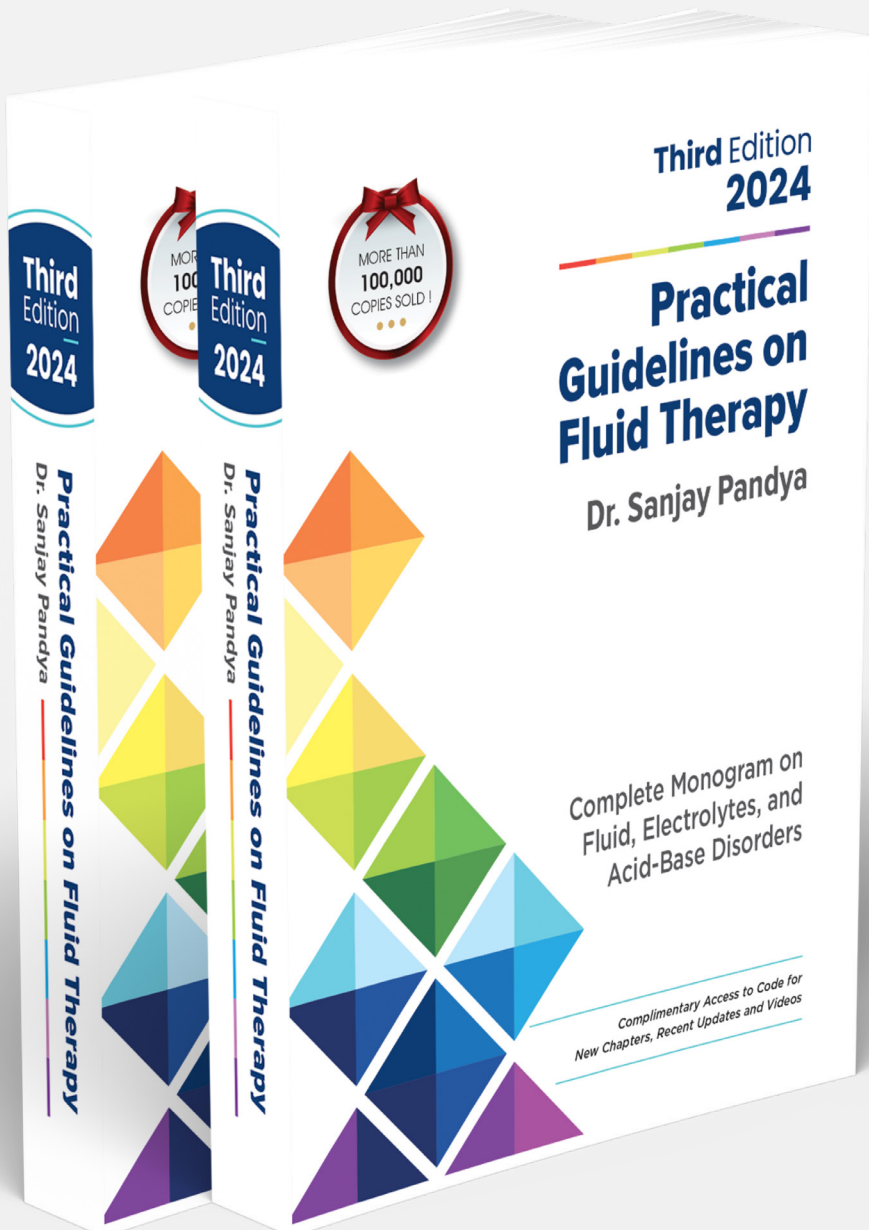




Fluid
therapy.org

Chapter 6:

Principles, Planning, and Prescribing Fluid Therapy



To get a copy of the book, visit: www.fluidtherapy.org

6

Principles, Planning, and Prescribing Fluid Therapy

Goals of Fluid Therapy.....	67	Resuscitation fluids	70
Principles and Guidelines.....	68	Maintenance fluids	70
Planning and Prescribing	68	Replacement fluids.....	71
Indications.....	70		

Fluid administration is commonly needed in hospitalized patients, especially in an emergency, ICU, and surgical units.

Why is it important to plan and prescribe fluid therapy meticulously?

- Fluid administration is an essential and most commonly required intravenous treatment in acutely ill hospitalized patients [1, 2].
- Timely, appropriate, and properly designed intravenous fluid administration is lifesaving [2, 3].
- The prescription plans of fluid therapy vary markedly in different dynamic phases, demanding frequent attention, evaluation, and necessary changes.
- Prescribing intravenous fluids is complex. Unfortunately, doctors' basic knowledge and understanding of prescribing intravenous (IV) fluids are poor, and errors in planning appropriate fluid type, rate, or volume

lead to morbidity and mortality, which is preventable [4–7].

- IV fluids are not just an innocent bag of water; their under or over-administration may be potentially harmful [8–11].
- Fluid overload is one of the most common complications of overzealous IV fluid administration, which is often overlooked but is harmful [10, 12–18].

Because of the possibilities of multifactorial errors and harmful effects, it is recommended to use the right type of fluid, in the right volume at the right time, by the right route (in a similar way as using any other pharmacological prescription antibiotics or drugs), and tailor the fluid therapy to meet the patient's individualized needs which reduces the risks and improves the outcome [2, 10, 19, 20].

Want to read more?

Get Printed Version

Get Kindle Version

REFERENCES

1. Finfer S, Myburgh J, Bellomo R. Intravenous fluid therapy in critically ill adults. *Nat Rev Nephrol*. 2018;14(9):541–557.
2. Martin C, Cortegiani A, Gregoretto C, et al. Choice of fluids in critically ill patients. *BMC Anesthesiology* 2018;181):200.
3. Hoste EA, Maitland K, Brudney CS, et al. Four phases of intravenous fluid therapy: a conceptual model. *Br J Anaesth*. 2014;113(5):740–747.
4. Ramsay G, Baggaley A, Vaughan Shaw PG et al. Variability in the prescribing of intravenous fluids: A cross sectional multicentre analysis of clinical practice. *Int J Surg* 2018;51:199–204.
5. Mathur A, Johnston G, Clark L. Improving intravenous fluid prescribing. *J R Coll Physicians Edinb* 2020;50(2):181–187.
6. Drummond GB. Why is knowledge about fluid prescribing so poor? *J R Coll Physicians Edinb* 2020;50(3):343–350.
7. Leach R, Crichton S, Morton N, et al. Fluid management knowledge in hospital physicians: ‘Greenshoots’ of improvement but still a cause for concern. *Clin Med (Lond)*. 2020;20(3):e26–e31.
8. National Clinical Guideline Centre (UK). *Intravenous Fluid Therapy: Intravenous Fluid Therapy in Adults in Hospital* [Internet]. London: Royal College of Physicians (UK); 2013 Dec.
9. Benes J, Kirov M, Kuzkov V, et al. Fluid Therapy: Double-Edged Sword during Critical Care? *Biomed Res Int*. 2015;2015:729075.
10. Hawkins WA, Smith SE, Newsome AS, et al. Fluid Stewardship during Critical Illness: A Call to Action. *J Pharm Pract*. 2020;33(6):863–873.
11. Malbrain M. Optimising Fluid Therapy in the Critically Ill: Introduction to the 7D conceptual framework. iFAD 2021 Visit: <https://www.fluidacademy.org/blog-foam/item/optimising-fluid-therapy-in-the-critically-ill.html>.
12. Boyd JH, Forbes J, Nakada TA, et al. Fluid resuscitation in septic shock: a positive fluid balance and elevated central venous pressure are associated with increased mortality. *Crit Care Med*. 2011;39(2):259–265.
13. Mitchell KH, Carlbon D, Caldwell E, et al. Volume overload: prevalence, risk factors, and functional outcome in survivors of septic shock. *Ann Am Thorac Soc*. 2015;12(12):1837–1844.
14. Van Regenmortel N, Verbrugghe W, Roelant E, et al. Maintenance fluid therapy and fluid creep impose more significant fluid, sodium, and chloride burdens than resuscitation fluids in critically ill patients: a retrospective study in a tertiary mixed ICU population. *Intensive Care Med*. 2018;44(4):409–417.
15. Claire-Del Granado R, Mehta RL. Fluid overload in the ICU: evaluation and management. *BMC Nephrol*. 2016;17(1):109.
16. Neyra JA, Li X, Canepa-Escaro F, et al. Cumulative fluid balance and mortality in septic patients with or without acute kidney injury and chronic kidney disease. *Crit Care Med*. 2016;44(10):1891–1900.
17. Perez Nieto OR, Wong A, Lopez Fermin J, et al. Aiming for zero fluid accumulation: First, do no harm. *Anaesthesiol Intensive Ther*. 2021;53(2):162–178.
18. Barhight MF, Nelson D, Chong G, et al. Non-resuscitation fluid in excess of hydration requirements is associated with higher mortality in critically ill children. *Pediatr Res*. 2022;91(1):235–240.
19. Chappell D, Jacob M, Hofmann-Kiefer K, et al. A rational approach to perioperative fluid management. *Anesthesiology*. 2008;109(4):723–40.
20. Malbrain MLNG, Langer T, Annane D, et al. Intravenous fluid therapy in the perioperative and critical care setting: Executive summary of the International Fluid Academy (IFA). *Ann Intensive Care*. 2020;10(1):64.
21. Vincent JL, De Backer D. Circulatory shock. *N Engl J Med* 2013;369(18):1726–34.
22. Malbrain ML, Marik PE, Witters I, et al. Fluid overload, de-resuscitation, and outcomes in critically ill or injured patients: a systematic review with suggestions for clinical practice. *Anaesthesiol Intensive Ther*. 2014;46(5):361–380.
23. Malbrain ML, Van Regenmortel N, Owczuk R. It is time to consider the four D’s of fluid management. *Anaesthesiol Intensive Ther*. 2015;47(Spec No):s1–s5.

24. Malbrain MLNG, Van Regenmortel N, Saugel B, et al. Principles of fluid management and stewardship in septic shock: it is time to consider the four D's and the four phases of fluid therapy. *Ann Intensive Care*. 2018;8(1):66.
25. National Institute for Health and Care Excellence Guideline for Intravenous fluid therapy in adults in hospital (CG174), 2013-Updated May 2017 (<https://www.nice.org.uk/guidance/cg174>).

KidneyEducation

Join the Mission to Fight Kidney Diseases

Explore the world's largest multilingual website created by a global team of over 100 nephrologists.

www.KidneyEducation.com

- » Read online or download the 200-page book "Save Your Kidneys" in 40 languages—completely free.
- » This comprehensive resource offers valuable information on preventing and managing common kidney problems, tailored for kidney patients and their families.
- » It's an authentic guide, prepared by nephrologists and free from any external funding.