WD1

# The critical role of the call bell in ensuring the safety and comfort of patients undergoing in-centre haemodialysis

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WEDNESDAY - Moderated Poster Session, HALL Q, March 11, 2026, 13:45 - 14:45

Introduction

Patients undergoing haemodialysis often experience prolonged periods of immobility and are at increased risk of medical emergencies during treatment. Immediate access to call bells is essential for ensuring timely medical intervention and ensure patients safety and comfort. Evidence suggests access to call bells was highly variable nationally with a survey of dialysis patients reporting nearly half expressing concern for their safety whilst dialysing.

Methods

A physical check of this unit during the morning and afternoon shifts was undertaken to assess how many patients had access to their call bell during treatment. In addition, 16 patients were randomly selected to complete a questionnaire. Question 1 asked Have you ever needed a call bell? If so, patients were then asked to describe what they needed to use the call bell for and how the lack of access affected them. Patient interviews were undertaken to gain deeper insights into their feelings of about call bell access and its impact on their comfort and safety.

Results

42 out of 97 patients (43%) were found without access to their call bell. Of the patients who undertook the questionnaire

· 6 reported needing the call bell due to haemodialysis machine issues

· 5 reported complications related to haemodialysis

· 3 used it to request assistance for discomfort

· 2 reported no need to use it

Most respondents reported feeling safe with their call bell within reach.

Discussion

Access to call bells is an often-overlooked communication tool. It remains simple but can be a vital intervention in promoting safety and comfort for patients on haemodialysis. We believe this issue is not unique to this unit however it is recommended that universal and

consistent access to call bells should be prioritised as a fundamental standard of care in dialysis units.

WD2

# Prevalence of Sarcopenia in Haemodialysis patients with low serum albumin and impact of dietary interventions

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WEDNESDAY - Moderated Poster Session, HALL Q, March 11, 2026, 13:45 - 14:45

Prevalence of Sarcopenia in Haemodialysis patients with low serum albumin and impact of dietary interventions

Chronic Kidney Disease patients particularly those on haemodialysis (HD) are at increased risk of Sarcopenia as highlighted by International Society of Renal Nutrition and Metabolism (ISRNM). With time gradual weight loss is apparent in such patients.

Latest guidelines by UK Renal Association recommend increased Energy and Protein requirements in these patients.

The aim of this study was to identify the relationship between low serum albumin and sarcopenia and impact of dietary input in such patients

Method:

Relevant data was collected from a Haemodialysis unit with a total of 96 patients dialysing from January 2024- January 2025. Out of this HD population- 11patients were identified who had consistently low serum albumin levels of <30g/l for ≥ 6 months.

An average Handgrip strength (HGS) reading was recorded using a hand dynamometer. Hand dynamometry is a core component of diagnostic criteria for conditions like sarcopenia and frailty as recommended by European working group on sarcopenia (EWGOS)

Total calories and protein requirements were calculated according to UKKA guidelines. An estimated oral intake was calculated via diet history provided by each patient. Dietary advice was provided to meet increased nutritional requirements. Six out of 11 patients were provided with Oral Nutrition supplements in addition to dietary advice

Revised Serum Albumin levels were recorded in a follow up dietetic review within 3-6 months of initial dietary review.

Results

Out of 11 patients- all had HGS score of less than 18 which indicates probable Sarcopenia among these patients

According to diet history recorded the average Estimated Nutritional Intake was less than Estimated Nutritional Requirement in all but 1 of these patients.

All patients lost weight except one, towards end of data collection. Two of these patients had significant weight loss of 10kg and 12kg post hospital admission.

Two of the participants passed away after the completion of audit (due to multiple co-factors including frailty and non-compliance to HD treatment) and one patient got transferred to another haemodialysis unit. This prevented further follow-up data collection to establish concrete results.

It was seen that 7 out of 11 (63.6%) patients showed improved albumin levels with two patients above 30 and one coming in close behind 29.6 following dietary review. Out of these 3 patients only one of them received additional Oral Nutrition Supplement along with dietary advice

Discussions:

The incidence of low albumin and Sarcopenia can be common among patients on haemodialysis. Increased energy and protein requirement can place them at high risk of Malnutrition.

This audit shows positive co relation of impact of dietary advice and improved albumin levels. It also shows that consistent low serum Albumin level can be a good independent indicator of malnutrition. However recorded weight loss in patient at the end of audit highlights the need for a proactive dietetic approach with frequent dietetic reviews and aggressive dietary treatment plan to help maintain weight and prevent malnutrition in these patients.

WD3

# Addressing challenging behaviour in a Haemodialysis Unit: A Quality Improvement Approach

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WEDNESDAY - Moderated Poster Session, HALL Q, March 11, 2026, 13:45 - 14:45

## Introduction

Aggression in haemodialysis units is an escalating international issue that jeopardizes the safety and well-being of staff and patients, yet it has received limited research attention. (Jones, 2014) Aggressive behaviour from patients, or their relatives pose significant challenges, impacting nurses' ability to deliver quality care, increasing stress, and consuming valuable time and resources. Evidence highlights the urgent need for effective prevention and management strategies. (Brunero, 2015)

## Aim

This project aimed to improve the management of challenging behaviour in a large single centre haemodialysis unit by:

1. Understanding staff experience of challenging behaviour

2. Developing effective prevention and management strategies.

3. Enhancing documentation of challenging behaviour incidents.

## Methods

A staff survey was conducted to better understand staff experiences with challenging behaviours. The survey took place from October to December 2024. Staff members across a variety of dialysis unit roles were surveyed including technicians, healthcare assistants and nurses.

Development of management strategies included reviewing existing trust policies and utilising trust expertise in escalating behaviour training to develop a haemodialysis unit specific policy.

## Results

20 participants completed the survey, and the results revealed:

• All participants had encountered challenging patient behaviour.

• 95% (19/20) reported experienced threatening or abusive language, often involving excessive swearing.

• 70% (14/20) encountered threatening behaviour (physical or verbal), while 35% (7/20) faced physical aggression.

• 70% of participants reported receiving no support following these incidents.

To address these issues, a behavioural chart was developed to document unacceptable behaviour, including verbal abuse, physical aggression, and sexual harassment. It also supports monitoring patients with dementia or confusion. We are currently awaiting sign off from the Trust legal team ahead of implementation.

## Discussion

A 2005 survey revealed that 80% of nephrology nurses experienced violence or aggression at work within a 12-month period (Sedgewick, 2005). It seems there has been no improvement in the past 20 years as these findings suggest that aggression and violence are widespread in this haemodialysis unit, with verbal abuse being the most common form. Despite these experiences, most staff reported a lack of support following incidents. The introduction of a behavioural chart provides a standardized tool for documentation and monitoring, enabling better management and prevention of challenging behaviours.

The behavioural chart, alongside the newly developed policy and procedure flowchart, offers a practical and scalable approach to managing challenging behaviours. Recommendations include integrating these tools into staff training and ensuring regular reviews to maintain effectiveness. By fostering a safer environment, these interventions can enhance the well-being of both staff and patients.

WD4

# Audit of Dialysis Initiation: Risk Factors for Unplanned Starts, Vascular Access, and Early Outcomes

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WEDNESDAY - Moderated Poster Session, HALL Q, March 11, 2026, 13:45 - 14:45

A substantial proportion of patients begin dialysis in an unplanned manner, often during hospital admission. This is linked to increased costs, higher morbidity, and early mortality. Previous studies suggest that diabetes and cardiovascular disease are associated with emergency initiation. Even within multidisciplinary CKD clinics, unplanned starts remain common, underscoring the challenge of predicting renal decline and ensuring timely preparation. These patients often miss out on pre-dialysis education and timely vascular access planning, leaving them more vulnerable in the early stages of renal replacement therapy.

Aim:
To audit all dialysis initiations between July 2024 and June 2025, quantify the proportion of unplanned starts, and identify clinical and demographic predictors to inform early identification and risk-stratification strategies.

Methods and Results:
A total of 148 patients initiated dialysis during the study period. Of these, 97 (66%) were elective starts and 51 (34%) were unplanned. Elective patients were slightly older (mean 61.7 vs 60.0 years).

Diagnostic patterns differed between groups: diabetic nephropathy (35%) and unknown aetiology (22%) were more common in unplanned starters compared with elective (29% and 8%, respectively). APKD and IgAN were less frequent in unplanned patients (4% and 2%) than in elective (16% and 10%).

Access at initiation showed marked differences. Elective starters most often commenced with a PD catheter (49%) or AVF (31%), whereas unplanned patients predominantly relied on femoral (43%) or tunnelled catheters (26%). At 90 days, 64% of elective HD patients were catheter-free, compared with only 17% of unplanned HD patients.

Hospitalisation within 90 days occurred in 23% of unplanned HD starters versus 16% of elective HD. Two unplanned HD patients required ICU admission. Catheter-related bloodstream infections were reported in 7% of unplanned HD patients versus 4% of elective HD.

Discussion:
This audit confirms that unplanned dialysis initiation remains common and is strongly associated with suboptimal vascular access and poorer early outcomes. The higher prevalence of diabetes and unknown diagnoses among unplanned starters highlights

opportunities for earlier identification and targeted risk stratification. Protective trends seen in APKD and IgAN reflect conditions more often detected early within specialist pathways.

These findings suggest that refining current initiation bundles to better address high-risk groups—particularly those with diabetes, cardiovascular disease, or obesity—may improve outcomes. Limitations include the single-centre setting and modest sample size, but the results provide actionable insights for quality improvement. Embedding risk-stratification tools into CKD care pathways may support sustainability and could be adapted to other centres aiming to reduce catheter dependence and improve planned initiation.

WD5

# Identifying and managing falls risk for in-centre haemodialysis patients : A proactive nursing approach

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WEDNESDAY - Moderated Poster Session, HALL Q, March 11, 2026, 13:45 - 14:45

## Introduction

Evidence suggests that worldwide, 27.1% of people on dialysis experience falls. We know that renal haemodialysis patients are at a higher risk of harm from falls due to the increased risk of fractures. Patients on dialysis are nearly 5 times as likely to have a hip fracture as patients without CKD. We also know that this increased risk can have a huge impact on mortality rates within the renal population, especially the elderly. Despite this, falls prevention remains under prioritised in routine renal care planning.
Historically in our unit we have given more focus to the care post falls, as opposed to the risk of patients having a fall. Recognising this, we did a thematic review of all falls to gain understanding of the approach required. The initiative aimed to shift from a reactive to a proactive model of care, grounded in clinical evidence and supported by quality improvement methodology.

## Methods

The team observed a concerning trend of increased falls, including instances where patients sustained harm. In response, we initiated a thematic review to examine all reported falls occurring throughout 2024, aiming to identify patterns, contributory factors, and opportunities for prevention.
The review monitored many aspects of each fall. This included patients age, cause of fall, time of fall, and the harm the fall caused. We aimed to understand the risk factors involved with falls so we could develop evidence-based assessments and care plans.
We also reached out to the Trusts falls team, and our renal Critically Appraised Topic (CAT) group to review falls research, critically appraise the project and improve its validity by ensuring the project was overseen by renal nurses and a clinical librarian who have an interest in research and clinical improvement.

## Results

Between 2022 to 2023, we had a 42% increase in falls, followed by a further 57% rise between 2023 to 2024. All falls during 2024 were examined. The thematic review of the falls showed that 78% of patients were over 65 years of age, 63% of the falls were due to syncope, 86% of falls were associated with patient-related factors such as frailty, hypotension, or impaired mobility and 62% of the falls occurred post dialysis.
We used these findings to devise a nurse-led, evidence-based falls risk assessment so we could identify patients who were high falls risk.
Alongside this, we created a high falls risk care plan with the aim to reduce the risk of falls and harm. This was based on the findings from the review and the research we found throughout this clinical improvement journey. Examining each fall helped us to determine

the causes and produce a number of recommendations/preventative measures which contributed to the development of the care plan.

## Discussion

This project identified a gap in our nursing assessment and care planning. It also provided us with clear risk factors which contribute to a fall. This data contributed to developing a falls risk assessment and a care plan for patients identified as high falls risk. The newly implemented falls risk assessment tool and care plan is currently in use across our incentre haemodialysis unit. Supported with education sessions, nurses are comfortable using the tool and find it easy to use.

WD6

# QI Abstract: Haemodialysis Prescription and Dialysis Access Update in New Starters

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WEDNESDAY - Moderated Poster Session, HALL Q, March 11, 2026, 13:45 - 14:45

Introduction
Timely and accurate haemodialysis (HD) prescription and documentation of dialysis access are critical to ensuring patient safety, continuity of care, and effective HD delivery. Delays or omissions can contribute to complications such as line sepsis, inappropriate dialysis dosing, or prolonged inpatient stays. The aim of this project was to measure the compliance with HD prescription and access documentation for new dialysis starters, identify delays in practice, and implement changes to improve compliance and timeliness.
QI Methodology
A two-cycle audit was conducted, targeting all new HD patients at Oxford University Hospitals (Main and Tarvers dialysis units, and the Acute Dialysis Team).

Cycle 1 (Baseline): March–April 2021

Cycle 2 (Post-intervention): December 2021–February 2022

Intervention:

Staff surveys (email and paper) identified barriers to prescription and documentation.

Actions taken:

Staff engagement sessions

Targeted education

Reminders in clinical areas

Data sources: EPR and Proton systems.

Outcomes tracked: compliance % and delay in days.
Results
Please insert in order
Table 1
Graph 1
Graph2
Graph 3
Discussion

This QI project demonstrated that simple, low-resource interventions—such as targeted staff awareness and direct feedback—can significantly improve compliance with critical documentation tasks in HD care. Key outcomes included:

A 3.6-fold improvement in HD prescription compliance

Significant reduction in prescription delay

Dialysis unit achieved 100% compliance

Continued challenges in access documentation delays, suggesting a need for:

Automated documentation prompts

Streamlined EPR integration

Next steps: Embed audits into regular practice, explore automation options, and extend this model to broader QI projects such as Tesio line care and infection prevention.

WD7

# Rationalising the targets in Haemodiafiltration: Convection volume or β2-Microglobulin clearance?

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WEDNESDAY - Moderated Poster Session, HALL Q, March 11, 2026, 13:45 - 14:45

Background:
Adoption of Haemodiafiltration (HDF) is increasing due to evidence of survival benefit in HDF compared to high flux Haemodialysis (HD). Enhanced middle-molecules clearance may be driving this benefit. However, the trials comparing HDF vs HD have failed to demonstrate consistent reduction in pre-dialysis β2-Microglobulin (β2M) (a surrogate middle molecule) in HDF. This may be due to dominant effects of Residual Kidney Functions (RKF) on pre-dialysis β2M levels, which was not reported in these trials.
Additionally, the benefits of HDF are related to convection volume, however no studies have examined the relationship between β2M clearance and convection volume.
Due to lack of understanding of relationship between convection volume and clearance parameters, current HDF practice relies on achieving 'All or None' high convection volume (≥23 Litres) without any individualisation.
Rationalising the HDF prescription by translating the convection volume to clinically relevant β2M clearance and potentially individualising it based on RKF is required, which we aimed in this study.
Methods:
We conducted a cross-sectional study involving 304 adult participants on maintenance haemodialysis and on post-dilutional HDF for >4 weeks. We observed one HDF session to record delivered convection volume and measured pre-and post-dialysis serum β2M for the same session. Renal urea clearance (KrU) was measured using interdialytic urine collection.
Results:
In a multivariable linear regression model the significant predictors of β2MRR were convection volume, BSA and dialyser ultrafiltration coefficient ($p < 0.001$, R2 0.62).
When analysed using categories of high vs low convection volume (≥23Litres vs <23Litres) B2MRR was significantly higher in high convection volume group (76.2 % vs 64.7%, $p < 0.001$).
There was no correlation between β2MRR and KrU. Pre-dialysis β2M, however, showed significant negative correlation with KrU (R2 0.47).
Significant predictors of post dialysis β2M in multivariable regression were pre dialysis β2M and β2MRR (R2 0.96), which in turn were related to KrU and convection volume respectively.
Discussion:
The study suggests β2MRR has significant correlation with convection volume. Patients achieving ≥23 L convection volume achieve a mean β2MRR of 76.2%. This may be an indication of the optimum B2MRR required to gain maximum benefit from HDF.
Using β2MRR target as an indictor of HDF adequacy instead of HDF volume may be clinically more relevant and more applicable to a wide range of dialysis therapies including non-HDF

treatment such as medium cut off dialysers. This method of dialysis adequacy assessment may be superior to conventional urea clearance because it reflects both small molecule clearance as well as middle molecules clearance.

Post dialysis β2M level may be clinically more meaningful than β2MRR as it embodies the effect of RKF as well as HDF convection volume, both of which are independent predictors of better outcomes.
This study did not find any correlation between B2MRR and KrU. Hence, it isn't possible to make any recommendation on individualising the HDF based on RKF. A formal kinetic modelling to assess the β2M mass removed and its correlation with RKF, if any, may be able to achieve that.

WD8

# Impact of dialysis modalities on hospitalisation: a systematic review and meta-analysis comparing haemodialysis vs peritoneal dialysis

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WEDNESDAY - Moderated Poster Session, HALL Q, March 11, 2026, 13:45 - 14:45

Background: Patients with chronic kidney disease initiating dialysis experience frequent hospitalisations, which impact morbidity, mortality, and healthcare burden. Comparative hospitalisation between haemodialysis (HD) and peritoneal dialysis (PD) patients remains a contentious subject given the dynamic nature of dialysis treatment. We aimed to perform a meta-analysis comparing hospitalisation among patients commenced on HD and PD, accounting for transitions in dialysis modality to reflect real-world practice.

Methods: We conducted a systematic review and meta-analysis of prospective and retrospective cohort studies comparing hospitalisation rates, time to first admission, and number of admission days between HD and PD, including both intention-to-treat and as-treated analysis. Pubmed, Embase, and Cochrane databases were searched for studies published up to February 2025. Rate ratio (RR) and hazard ratio (HR) with 95% confidence intervals (CI) were pooled across studies.

Results: Out of 2596 database results, 7 cohort studies with a total of 35,054 patients were included. Across multiple studies, intention-to-treat analyses showed no significant difference in overall hospitalisation rates between HD and PD (RR 1.04; 95% CI 0.79-1.36). However, as-treated analyses demonstrated fewer hospitalisations with HD (RR 0.87; 95% CI 0.81-0.94). HD was also associated with a delayed time to first hospitalisation (HR 0.87; CI 0.79-0.96) and fewer hospital admission days, both in intention-to-treat (RR 0.73; CI 0.59-0.91) and as-treated analyses (RR 0.77; CI: 0.70-0.84). Heterogeneity was high in some models, but findings were consistent in as-treated analyses. Overall, these results suggest that HD is associated with fewer and shorter hospitalisations compared with PD.

Conclusion: This meta-analysis revealed that patients who initially started on HD or PD have similar hospitalisation rates. However, when accounting for modality switches, HD was associated with a lower rate of hospitalisation. In addition, patients on HD experienced delayed time to first hospital admission and fewer hospitalisation days compared to PD, although the effect appeared modest.

WD9

# A novel approach to estimating non-renal β2-Microglobulin clearance.

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WEDNESDAY - Moderated Poster Session, HALL Q, March 11, 2026, 13:45 - 14:45

Introduction:
Global Increase in uptake of hemodiafiltration (HDF) has revived interest in middle molecules clearance, which can potentially be used as a tool for measuring HDF adequacy. A precise understanding of kinetics of a surrogate middle molecule (e.g.Beta 2 Microglobulin (β2M)) would be the first step in that direction. Data on β2M generation, distribution and dialysis clearance and renal clearance (Kr) are available, but non-renal clearance (Knr) is poorly understood and is required for calculation of β2M removal.
Non-renal β2M clearance is believed to occur via the reticuloendothelial system (RES). Kinetic studies with isotope labelled β2M in anuric subjects suggest Knr ~3 mL/min. However, this fixed value implies substantially large non-renal β2M mass removal, exceeding the dialytic β2M mass removal in anuric patient. This appears physiologically implausible. Clinical observations of dialysis related amyloidosis in eras of low flux dialysis and its decreasing prevalence with increasing high flux HD and HDF highlights the critical role of dialysis in β2M mass removal. A capped Knr in keeping with RES receptor saturation, particularly at low Glomerular Filtration Rate (GFR) have more physiological plausibility.
Objective:
To explore Knr β2M and non-renal β2M mass removed with varying levels of GFR.
Methods:
A 2-pool kinetic model was constructed for a simulated non dialysis population with average anthropometry (age 70, weight 75 kg, height 175 cm) and varying levels of GFR(Figure1). Following steady-state principle was used to estimate Knr:
G=Kr+Knr
Where G=0.12 mg/kg/hr and Kr=GFR.
Steady state β2M concentrations corresponding to GFR levels were drawn from a previously published literature. Two modelling strategies were applied: (1) a non iterative model comparing uncapped Knr = 3 mL/min vs. a capped non renal mass removal (maximum 500 mg/week), and (2) an iterative model in which Knr was adjusted at each GFR to match simulated to observed β2M concentrations.
Results:
The non iterative model with a fixed Knr of 3ml/min underestimated β2M concentrations at GFR<5ml/min, indicating overestimation of non renal removal. Applying a cap of 500 mg/week improved fit to measured concentrations(Figure2).
In the iterative model Knr increased with falling GFR and rising β2M concentration up to 3.9 mL/min at GFR 16 mL/min (β2M 7.5 mg/L). Below this GFR, Knr plateaued and β2M mass removal was capped by a saturation factor (≤1)(Figure3,4) as demonstrated in the following equation:

Non renal β2M mass removal= β2M concentration×Knr×Saturation Factor

Within β2M concentration range 10 40mg/L, the saturation factor can be determined as:
Saturation Factor=1.815-0.378×ln(β2M)

Discussion:
Our simulation modelling shows Knr is not fixed at 3 mL/min. Instead, it appears to increase with reducing GFR up to a saturation point, after which it plateaus. Non renal β2M mass removal therefore has a physiologic ceiling.
Despite a very small clearance relative to dialytic clearance, due to Knr being continuous (like Kr) its overall impact on β2M mass removal is substantial. Therefore, a better understanding of Knr is crucial to increase the reliability of the model in estimating β2M kinetics.
These findings suggest that modelling of β2M kinetics should incorporate a saturable non renal clearance mechanism.

WD10

# Long COVID (or) post-COVID-19 condition in adults receiving dialysis - A systematic review

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WEDNESDAY - Moderated Poster Session, HALL Q, March 11, 2026, 13:45 - 14:45

Introduction:
In patients receiving dialysis, long COVID (LC) or post-COVID-19 condition is defined as symptoms persisting beyond 12 weeks of a COVID-19 infection. These symptoms overlap with common symptoms faced routinely by dialysis patients, including fatigue, sleep disturbance and dyspnea, which makes the diagnosis a challenge. This systematic review was conducted to explore the burden, pattern and factors associated with LC in patients receiving dialysis.

Methods:
A systematic literature search was conducted by two authors VM and AR using the following keyword combinations ("Long COVID and Dialysis", "Post-COVID-19 condition and Dialysis", "Long COVID and haemodialysis", "Post-COVID-19 condition and haemodialysis", "Long COVID and peritoneal dialysis", "Post-COVID-19 condition and peritoneal dialysis") in PUBMED, Medline ProQuest and ScienceDirect websites. The inclusion criteria were published English language full-text articles on LC or post-COVID condition in adult (>18) patients receiving dialysis between January 2020 and June 2025. The study was conducted according to the PRISMA guidelines and registered on the PROSPERO website.

Results:
The PRISMA flowchart of the final studies (n=7) included in the qualitative analysis after exclusion of duplicates and relevance is illustrated in Figure 1. The prevalence of LC was reported in more than 68% of the maintenance haemodialysis patients, with older age, female sex, high comorbid burden, severe COVID-19 and lower post infection antibody levels being significant risk factors (Zhao et al., 2024). Further, a national survey on French dialysis patients reported that 1in 6 patients who have COVID-19 will have LC(Belkacemi et al., 2022). The most common symptoms of LC in dialysis patients were fatigue or muscle weakness (48%), palpitations (30%), sleep difficulties (29%), and nausea (27%)(Och et al., 2021). Data from ERACODA showed that most patients recovered to their pre-existing mental and functional status in 3 months post-infection (Hemmelder et al., 2022) , although lower HRQoL scores were reported in other cohorts(Shaban et al., 2024). A 1 in 17 prevalence with predominant symptoms (fatigue, dyspnea and muscle weakness) and risk factors being low antibody titer was also reported in patients with LC in advanced CKD in Netherlands (Bouwmans et al., 2024). (Table 1)

Discussion:
Long COVID has a significant impact on functional status and QoL in patients receiving dialysis. There is a lack of evidence in the dialysis population, more so in patients receiving

home therapies (peritoneal dialysis). Systematic screening for post-COVID-19 condition symptoms 8-12 weeks post-COVID-19 infection would guide the referral of these patients for early rehabilitation and psychological counselling.

WD11

# Diabetic ketoacidosis in dialysis patients: a physiology-based framework for safe, individualised management

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WEDNESDAY - Moderated Poster Session, HALL Q, March 11, 2026, 13:45 - 14:45

Introduction
Applying standard diabetic ketoacidosis (DKA) protocols to dialysis patients can be unsafe, precipitating pulmonary oedema, refractory hyperkalaemia, or fatal hypoglycaemia within hours. In the absence of dialysis-specific guidance, clinicians are forced to improvise. This review synthesises contemporary evidence into a physiology-based bedside framework designed for safe and reproducible practice in dialysis-dependent patients. Mortality rates in dialysis-associated DKA remain substantially higher than in the general population, amplifying the urgency for adapted pathways.

Methods
A narrative search was conducted across PubMed/MEDLINE, Embase, and Google Scholar (Jan 2004–Jun 2024), prioritising observational studies, consensus guidelines, and physiology-based reviews in adult dialysis populations. Case reports were used only to illustrate phenotypes or pitfalls. No preregistered protocol or meta-analysis was undertaken. This approach was chosen because dialysis-associated DKA is both rare and heterogeneous, making quantitative synthesis impractical. Inclusion was broad, spanning haemodialysis and peritoneal dialysis cohorts, with emphasis on clinically applicable physiology and workflow barriers.

Results
Three domains emerged as decisive for safe practice.

Volume phenotyping: Dialysis patients may present as hypovolaemic, euvolaemic, or hypervolaemic. Reflexive crystalloid boluses—safe in conventional DKA—can trigger pulmonary oedema. Phenotype-first assessment, supported by examination and point-of-care ultrasound, guides fluid choice: cautious aliquots (250–500 mL) if hypovolaemic; avoidance if euvolaemic; insulin-first with early dialysis if hypervolaemic. Illustrative cases show that phenotype stratification prevents both fluid overload and undertreatment.

Insulin–glucose decoupling: Reduced renal clearance prolongs insulin half-life, while uraemic resistance makes requirements unpredictable. A “dry insulin” strategy—low-dose variable-rate infusion (~0.05 U/kg/h) titrated to ketone clearance (β-hydroxybutyrate fall ≥0.5 mmol/L/h)—with independent dextrose infusion (D10–D20) maintains glucose 8–12 mmol/L, promoting ketosis resolution without fluid overload.

Electrolyte and acidosis control: Total body potassium is typically elevated. Supplementation is unnecessary unless $K^+$ <3.5 mmol/L. Dialysis should be initiated for refractory hyperkalaemia (≥6.0 mmol/L with ECG changes or ≥6.5 mmol/L despite insulin) or severe

acidosis (pH <7.1). Sustained low-efficiency dialysis (SLED) is preferred to avoid osmotic shifts; peritoneal dialysis may suffice in selected cases. Bicarbonate is reserved for extremis only when dialysis is unavailable.
Service-level themes included training gaps, rigid generic protocols, and limited access to bedside β-hydroxybutyrate monitoring. Key audit metrics were hypoglycaemia incidence, inappropriate fluid use, time-to-dialysis initiation, and phenotype misclassification rates.

## Discussion

Dialysis-specific constructs—volume phenotyping, dry insulin with glucose decoupling, and dialysis-trigger thresholds—are essential to reduce iatrogenic harm. This framework addresses a high-mortality emergency that has long lacked evidence-based guidance. For frontline registrars, it clarifies escalation thresholds; for nursing teams, it defines safe infusion gates; and for service leads, it demonstrates how renal-specific DKA pathways can prevent recurrent harm. It provides a reproducible template for UK renal services. Embedding these principles transforms management from improvisation to structured, physiology-driven care.

## Implication

Dialysis-specific DKA pathways, centred on phenotype-first assessment and dry insulin protocols, should be embedded across UK renal services to improve patient safety and outcomes.

## Next step

Prospective registries and pragmatic SLED-based trials are needed to validate and refine these strategies in real-world practice. Embedding such constructs could redefine how renal emergencies are taught, audited, and delivered across the NHS.