

N4 — UF Rate and Treatment Time

FRONT

Remove the fluid without exceeding a safe ultrafiltration (UF) rate. When it won't fit, add time — not rate.

When: setting the UF goal at the start of every treatment.

Do this

1. **UF goal** = weight above target + rinse-back and saline + intake during treatment (per unit practice).
2. **UF rate (mL/kg/h)** = UF goal (mL) ÷ hours ÷ target weight (kg).
3. **Ceiling: 13 mL/kg/h.** It is a ceiling, not a goal — lower is better; below 10 when possible [1].
4. **Heart failure:** aim for 10 mL/kg/h or less [2].
5. **Patients over 80 kg:** also keep the absolute rate at or below about 1,000 mL/h [3].
6. If the goal won't fit under the ceiling, extend time per your unit protocol's standing order, using the table.

Most fluid that fits at 13 mL/kg/h, capped at 1,000 mL/h [1,3]:

Target weight	4 h	4.5 h	5 h
50 kg	2.6 L	2.9 L	3.2 L
60 kg	3.1 L	3.5 L	3.9 L
70 kg	3.6 L	4.1 L	4.5 L
80 kg or more	4.0 L (cap)	4.5 L (cap)	5.0 L (cap)

Call the nephrologist when

- The fluid won't fit even with the extension your protocol allows — an extra session may be needed.
- The UF rate exceeded 13 mL/kg/h, or about 1,000 mL/h in a patient over 80 kg, in any session where time could not be extended [1,3].
- The patient refuses extra time.
- High potassium or a missed treatment accompanies the fluid gain — this needs full dialysis, not UF alone.
- The gain after the long weekend is repeatedly the problem [5].

Don't

- Don't raise the UF rate to “catch up” on the target in the same time.
- Don't treat 13 mL/kg/h as a goal to reach.
- Don't use isolated UF when potassium or clearance is the issue.
- Don't use sodium profiling to push more fluid off [6].

Why

1. Mortality rose about 3% for each 1 mL/kg/h of UF rate, starting below 10 [1]. Above 13 versus 10 or less: HR 1.59 in the HEMO cohort [2].
2. Heart failure patients showed excess risk even at 10–13 mL/kg/h [2].
3. At 13 mL/kg/h, risk was much higher for a 100-kg patient than a 60-kg patient; above 1,000 mL/h, risk was high regardless of size [3].
4. Each extra 30 minutes of treatment time was associated with about 6% lower mortality [4]; the long weekend gap carries the most heart failure and arrhythmia admissions [5].
5. Routine sodium profiling was associated with higher mortality (HR 1.36) [6].

Go deeper

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References

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2. Flythe JE, et al. Rapid fluid removal during dialysis is associated with cardiovascular morbidity and mortality. *Kidney Int.* 2011;79:250-257. <https://pubmed.ncbi.nlm.nih.gov/20927040/>
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4. Tentori F, et al. Longer dialysis session length is associated with better intermediate outcomes and survival (DOPPS). *Nephrol Dial Transplant.* 2012;27:4180-4188. <https://pubmed.ncbi.nlm.nih.gov/22431708/>
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6. Dasgupta I, et al. Associations between hemodialysis facility practices to manage fluid volume and intradialytic hypotension and patient outcomes. *Clin J Am Soc Nephrol.* 2019;14:385-393. <https://pubmed.ncbi.nlm.nih.gov/30723164/>

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