN including KRT, the cost implications of these decisions can be more readily determined.

Background

IgA nephropathy (IgAN) is a kidney disease in which immune complexes (formations of galactose deficient immunoglobulin A (Gd-IgA) molecules and their corresponding anti-Gd-IgA antibodies) form in the circulation and subsequently deposit in the glomeruli of kidneys[1]. A diagnosis can have a lifelong impact on patients who have to take regular medications and are at risk of progression to chronic kidney disease (CKD) which may progress to end stage kidney disease (ESKD) and need for kidney replacement therapy (KRT) including dialysis and kidney transplantation. Since first being described over 50 years ago, the mainstay of management for IgAN has been conservative therapy (including renin-angiotensin system (RAS) blockade, blood pressure control, and lifestyle advice)[2]. These older therapies are cheap but have limited efficacy as they do not target the specific molecular mechanisms of the disease. With increasing understanding of the pathophysiology of the disease, including the role of complement, there are a number of novel therapeutics in various stages of development[3]. We may be moving into an era of combination therapy for IgAN, in which clinicians will be required to tailor treatment depending on individual patient characteristics and likely response to therapy. The costs of these new therapies, and associated treatment costs, are also likely to be taken into consideration by bodies that determine if new therapies are integrated into standard of care, such as the National Institute for Health and Care Excellence (NICE) in the United Kingdom.

There is a paucity of health economic analysis for IgAN on review of the literature. A recently published review by Jhaveri et al.[7] in 2023 described the economic burden of IgAN along with its humanistic impact. They cited 5 studies reporting on its economic burden.

The first was a Canadian study by Barbour et al.[8] including patients with glomerulonephritis treated with immunosuppression between 2000 and 2012. The main goal was to determine mean immunosuppression cost. They found that there was a mean increase in cost for patients with IgAN ($n = 756$) over time (\$158 Canadian dollars in 2000 and \$221 Canadian dollars in 2013), but this was not statistically significant. Prednisone was the most common immunosuppressive medication reported. Interestingly, the mean cost of immunosuppression for all the other glomerulopathies reported on increased over time. This study did not address any other healthcare care associated costs for IgAN other than immunosuppression use.

Secondly, a Japanese study[9] reported on the cost effectiveness of immunosuppressive therapy using 2 models. It should be noted that this study did not generate new data, instead opting to use a previously reported European cohort (VALIGA) and did not report individual healthcare-associated costs which could have been compared with our study.

The third study by Li et al.[10] reported on healthcare resource utilization (2015, in Chinese yuan) for 11,569 hospitalized patients in China. The median length of stay was 10 days with a cost of 8,000 yuan (roughly £900 per patient). It did not report on other costs.

The fourth study involved only 1 patient on haemodialysis in Italy, and the fifth related to cost analysis of biomarker screening and did not directly report healthcare associated costs, so these studies are not discussed in more detail here.

IgAN can be a progressive condition and up to 26% of patients will progress to ESKD within 10 years of diagnosis[1]. ESKD is associated with the need for KRT including haemodialysis, peritoneal dialysis and kidney transplantation, which are all associated with significant financial costs, along with increased morbidity and mortality. There is also the additional psychosocial cost for patients resulting from multiple hospital attendances, the potential need for

invasive procedures, and travel to and from dialysis. The result is a potential negative impact on quality of life. Novel therapies that aim to reduce the rate of progression to ESKD could reduce the healthcare associated costs for IgAN, but we lack an understanding of these costs for this patient group.

In this study, we aimed to determine the healthcare associated costs associated with IgAN in a cohort of patients diagnosed over a 5-year period and retrospectively followed over time for up to 8 years. We aimed to determine costs in two main areas: hospital admissions and KRT. These two cost areas can be summated to generate a total approximate overall health care associated cost. Such cost analysis is expected to be valuable for future cost-effectiveness studies which guide decision makers.

Methods

Study design

This study employed a retrospective observational design to assess healthcare associated costs of IgAN. There were 110 patients diagnosed with IgAN at Salford Royal Hospital between January 2015 and December 2019 who were identified using the biopsy database and electronic patient record (EPR).

Data source

Data collected from the EPR included age at time of diagnosis, sex, ethnicity, hospital admissions and length of stay, intensive care admissions and length of stay, need for dialysis (either hospital-based haemodialysis, home-based haemodialysis, continuous ambulatory peritoneal dialysis [CAPD], automated peritoneal dialysis [APD] or assisted APD), or kidney transplant (either deceased after cardiac death, deceased after brainstem death, or live donor), and mortality status.

Data from the NHS National Cost Collection for the years 2015/16, 2016/17, 2017/18, 2018/19, 2019/20 and 2020/21[4] were used to access the relevant costs for this study. Data pertaining to hospital admissions was obtained through the EPR for Salford Royal Hospital, and through the Greater Manchester Care record (primary care system) for hospital admissions other than at Salford Royal Hospital. Discharge summaries were used to determine length of stay and details for any admissions to intensive care. The relevant costs for this study are depicted in Table 1 by year.

The study end point date was either recorded as 30/09/2023, date of death or date of last follow up if subsequently lost to follow up.

Hospital costs

The cost attributed for a general overnight ward admission were obtained from the reported non-elective regular day and night admission cost [£298.41 in 2015/16, £305.85 in 2016/17, £337 in 2017/18, £341 in 2018/19, £378 in 2019/20, and £483 in 2020/21]. Intensive care admission costs were taken from the 'Critical Care' data utilising the 'renal patients predominate' subgroup. It was not possible to determine how many organs were supported during individual intensive care admissions so the value for '2 organs supported' was used.

Dialysis and transplant costs

Haemodialysis costs, either in hospital or at home, were reported per session. These values were scaled up to determine the yearly cost. Values for peritoneal dialysis were obtained using the same method. Separate costs for cadaver heart beating, non-heart beating and live donor transplantation were recorded.

Medication and out-patient costs

We did not determine medication costs for individual patients. It was assumed that patients were managed with routine care: RAS blockade, blood pressure control and lifestyle advice. It is likely that a greater proportion of patients will have been prescribed a sodium-glucose co-transporter-2 inhibitor (SGLT2-i) since the publication of the IgAN subgroup analysis of the clinical trial investigating dapagliflozin in CKD (DAPA-CKD) in 2021 [5], but nevertheless it is likely that hospital and KRT related costs contribute the largest proportion of the total cost. The current cost in the UK for a 28-day supply of dapagliflozin 10mg daily is £36.59 and for a 28-day supply of ramipril 10mg daily is £1.22, as per the British National Formulary.

Statistical methods

For each patient, data were collected for inpatient admissions to general wards and intensive care including duration of stay, duration of either haemodialysis or peritoneal dialysis, and details relating to kidney transplantation if one occurred. Costs were generated for these based on the sources reported above. Costs for years 2015/16- 2020/21 were adjusted for inflation by using the NHS Cost Inflation Index with the comparison year being 2021/22. The total health care associated cost was a summation of all individual costs, and a mean annual cost for each patient was determined by dividing the total cost by their length of follow up in years. Mean and standard deviation values were obtained using SPSS (IBM) version 25.0.

The total cohort was further subdivided by age into 6 subgroups (ages 16–25, 26–35, 46–55, 56–65, ≥ 66 years), by sex, ethnicity and mortality status reported during the study period.

Ethical considerations

The study complies with the declaration of Helsinki and as indicated by the NHS Health Research Authority online tool <http://www.hra-decisiontools.org.uk/research> this study was not considered research requiring research ethics committee review as it was a retrospective observational study using measurements routinely collected and using fully anonymised and secondary use of data. The need for individual patient consent was waived by the Research and Innovation committee of the Northern Care Alliance NHS Group, as the data obtained was routinely available without the need to interview patients or obtain any extra information. The committee granted study approval and registered the study (Ref: ID S22HIP50) after approving the methodological protocol.

Table 1
Costs in GBP for various parameters by year between 2015/16 and 2021/22, adjusted for inflation, as per the NHS National Cost Collection.

Cost per:		Year						
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Overnight stay (ward)		337.0	338.5	368.3	366.8	397.9	496.1	406.0
Intensive care unit stay (per 24 hr period)	463.1	574.3	581.4	1012.1	772.0	2614.5	778.5	778.5
	757.8	641.8	761.8	805.6	1366.5	1563.6	1093.1	1093.1
	1274.0	669.5	1007.7	942.2	1238.2	4364.7	1054.9	1054.9
	2025.0	1184.1	1540.0	1634.8	1612.2	534.9	1415.7	1415.7
	2288.2	1277.0	1627.4	1566.0	1640.1	2626.3	NA	NA
	2835.9	2257.5	1985.9	1416.5	1817.0	NA	NA	NA
Haemodialysis (satellite via AVF or graft)	193.1	178.2	176.0	168.9	170.3	187.1	188.4	188.4
	2510.7	2316.1	2287.5	2195.1	2214.3	2432.6	2448.7	2448.7
	30127.9	27793.4	27450.3	26341.6	26571.0	29191.5	29384.2	29384.2
Home dialysis (at base, fistula)	177.3	200.3	220.8	234.5	193.3	238.4	212.8	212.8
	2305.1	2603.8	2870.1	3048.0	2512.3	3098.7	2765.8	2765.8
	27661.2	31246.0	34440.8	36576.2	30147.3	37184.4	33189.0	33189.0
Continuous ambulatory peritoneal dialysis	58.7	76.4	74.3	72.1	79.5	83.8	75.8	75.8
	1786.3	2322.5	2260.6	2191.8	2418.1	2547.9	2306.8	2306.8
	21436.0	27869.8	27126.8	26301.8	29017.8	30575.4	27681.6	27681.6
Automated peritoneal dialysis	66.6	85.2	84.2	79.6	81.7	91.9	83.8	83.8
	2026.8	2591.8	2559.8	2420.8	2484.4	2794.2	2548.0	2548.0
	24321.6	31101.1	30717.1	29049.7	29813.0	33529.8	30576.1	30576.1
Assisted automated peritoneal dialysis	102.8	104.0	92.9	79.6	92.4	107.0	96.3	96.3
	3126.1	3164.0	2825.7	2420.8	2810.0	3254.7	2927.9	2927.9
	37513.0	37967.6	33908.5	29049.7	33720.2	39056.2	35134.9	35134.9
Transplant	16400.0	14045.0	13890.2	14698.0	14133.4	21892.9	19516.9	19516.9
	16962.4	12815.6	14645.4	14278.6	16344.1	22559.0	19930.6	19930.6
	15636.6	15237.9	14031.2	14556.1	13314.9	22142.5	16409.5	16409.5

Results

Sample

The demographics and key outcomes of the 110 patients in the total cohort are presented in Table 2. The median follow-up duration was 4.6 (interquartile range [IQR] 3.5–5.9 years. The median age at biopsy was 46 (IQR 29–61) years, with 38 (34.5%) female patients, 94 (85.5%) White, 11 (10%) Asian, 2 (1.8%) Black and 3 (2.7%) of other ethnicity. Progression to KRT was observed in 30 (27.3%) patients and 24 (21.8%) died.

Table 2
Baseline characteristics and key outcomes of total cohort.

Age, years		Total cohort (n = 110)
		46 (29–61)
Female		38 (34.5)
Ethnicity	White	94 (85.5)
	Asian	11 (10)
	Black	2 (1.8)
	Other	3 (2.7)
Follow up duration, years		4.6 (3.5–5.9)
Progression to KRT		30 (27.3)
	Haemodialysis*	23 (20.9)
	Peritoneal dialysis*	13 (11.8)
	Kidney transplant*	10 (9.1)
Mortality		42 (21.8)

Categorical values presented as number (percentage), continuous values presented as median (interquartile range).

KRT, kidney replacement therapy

*Total adds to > 30 as some patients had more than 1 type of KRT

Resource use and costs

The resource use amongst the total cohort can be seen in Table 3. At least 1 hospital admission was observed in 59.1% of patients during the study period. The mean total inpatient days in hospital averaged for the whole cohort was 18.2 days. There was an intensive care admission in 8 (7.3%) patients, with a mean total number of intensive care days for the whole cohort of 0.5 days. Progression to haemodialysis occurred in 20.1%, CAPD in 5.5% and APD in 8.2%. Ten patients received a kidney transplant.

Table 3
Resource use amongst the total cohort.

Health care resource use		Total cohort, n = 110
At least 1 hospital admission		65 (59.1)
Mean total number of days in hospital (ward admission)		18.2
At least 1 intensive care admission		8 (7.3)
Mean total number of days in hospital (ICU admission)		0.5
Progression to hospital-based HD		23 (20.1)
Progression to home-based HD		0 (0)
Progression to CAPD		6 (5.5)
Progression to APD		9 (8.2)
Kidney transplant	Cadaveric heart beating	4 (3.6)
	Cadaveric non-heart beating	1 (0.9)
	Live donor	5 (4.5)

Categorical values presented as n (%), continuous values as mean (SD).

APD, automated peritoneal dialysis; CAPD, continuous ambulatory peritoneal dialysis; HD, haemodialysis; ICU, intensive care unit.

The mean total healthcare cost per patient over the study period was £23,333 (standard deviation [SD] £46,491), (Table 4). The mean cost per patient due to hospital admissions to a general ward was £6,587 (SD £15,340), and for an intensive care admission £560 (SD £3,688). The mean cost per patient for haemodialysis was £8,620 (SD £24,093), for peritoneal dialysis £5,976 (SD £23,394) and for a kidney transplant £1,590 (SD £5,140).

The mean annual cost per patient increased in every age group from £1,615 for those aged 16–25 years to a maximum of £47,929 in the oldest age group (≥ 66 years). The mean annual cost and total cost during the study point for the 6 different age groups can be seen in Fig. 1.

When comparing males and females, the total mean cost per patient was higher for males (£25,020 vs 20,138), with a corresponding higher mean annual cost (£8,572 vs £5,534).

Patients of Asian ethnicity had a higher mean total cost (£52,301) compared to White patients (£21,159) but this did not translate to a higher mean annual cost (£9,640 vs £13,668). This result is perhaps limited by the small sample size of Asian patients (n = 10), and further work is required to see if the result would be replicated with a larger sample size.

The mean total and annual costs were higher in those patients who subsequently died during the study period (n = 24), Fig. 2. The mean annual cost for those who died was £45,406 compared to just £3,506 for those who were still alive at the study endpoint. This suggests most of the healthcare associated costs for patients with IgAN occur in the last few years of life, or in those who are the most unwell. It should be noted that 8 of the 24 patients who died were followed up for less than 1 year, and that this affects the result of the mean annual cost.

A cost of zero (£0) was attributed to 44 (40%) of the patients in this study- that is they had both no hospital admissions and did not progress to require KRT during the study period. The highest cost attributed to a single patient was £242,311 due to a combination of hospital admissions (£53,822), APD (£168,971) and a beating heart donor transplant (£19,517).

Table 4
Mean (and standard deviation) of health care costs for the overall cohort and for subgroups according to age, sex, ethnicity and mortality status.

	N individuals (%)	Total cost		Annual cost		Hospital admissions ward		Hospital admissions ICU		Haemodialysis cost		Peritoneal dialysis cost		Transpl cost
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean
Overall	110	23,333	46,491	12,648	59,750	6,587	15,340	560	3,688	8,620	24,093	5,976	23,394	1,590
Age (years)														
16–25	19 (17.3)	6,813	27,382	1,615	6,576	1,056	2,443	-	-	5,495	23,953	261	1,138	0
26–35	21 (19.1)	8,045	15,913	1,915	3,770	1,462	2,345	-	-	1,263	5,340	3,232	8,553	2,088
36–45	13 (11.8)	22,174	46,528	5,154	9,757	2,939	6,952	2,840	10,240	4,076	10,341	9,398	28,692	2,920
46–55	20 (18.2)	30,141	43,790	6,284	9,620	4,853	7,392	381	1,266	11,094	27,553	11,108	28,486	2,704
56–65	19 (17.3)	42,620	69,686	13,945	24,325	10,061	18,579	621	2,179	17,242	34,748	12,641	40,776	2,054
≥ 66	18 (16.4)	31,523	53,079	47,929	142,624	19,298	27,755	293	1,243	11,933	26,136	-	-	-
Sex														
Female	38 (34.5)	20,138	43,750	5,534	99,482	6,761	17,147	139	856	7,971	25,137	3,575	12,886	1,693
Male	72 (65.5)	25,020	48,087	8,572	16,570	6,496	14,422	783	4,512	8,963	23,697	7,243	27,367	1,536
Ethnicity*														
White	94 (85.5)	21,159	43,603	13,668	64,450	5,661	12,831	574	3,952	7,364	21,721	6,137	24,384	1,422
Asian	11 (10)	52,301	68,182	9,640	13,577	17,277	29,681	693	1,675	23,267	40,642	7,314	30,394	3,749
Black	2 (1.8)	378	534	91	128	378	535	-	-	-	-	-	-	-
Mortality														
Alive	86 (78.2)	17,553	42,109	3,506	8,074	3,507	11,172	579	4,052	5,888	19,521	5,544	22,896	2,034
Died	24 (21.8)	44,048	55,834	45,406	123,473	17,623	22,167	492	1,945	18,408	34,854	7,525	25,555	-
*3 patients with unknown ethnicity														

Discussion

Main results

There were significant healthcare-associated costs for patients with IgAN, more than half of which was attributable to the costs of KRT. Costs increase with age, with the greatest mean annual cost occurring in the oldest age group (≥ 66 years). Given that the median age at diagnosis in our cohort was 46 years, there are potentially many years over which costs for an individual can increase.

We did not find any striking differences in the costs between males and females. Regarding ethnicity, there was a much larger total cost for patients of Asian ethnicity, which was predominantly due to increased haemodialysis and hospital admission costs. However, given the small sample size of just 10, it is difficult to draw robust conclusions from this and further work with a larger cohort of Asian patients would be useful.

The finding that those patients who died during the study period had a much higher mean annual and total cost is unsurprising in the context of most healthcare spending for an individual occurring in the last few years of their life[6], and with ESKD requiring KRT being associated with greater morbidity and mortality.

There were no costs (by this costing method) in 40% of the patients in the study suggesting that there is variability in the natural history of IgAN and how patients use healthcare resources. This variability is important because if we can accurately identify those patients who are at high risk of being likely to require more healthcare resources we could adapt our management strategy appropriately.

Comparison with previous literature

The paucity of previously published literature on the healthcare associated costs in IgAN mean that a comparison between the data reported here and other studies is not possible.

Rationale for performing health economic analysis for IgAN

There is always a balance when faced with effective new (and often expensive) therapies for a given condition between widespread adoption and more judicious use for those people who are most likely to benefit. We are moving towards an era of combination therapy for IgAN with several new drugs in development. Trials published in the last 3 years have presented data for targeted release budesonide/ Kinpeygo (NeflgArd) [11], Sparsentan (PROTECT) [12], Sibeprenlimab [13], and ZigaKibart [14]. These trials have demonstrated beneficial effects in reducing proteinuria in patients with IgA nephropathy. A reduction in proteinuria is likely to have a knock on effect by i) prolonging the time interval before KRT is needed, or even negating the need for it entirely, and ii) reducing mortality by slowing down CKD progression. Kinpeygo and Sparsentan have subsequently undergone technology appraisal review by NICE (TA937 and TA1074) in the UK and have been licensed for use [15, 16]. There are several trials currently registered with clinicaltrials.gov, in various stages of development, testing novel therapies for IgAN.

Policy and research implications

The primary aim of therapy for IgAN is stabilisation of kidney function and thus attenuation of eGFR decline or prevention of progression to ESKD and need for KRT. The cost for these new therapies needs to be weighed against any cost savings due to fewer hospital admissions and less requirement for KRT. The cost of dialysis for 1 year (either haemo- or peritoneal) is currently around £30,000 in the UK, and a kidney transplant just under £20,000. Thus, there are potentially significant cost savings to be made by delaying, or possibly avoiding entirely, these interventions.

Whilst targeting a reduction in hospital admissions may be difficult (as CKD patients are vulnerable to intercurrent illnesses, especially those receiving immunosuppression), any intervention that is able to reduce the risk of progression to requiring KRT is likely to have a significant impact on the overall healthcare associated cost in IgAN.

Strengths and limitations

This is the first study, to our knowledge, to perform a health economics analysis in IgA nephropathy. As such, the findings presented here will be of interest to nephrologists who treat patients with this condition in this new era where multiple new treatments become increasingly available. There is a significant economic burden with untreated IgA nephropathy, potentially leading to end stage kidney disease and renal replacement therapy.

There are several limitations of this study. Firstly, it was retrospective and so some sections of the dataset are incomplete. We could not identify specific reasons for hospital admissions and were unable to differentiate those admissions which were related to the IgAN diagnosis (for example fluid overload secondary to ESKD) or an unrelated health problem (such as pneumonia). We also did not collect medication data for individual patients. We felt that this would have been unlikely to have affected the cost analysis significantly given that the majority of patients at our centre were treated with standard of care including maximum tolerated renin-angiotensin inhibition, and since 2021 with the addition of an SGLT2-i if there was significant proteinuria. We have not factored use of immunosuppression into this study. We did identify 28 (25.5%) who received immunosuppression- either cyclophosphamide, prednisolone or mycophenolate mofetil. We felt that the relative costs of these medications were insignificant compared to the other costs reported in the study. We also did not calculate the costs for out-patient care which again were felt were likely be small compared to the other costs reported in this study.

Conclusions

In conclusion, to the best of our knowledge, we report here for the first time the main healthcare associated costs for patients with IgAN, at a large centre in the UK. We show that the total cost over a median follow up duration of 4.9 years is £23,333, and that costs increase with increasing age. The cost of KRT, and severe illness leading to mortality, are the main contributors to the total cost, and so any potential reduction in the rate of progression to ESKD, or mortality, is likely to have the greatest impact in reducing the overall costs associated with this progressive condition.

Abbreviations

APD
automated peritoneal dialysis
CAPD
continuous ambulatory peritoneal dialysis
CKD
chronic kidney disease
DAPA

CKD-clinical trial comparing dapagliflozin with placebo in a cohort of patients with chronic kidney disease

EPR

electronic patient record

ESKD

end-stage kidney disease

Gd

IgA-galactose deficient immunoglobulin A

ICU

intensive care unit

IgAN

immunoglobulin A nephropathy

IQR

interquartile range

NICE

national institute for health and care excellence

KRT

kidney replacement therapy

RAS

renin angiotensin system

SGLT2i

sodium glucose co-transporter-2 inhibitor

Declarations

Consent for publication

Not applicable

Competing Interests

JS and TA have no competing interests SS has the following competing interests: speaker/lecture fees from AstraZeneca, Bayer, Sanofi-Genzyme, Novartis, CSL Vifor Pharma, GSK, Menarini, Medscape; Advisory boards: Novartis, Bayer, Sanofi-Genzyme, Vifor Pharma, Boehringer Ingelheim, AstraZeneca and GSK; Clinical consultancy: Sanifit, Inozyme Pharma inc; Grants from Amgen, JnJ, AstraZeneca, CSL Vifor, Sanofi Genzyme. PAK has the following competing interests: grant funding from Vifor and Astellas, consulting fees from Astra Zeneca, Vifor, Unicyte and UCB, honoraria from Vifor, Astra Zeneca and Pfizer, support for attending meetings from Pharmacosmos and Vifor.

Funding

This study was generously supported by a research grant from CSL Vifor.

Author Contribution

J.S. conceptualized the study, performed data collection and analysis, and wrote the manuscript. T.A. aided with study design, analysis and reviewed the manuscript. S.S. and P.A.K. conceptualized the study and reviewed the manuscript.

Acknowledgements

Not applicable.

Clinical trial

Clinical trial number: not applicable

Data Availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

References

1. Rodrigues JC, Haas M, Reich HN. IgA Nephropathy. Clin J Am Soc Nephrol. 2017;12(4):677–86.

2. Floege J, Rauen T, Tang SCW. Current treatment of IgA nephropathy. *Semin Immunopathol*. 2021;43(5):717–28.
3. Kunter U, Seikrit C, Floege J. Novel agents for treating IgA nephropathy. *Curr Opin Nephrol Hypertens*. 2023;32(5):418–26.
4. National Cost Collection for the NHS. [<https://www.england.nhs.uk/costing-in-the-nhs/national-cost-collection/>]
5. Wheeler DC, Toto RD, Stefánsson BV, Jongs N, Chertow GM, Greene T, Hou FF, McMurray JJV, Pecoits-Filho R, Correa-Rotter R, et al. A pre-specified analysis of the DAPA-CKD trial demonstrates the effects of dapagliflozin on major adverse kidney events in patients with IgA nephropathy. *Kidney Int*. 2021;100(1):215–24.
6. Luta X, Diernberger K, Bowden J, Droney J, Howdon D, Schmidlin K, Rodwin V, Hall P, Marti J. Healthcare trajectories and costs in the last year of life: a retrospective primary care and hospital analysis. *BMJ Support Palliat Care* 2020.
7. Jhaveri KD, Bensink ME, Bunke M, Briggs JA, Cork DMW, Jeyabalan A. Humanistic and Economic Burden of IgA Nephropathy: Systematic Literature Reviews and Narrative Synthesis. *Pharmacoecon Open*. 2023;7(5):709–22.
8. Barbour S, Lo C, Espino-Hernandez G, Sajjadi S, Feehally J, Klarenbach S, Gill J. The population-level costs of immunosuppression medications for the treatment of glomerulonephritis are increasing over time due to changing patterns of practice. *Nephrol Dial Transpl*. 2018;33(4):626–34.
9. Hiragi S, Tamura H, Goto R, Kuroda T. The effect of model selection on cost-effectiveness research: a comparison of kidney function-based microsimulation and disease grade-based microsimulation in chronic kidney disease modeling. *BMC Med Inf Decis Mak*. 2018;18(1):94.
10. Li J, Cui Z, Long J, Huang W, Wang J, Zhang H, Wang H, Zhang L, Ronco P, Zhao MH. Primary glomerular nephropathy among hospitalized patients in a national database in China. *Nephrol Dial Transpl*. 2018;33(12):2173–81.
11. Lafayette R, Kristensen J, Stone A, Floege J, Tesar V, Trimarchi H, Zhang H, Eren N, Paliege A, Reich HN, et al. Efficacy and safety of a targeted-release formulation of budesonide in patients with primary IgA nephropathy (NefIgArd): 2-year results from a randomised phase 3 trial. *Lancet*. 2023;402(10405):859–70.
12. Rovin BH, Barratt J, Heerspink HJL, Alpers CE, Bieler S, Chae DW, Diva UA, Floege J, Gesualdo L, Inrig JK, et al. Efficacy and safety of sparsentan versus irbesartan in patients with IgA nephropathy (PROTECT): 2-year results from a randomised, active-controlled, phase 3 trial. *Lancet*. 2023;402(10417):2077–90.
13. Perkovic V, Trimarchi H, Tesar V, Lafayette R, Wong MG, Barratt J, Suzuki Y, Liew A, Zhang H, Carroll K, et al. Sibeprenlimab in IgA Nephropathy - Interim Analysis of a Phase 3 Trial. *N Engl J Med*. 2026;394(7):635–46.
14. Kooienga L, Lo J, Lee EY, Kim SG, Thomas H, Workeneh B, Agha I, Song Y, Smith W, van Eenennaam H, et al. Zigakibart demonstrates clinical safety and efficacy in a Phase 1/2 trial of healthy volunteers and patients with IgA nephropathy. *Kidney Int*. 2025;108(3):445–54.
15. Targeted-release budesonide for treating primary IgA nephropathy. TA937 [<https://www.nice.org.uk/guidance/ta937>]
16. Sparsentan for treating primary IgA nephropathy. TA1074 [<https://www.nice.org.uk/guidance/ta1074>]

Figures

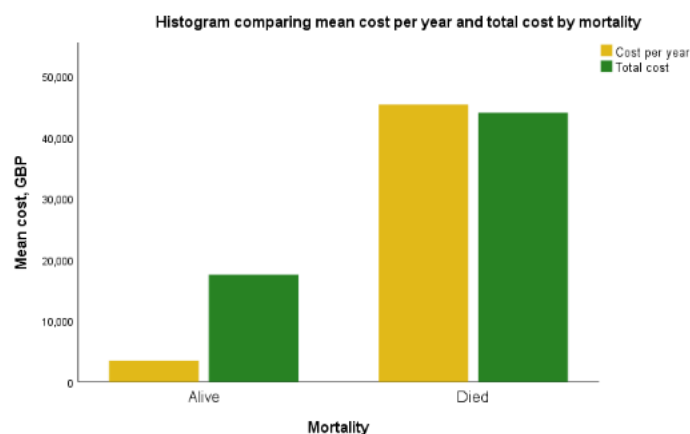


Figure 1

Mean cost per year and total cost during follow-up period by age group.

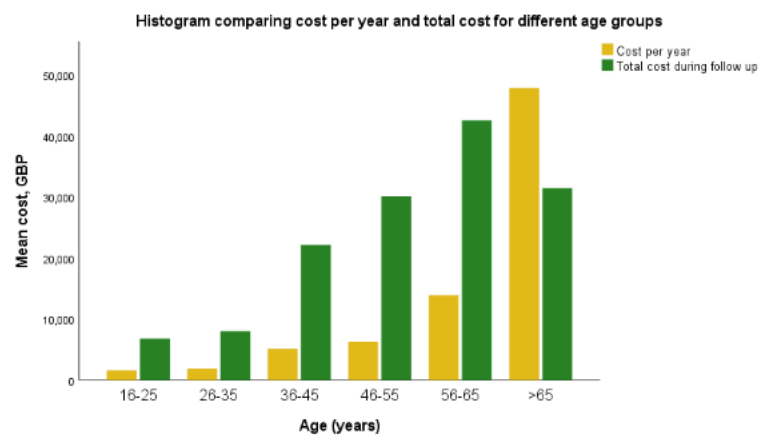


Figure 2

Mean cost per year and total cost for those patients still alive at study endpoint and those who had died.