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Effect of a dynamic positioning–assisted dialysis nursing model on dry weight attainment

Submission date	Recruitment status	[_] Prospectively registered
03/07/2026	Recruiting	[_] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
11/07/2026	Ongoing	[_] Results
Last Edited	**Condition category**	[_] Individual participant data
08/07/2026	Urological and Genital Diseases	[X] Record updated in last year

Plain English summary of protocol
Not provided at time of registration

Contact information

Type(s)
Principal investigator, Scientific, Public

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Study information

Scientific Title
Effect of a dynamic positioning–assisted dialysis nursing model on dry weight attainment

Study objectives
Based on the concept of the Hydrostatic Indifference Plane (HIP), investigate the hemodynamic effects of the combined Passive Leg Raising (PLR) and Tilt position on maintenance hemodialysis (MHD) patients, with a focus on preventing intradialytic hypotension (IDH) and hypertension during dialysis blood reinfusion, thereby improving the achievement rate of Dry Weight (DW).

Ethics approval required
Ethics approval required

Ethics approval(s)
Submitted 25/02/2022, Ethics Committee of China Three Gorges University (Gezhouba Central Hospital of Sinopharm, Yichang City, 443002, China; +86 139 7200 0727; -), ref: 2022BA002

Primary study design
Interventional

Allocation
Randomized controlled trial

Masking
Blinded (masking used)

Control
Uncontrolled

Assignment
Parallel

Purpose
Device feasibility

Study type(s)

Health condition(s) or problem(s) studied
Maintenance hemodialysis

Interventions
72 MHD patients were randomly divided into an observation group and a control group (36 each). Computer-generated block randomisation (block size 6) was used with allocation concealed with sequentially numbered opaque sealed envelopes.

Intervention: Dynamic positioning dialysis nursing model guided by relative blood volume monitoring, including passive leg raising during ultrafiltration and sequential tilt/sitting posture adjustment during blood reinfusion, delivered 3 times weekly over 3 months. Comparator: Standard maintenance haemodialysis with fixed supine position and no positional intervention.

Using the Fresenius 4008S dialyzer's relative blood volume (RBV) monitoring, the control group stopped ultrafiltration when the RBV curve dropped sharply, while the observation group maintained PLR. If the RBV curve rebounded, ultrafiltration was resumed with an extra 150–500 ml; if it plateaued, the current weight was set as provisional DW. The study compares the overhydration (OH), total body water (TBW), extracellular water (ECW), intracellular water (ICW), as well as the systolic blood pressure (SBP), diastolic blood pressure (DBP), and mean arterial pressure (MAP) at the start of dialysis, the end of ultrafiltration, and the end of dialysis blood reinfusion between the two groups. Over 3 months, indicators like IDH incidence, ultrafiltration adjustments, overhydration (OH), TBW, ECW, ICW and DW compliance rate were compared.

Intervention Type

Device

Phase
Phase III

Drug/device/biological/vaccine name(s)
Dynamic positioning–assisted dialysis nursing model

Primary outcome(s)
1. achievement rate of dry weight measured using thoracic bioelectrical impedance analysis (NICaS BIA) at baseline and 3-month follow-up

Key secondary outcome(s)
1. Incidence of intradialytic hypotension (IDH) measured using real-time bedside blood pressure monitoring at each 4-hour dialysis session over 3 months

2. Overhydration (OH), total body water (TBW), extracellular water (ECW), intracellular water (ICW), ECW/TBW and ECW/ICW ratios measured using NICaS BIA at baseline and 3-month follow-up

3. Systolic blood pressure (SBP), diastolic blood pressure (DBP), and mean arterial pressure (MAP) measured using electronic sphygmomanometer at dialysis initiation, end of ultrafiltration and completion of blood reinfusion per session

4. Mean ultrafiltration volume and relative blood volume (RBV) fluctuation measured using Fresenius 4008S dialysis machine BVM monitoring system at each dialysis session for 3 months

Completion date
03/07/2028

Eligibility

Key inclusion criteria
1. MHD duration of more than 6 months
2. Independent in daily activities
3. Receiving regular HD sessions three times per week

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 Years

Upper age limit
75 Years

Sex

All

Total final enrolment
72

Key exclusion criteria
1. Patients with fractures, spinal deformities, or impaired self-care ability
2. History of severe hepatic, pulmonary, or neurological diseases
3. Body mass index (BMI) <18.5 kg/m² (underweight)

Date of first enrolment
03/07/2026

Date of final enrolment
03/07/2028

Locations

Countries of recruitment
China

Sponsor information

Organisation
Gezhouba Central Hospital of Sinopharm

ROR
https://ror.org/0027z3756

Funder(s)

Funder type

Funder Name
Investigator initiated and funded

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available