

# Clinical outcomes of peritoneal dialysis and hemodialysis in patients with end-stage renal disease: A systematic review and meta-analysis

INPLASY2025120071

doi: 10.37766/inplasy2025.12.0071

Received: 19 December 2025

Published: 19 December 2025

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**ADMINISTRATIVE INFORMATION**

**Support** - This study was supported by the Science and Technology Department of Gansu Province, No. 20JR5RA35; the Talent Innovation and Entrepreneurship Project of Science and Technology Bureau of Cheng Guan District, Lanzhou, No. 2020RCCX0030; the Science and Technology Project of Gansu Province, RuiE Emergency Medicine Research Special Fund Support Project, No. 22JR10KA009. the Natural Science Foundation of Gansu Province Project, No. 25JRRA567.

**Review Stage at time of this submission** - Data analysis.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY2025120071

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 December 2025 and was last updated on 19 December 2025.

**INTRODUCTION**

**Review question / Objective** This systematic review and meta-analysis aims to compare the clinical outcomes of PD versus HD in ESRD patients to inform clinical decision-making.

**Condition being studied** Peritoneal dialysis (PD) and hemodialysis (HD) are the two primary dialysis modalities; however, existing evidence presents conflicting conclusions regarding their comparative effects on long-term survival and complication risks.

**METHODS****Search strategy**

Search strategy in PubMed:

#1 ("peritoneal dialysis"[MeSH Terms] OR "peritoneal dialysis"[Title/Abstract])  
 #2 ("renal dialysis"[MeSH Terms] OR "hemodialysis"[Title/Abstract] OR "hemodialysis units, hospital"[MeSH Terms])  
 #3 #1 AND #2  
 #4 ("kidney failure, chronic"[MeSH Terms] OR "End-stage renal disease"[Title/Abstract] OR "End-stage kidney disease"[Title/Abstract] OR "ESRD"[Title/Abstract] OR "End Stage Renal Failure"[Title/Abstract] OR "Chronic kidney disease stage 5"[Title/Abstract])  
 #5 #3 AND #4

Search strategy in EmBase:

#1 'peritoneal dialysis'/exp OR 'peritoneal dialysis':ti,ab,kw  
 #2 'hemodialysis'/exp OR 'hemodialysis':ti,ab,kw  
 #3 #1 AND #2

#4 'chronic kidney failure'/exp OR ('end-stage renal disease' OR 'esrd' OR 'chronic kidney disease stage 5'):ti,ab,kw  
#5 #3 AND #4

Search strategy in Cochrane library:

#1 (peritoneal dialysis):ti,ab,kw  
#2 (hemodialysis OR "haemodialysis" OR "hemo-dialysis"):ti,ab,kw  
#3 #1 AND #2  
#4 ("end-stage renal disease" OR "end-stage kidney disease" OR ESRD OR "end stage renal" OR "chronic kidney disease stage 5" OR "stage 5 chronic kidney disease"):ti,ab,kw  
#5 #3 AND #4

Search strategy in Web of Science:

#1 TS=("peritoneal dialysis")  
#2 TS=("hemodialysis" OR "haemodialysis")  
#3 #1 AND #2  
#4 TS=("end-stage renal disease" OR "end-stage kidney disease" OR "ESRD" OR "end stage renal" OR "chronic kidney disease stage 5")  
#5 #3 AND #4.

**Participant or population** Adult patients diagnosed with ESRD.

**Intervention** PD.

**Comparator** HD.

**Study designs to be included** Prospective or retrospective studies.

**Eligibility criteria** Studies were included based on the following PICOS framework: (1) Population: adult patients diagnosed with ESRD; (2) Intervention & Comparison: PD compared directly with HD; (3) Outcomes: the primary outcome was all-cause mortality, and secondary outcomes included treatment-related complications; (4) Study design: prospective or retrospective studies directly comparing PD and HD.

**Information sources** PubMed, EmBase, the Cochrane Library, and Web of Science.

**Main outcome(s)** All-cause mortality.

**Additional outcome(s)** Treatment-related complications.

**Quality assessment / Risk of bias analysis** Newcastle-Ottawa Scale (NOS).

**Strategy of data synthesis** All meta-analyses employed random-effects models.

**Subgroup analysis** Pre-specified subgroup analyses were performed to explore potential sources of heterogeneity based on publication year, study design, geographical region, mean age, proportion of males, proportion of diabetic patients, follow-up duration, and study quality.

**Sensitivity analysis** Sensitivity analysis was conducted by sequentially removing each study and recalculating the pooled estimate to evaluate result robustness.

**Language restriction** No restriction.

**Country(ies) involved** China.

**Keywords** peritoneal dialysis; hemodialysis; end-stage renal disease; systematic review; meta-analysis.

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