



Water Works

The Value of Water



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Water Works



The Value of Water

Water is vital for the body...

Accounting for roughly 60% of body weight, water is the largest component of the human body and the major constituent of cells, tissues and organs.

Maintaining fluid balance in the body

- Water is essential for cellular homeostasis
- Water serves as the basis for the key transport systems (e.g., blood, lymphatics, urine, digestive fluids)
- Water acts as a thermal buffer to regulate body temperature

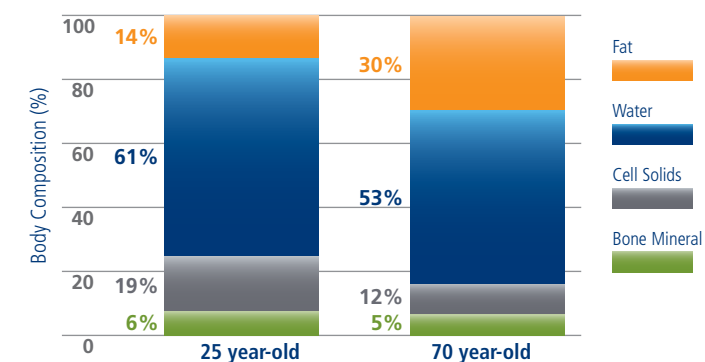
...and for the Geriatric Patient

Age-related changes make older adults even more vulnerable to shifts in water balance that can result in dehydration.

Risk Factors In Elderly Patients

- Decreased thirst sensation
- Total body fluid decrease
- Decline in kidney function
- Functional limitations (dysphagia, stroke, etc.)

Aging and Body Composition¹



Hickson, 2006; Hayes and Roberts 2006



Fluid needs must be individualized, communicated, and monitored, and care plans continually evaluated for progress. Having the goal of improving hydration daily can go a long way in keeping your patients and residents healthy—including the prevention and treatment of pressure ulcers and other chronic wounds.

Dehydration impairs the body's inflammatory response, alters metabolism, inhibits tissue regeneration, and depresses the immune function (which increases risk for infections).

Hydration is important to maintaining blood volume, and adequate blood volume is needed for proper circulation. Proper circulation keeps tissue healthy and viable.

Zwiefelhofer, Debbie. RD, LD.
Dietary Manager October 2007:18-21

Clinical Challenge:

Tube Clogging

When small-bore feeding-tube (SBFT) occlusion occurs, substantial charges for the replacement of the feeding tube are incurred and the removal and replacement of the tube adds to patient discomfort and interrupts nutrient delivery.³

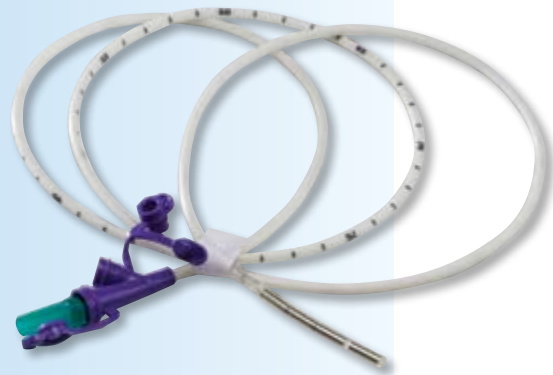
Consequences of Clogged Feeding Tube

If a tube becomes occluded a patient could miss multiple feedings before the tube is unclogged or replaced. Some additional consequences of a clogged feeding tube include:

- Nutritional and Hydration Deficiencies
 - Missed or delayed feedings and free water flushes
- Hospital Readmission
 - Dehydration and tube replacement
- Increased Cost
 - Tube replacement, material, labor, and x-ray can cost hundreds of dollars per incident
- Increased Nursing Time and Intervention
 - Average manual flush can take between 10 and 60 minutes of nursing time per day
 - Identify and attempt to unclog feeding tube
- Missed or Delayed Medication

Did You Know?

- Small-bore enteral feeding tubes may become clogged in up to 35% of patients.²
- Tube blockage may result in increasing nursing time, interrupted nutrition and medication delivery, patient discomfort and trauma (if the tube requires removal), and higher costs.²



Kangaroo™ Pump Solution:

Tube Patency

Enhanced tube patency through meeting proper flushing protocols can lead to improved clinical outcomes, nursing efficiencies and decreased cost. Programmable flush helps you comply with A.S.P.E.N.* guidelines.

Flushing to Maintain Tube Patency

A.S.P.E.N. Guidelines

- Flush feeding tubes with 30 mL of water every 4 hours.
- Flush feeding tube with 30 mL of water after residual measurements.
- Adhere to proper tube flushing protocols before and after medication administration.

Kangaroo™ Enteral Feeding Pump Capabilities

- Programmable Automated Flush
 - The Kangaroo pump's fully variable hydration function saves nursing time and allows clinicians to set a distinct flush rate and interval based on a patient's specific needs.
- "Flush Now" after Gastric Residual Volume (GRV)
 - The Kangaroo solution offers the "flush now" feature to clear lines after GRV checks.
- "Flush Now" before and after medication delivery
 - The Kangaroo solution offers the "flush now" feature to clear lines before and after medication delivery.



Program your Kangaroo™ pump to meet A.S.P.E.N. guidelines!

*American Society for Parenteral and Enteral Nutrition

Clinical Challenge:

Dehydration

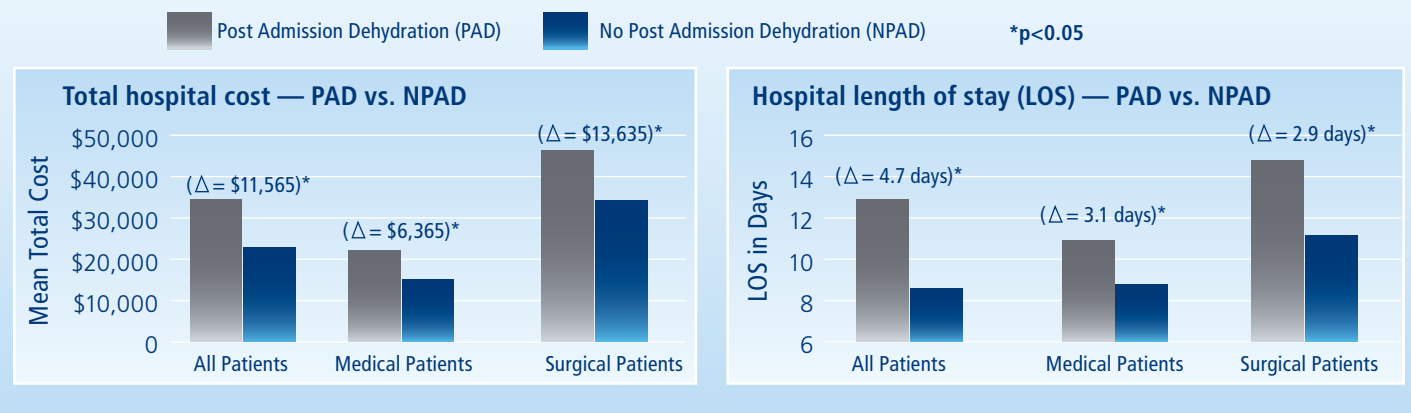
In 2008, the annual hospital spend related to dehydration for a patient population of 65 years and older was estimated to be approximately \$1.6 billion.⁴

It is estimated that 12–25% of residents in long-term care facilities are dehydrated. 52% of patients admitted into the hospital with a diagnosis of dehydration will come from a nursing home.¹

Post-Admission Dehydration (PAD)

PAD has a potential to add significant burden to hospital costs and resources. Adopting strategies aimed at avoiding PAD may help in reducing hospital costs and resource burden and may improve patient outcomes.

The economic burden of inpatient post-admission dehydration⁵



Increased Risk of Hospital-Acquired Conditions

The consequence of poor fluid management can lead to dehydration which has a direct impact on pressure ulcers, CAUTIs, SSIs, DVTs and falls.^{6,7,8}

Risk Factors Associated With Decubitus Ulcer In An Institutionalized Elderly Population (N=827)⁹

Decubitus Ulcer	ABSENT	PRESENT	% INCREASE	P VALUE
Dehydration (%)	12.5	22.9	83%	0.0002
Immobility (%)	45.4	87.4	93%	0.0000
Edema (%)	30.3	50.5	67%	0.0000
Poor Circulation (%)	54.4	71.1	31%	0.0000

Casimiro et al. Collected information from 827 elderly institutionalized patients and investigated the prevalence and risk factors of decubitus ulcers.

In this study, poorly hydrated individuals were twice as likely to develop pressure ulcers.

Kangaroo™ Pump Solution:

Hydration

Hydration to Maintain Fluid Balance in the Body

Covidien’s pumps feature variable programmable hydration capabilities that are flexible enough to meet the challenge of your patient’s unique hydration needs.

Meet total hydration needs for a variety of common flushing orders.

<p>Fluid deficiency corrections:</p> <ul style="list-style-type: none"> For patients who require large volumes to correct fluid deficiencies 	<p>Fully programmable feed and hydration pump:</p> <ul style="list-style-type: none"> Flushing intervals of 1–24 hours and rates of 10–500 mL
<p>Bolus flush orders:</p> <ul style="list-style-type: none"> For patients who require bolus flushes 	<p>Variable flushing:</p> <ul style="list-style-type: none"> “Flush Now” feature delivers water at volumes as low as 10 mL per interval

Clinical Application:

Case Study:

The below scenario highlights the development of a free water flush order to meet the hydration needs of a patient.

A mechanically ventilated ICU patient with euvolemic hypernatremia requires enteral nutrition.

Estimated Nutrient Needs:
 Kilocalories: 2300-2500
 Fluid mL: 2250-2600

Tube Feeding Order:
 Standard 1.2 formula
 Continuous at 85 mL/h

Tube Feeding Provides:
 2448 kcals
 1672 mL formula free water

Water Deficit Needs:
 Formula deficit: 776 mL
 Free water deficit: 1100 mL
 Total deficit: 1876 mL

Free Water Flush Order:
 240 mL every 3 hours

Program your Kangaroo™ pump to meet feed and hydration orders!

Water Works...for You

This program includes resources to assess current fluid attainment rates, educate your staff and implement an appropriate flushing and hydration protocol.

Fluid Management Education Resources

CEU program to educate your staff

- Continuing Education Hydration Webinar
- Hydration and Flushing Pocket Cards
- Helpful Hints/Equations
- Estimated Fluid Needs Calculation
- Related A.S.P.E.N. Guidelines

Hydration Quality Monitor/Comparative Review

Review your facility's data to verify the benefits of a hydrating pump.

- Trial Covidien's flushing and hydration pumps and document fluid attainment results vs. quality monitor benchmark. Economic modeling tools are available to determine cost and time savings for nursing and the hospital.
- Record current practice flushing protocol volumes and/or additional ordered flushing volumes in an easy-to-use electronic tool provided to you by Covidien.

For more information, please contact your Covidien sales representative at (800) 962-9888.

References:

- 1 Zwiefelhofer, Debbie. RD, LD. Hydration *Dietary Manager* October 2007:18-21
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- 8 Summary of the Updated American Geriatrics Society, British Geriatrics Society Clinical Practice Guideline for the Prevention of Falls in Older Persons *Journal of American Geriatric Society* 2010
- 9 Casimiro C, Garcia-de-Lorenzo A, Usan L. Prevalence of decubitus ulcer and associated risk factors in an institutionalized Spanish elderly population. *Nutrition* 2002;18:408-414

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