



Your Elderly Patient Needs IV Therapy . . . Can You Keep Her Safe?

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She's especially vulnerable to fluid overload, phlebitis, and a host of other complications. Here's how to protect her from harm.

If you care for elderly adults, you're no stranger to providing intravenous (IV) therapy to treat such problems as dehydration and infection, and you know how vulnerable these patients are to fluid overload and other complications of IV therapy. Fortunately, you can avoid most of the pitfalls of IV therapy with careful assessment and monitoring.

Dehydration is a common reason elderly people need IV therapy. Compared to younger adults, elderly patients normally have a lower overall body fluid.

The fluid ordered depends on which type of dehydration the patient is experiencing: Isotonic, hypertonic or hypotonic dehydration. Knowing the signs and symptoms of each of these types will help you in making an accurate assessment.

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LOOKING FOR TROUBLE

Fluid overload, electrolyte imbalances, and other problems can develop rapidly when you administer fluids to an elderly patient with compromised renal and cardiovascular function. To maintain an accurate infusion, use an IV pump. Monitor electrolytes, blood urea nitrogen (BUN), and creatinine levels throughout therapy and assess regularly for signs and symptoms of fluid overload: distended neck veins, full, bounding pulse, elevated blood pressure, and moist rales. Assess your patient's weight daily. If you suspect fluid overload, stop the infusion immediately and notify the physician.

Renal changes in elderly patients may reduce the kidneys' ability to concentrate and dilute urine in response to water or salt excess and to metabolize and excrete drugs. These factors combined with cardiac deficiencies and decreased or uneven blood flow to the

organs create a precarious balance in your patient between dehydration and fluid overload.

Some fluid types are associated with specific problems. Dextrose, for example, is particularly dangerous to give without a pump because infusing it too rapidly may cause cerebral edema. In addition, because dextrose contains no electrolytes, prolonged therapy can lead to serious electrolyte imbalances.

Another potentially troublesome solution is 0.9% sodium chloride, which contains more sodium and chloride than a normal person requires. Given to an elderly person with

impaired renal function, it can quickly trigger hypernatremia. These risks underscore the need for regular electrolyte monitoring.

If your patient is dehydrated from vomiting and diarrhea, both potassium and sodium may be depleted. If she can't take oral potassium, the physician will order IV potas-

sium. Monitor serum electrolytes closely and stay alert for signs and symptoms of hyperkalemia: paresthesias of the

face, tongue, hands, and feet; cardiac arrhythmias; nausea; and diarrhea. Potassium is excreted mainly through the kidneys, so impaired kidney function increases the risk of hyperkalemia, as does the use of potassium-sparing diuretics.

WHEN ADMINISTERING POTASSIUM TO AN ELDERLY PATIENT, REMEMBER THESE POINTS:

* Administer the infusion with an infusion pump at a rate of 10-20 mEq/hour, 5-10 mEq/hour for patients with renal impairment. Place the patient on cardiac monitoring if the infusion rate is higher than 20 mEq/hr.

* Thoroughly mix potassium solutions.

* Monitor urine output, which should be at least 30 ml/hour. If it's not, notify the physician.

* Monitor cardiac rate and rhythm during the infusion and notify the physician of significant changes.

To complicate matters, many elderly patients take digoxin for cardiac problems. Hypokalemia can potentiate the action of digitalis glycosides, causing toxicity. If your patient is hypokalemic and takes digoxin, watch for signs of digitalis toxicity, such as bradycardia, generalized muscle weakness, nausea and vomiting, and arrhythmias.

PROTECTING FRAGILE TISSUE

Elderly skin is more susceptible to injury. Infiltration may go unnoticed because of the skin's decreased integrity and loose skin folds. Because of decreased tactile sensation, a large amount of fluid may infuse subcutaneously before the patient experiences pain.

Certain IV drugs, including potassium and many antibiotics, are extremely irritating to an elderly person's fragile vessels. To reduce discomfort and lower the risk of phlebitis and other complications, follow these guidelines:

* Monitor the IV site frequently for signs of infiltration (cool, blanched swelling at site) or phlebitis (redness, tenderness, and swelling along vessel). Some drugs, such as Vancomycin, can cause tissue necrosis if they infiltrate. If you see signs of infiltration or phlebitis, remove the IV device and restart the infusion at another site. Monitor vancomycin blood levels carefully: Side effects increase with only slight serum trough level elevations.

* To reduce discomfort from irritating drugs, try these strategies: apply a moist and warm (but not hot) pack to the site during the infusion, decrease the solution's concentration, slow the flow rate, and use only larger veins (such as the cephalic vein) to improve hemodilution. Vein selection is extremely

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important: Keep in mind what solution or drug you'll be infusing, how long the infusion will last, and the condition of the patient's veins when making a selection for venipuncture.

SPECIAL CONSIDERATIONS FOR ANTIBIOTICS

Antibiotic treatment is another common reason for IV therapy in the elderly. Monitoring electrolytes during therapy is essential to avoid such imbalances as hypernatremia. Some antibiotics, such as penicillins and cephalosporins, contain sodium; if given in a sodium solution, they can lead to sodium excess.

Also watch serum drug levels, especially with such powerful antibiotics as aminoglycosides and Vancomycin. In these drugs, the therapeutic and toxic ranges are very close. Because these drugs are eliminated through the kidneys, an elderly patient with impaired renal function may experience a prolonged drug effect and such adverse drug reactions as nephrotoxicity and ototoxicity. Monitor

kidney function (especially BUN and creatinine clearance) and lower the drug dosage as indicated.

Ototoxicity can be either vestibular, with such symptoms as vertigo or ataxia, or auditory, with hearing loss or tinnitus. Audiograms or vestibular function studies may be indicated for patients receiving ototoxic drugs.

Pseudomembranous colitis, another possible adverse effect of antibiotic therapy, can occur 4 to 10 days after the start of antibiotic therapy. If your patient is receiving an antibiotic intravenously and develops diarrhea, stop the IV and notify the physician. The physician may order Flagyl, Vancomycin, or discontinue the antibiotics.

PLANNING AHEAD

For an elderly patient, IV therapy is never strictly routine. But by anticipating possible problems ahead of time, you can take appropriate precautions and help ensure a successful course of treatment.

REFERENCES

From: Nursing 99, Springhouse Corp., June 1999, pp. 54-55

1. Gahart, Betty, *Intravenous Medications*, 13th edition. New York: Mosby, 1997.
2. Intravenous Nurses Society, *Revised Standards of Practice*, Philadelphia, PA: Lippincott-Raven, 1998.
3. Fabian, B.: "Intravenous Therapy in the Older Adult," in *Intravenous Therapy: Clinical Principles and Practice*, J. Terry, et al. (eds). Philadelphia, PA, W.B. Saunders Co., 1995.



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