Clinical Nutrition News

A.S.P.E.N. Clinical Nutrition Week 2012: Orlando, Florida

February 2012

Highlights from Clinical Nutrition Week 2012

• Use of enteral as compared to parenteral nutrition in a US hospital saved $4,000 per patient, a cost cut attributed to shorter lengths of stay and lower complication rates (p 2).
• US hospitals will soon face reduced reimbursement for preventable readmissions; nutritional interventions help keep patients out of the hospital (p 3).
• New ICD-9 and ICD-10 codes for malnutrition are intended to boost use of nutrition as therapy (p 4).
• On the evidence about benefits of dietary omega-3 fatty acids for babies and adults, nutrition pioneer Dr Stanley Dudrick advised, “We need to move scientific information from the laboratory to the policy makers” (p 5).
• A study of medical oncology patients found that 89% had 5 or more symptoms of poor appetite and nutritional status (p 6).
• Nutrition and exercise play key roles for reducing risk of disease-related sarcopenia (p 9-10).
• Enteral nutrition is preferred over parenteral nutrition for most hospitalized patients (p 11).

Clinical Nutrition News is an educational newsletter for health care professionals around the world. Based on clinical nutrition congresses in Europe, Asia, and the Americas, we report new ideas in the areas of nutrition advocacy and education, basic science, and clinical research and practice.

This newsletter issue highlights cutting-edge information from Clinical Nutrition Week 2012 (CNW 2012), the premier scientific program of the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.). Hot topics at the Orlando, Florida USA meeting included: heightened attention to recognizing disease-related malnutrition, review of omega-3 fatty acids in science and practice, and special nutritional requirements of people who are critically ill or injured.

Abbott Nutrition played a leading role at CNW 2012. The Abbott Nutrition Health Institute hosted a scientific update on use of fish oil (omega-3s) in nutrition for critically ill patients. Abbott organized 11 meet-the-expert sessions where standout professionals discussed how nutrition facilitates better outcomes for cancer, surgery, and kidney disease patients. In addition, more than 300 attendees at the Abbott Nutrition Night symposium had an opportunity to learn how specific nutritional components can help prevent and treat sarcopenia, a condition of muscle weakening with aging or disease.
Malnutrition is epidemic in hospitals

“The faces of malnutrition are not always what you expect,” opened Dr Refaat Hegazi (Ohio, USA) in a Meet-the-Expert session sponsored by Abbott Nutrition. While we may envision malnutrition as a starving child in a developing country, malnutrition is actually quite prevalent in industrialized countries as well.

The prevalence of disease-related malnutrition ranges between 20% and 50% in hospitals worldwide. Further, patients in these hospitals commonly experience nutritional deterioration during their stay. Worse yet, many hospital patients are not even screened for nutritional status, and others are diagnosed as malnourished but are not provided adequate nutritional therapy.

The human tolls of malnutrition are sweeping and severe. Malnutrition impairs function of gastrointestinal (GI), cardiac, pulmonary, renal, and immune systems, and delays recovery from illness or injury. In addition, malnutrition increases muscle weakening and raises risk of health complications such as infections, sepsis, and pressure ulcers. Malnutrition likewise has adverse impacts on mental wellbeing and ability to perform physical activities. In turn, malnutrition predisposes individuals to lower quality of life, to immobility, and to loss of independence. Malnutrition even increases risk of death.

With such high human tolls, there are also financial tolls. Results of a recent US study showed that use of enteral as compared to parenteral nutrition could save about $4,000 per patient, which was attributed to shorter length of stay and fewer complications. In today’s challenging financial climate, it is important to note that the costs of hospital malnutrition can be lowered by relatively inexpensive nutrition therapy.

What can we do to improve hospital nutrition care?

- Increase awareness of nutrition benefits, and improve training for professional caregivers.
- Enhance use of nutrition specialists (physicians, dietitians, nurses).
- Screen and intervene.
- Create hospital- and country-wide policies on nutrition care.

<table>
<thead>
<tr>
<th>Malnutrition decreases</th>
<th>Malnutrition increases</th>
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<tr>
<td>Immunocompetence</td>
<td>Rate, duration, severity of infections</td>
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<tr>
<td>Recovery from illness/injury</td>
<td>Overall complication rate</td>
</tr>
<tr>
<td>Mental state</td>
<td>Hard-to-heal wounds, pressure ulcers</td>
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<tr>
<td>Tolerance of treatment</td>
<td>Immobility, risk of falling</td>
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<tr>
<td>Quality of life</td>
<td>Need of help and care</td>
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<tr>
<td>Prognosis</td>
<td>Morbidity</td>
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<tr>
<td>GI, pulmonary, and renal function</td>
<td>Mortality</td>
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Canadian Task Force takes action against malnutrition

Recognizing a 40% to 70% prevalence of malnutrition in their health care facilities, Canadian health care leaders decided to take a close look at how they delivered nutrition care. To start, they named a results-oriented Canadian Malnutrition Task Force (CMTF). In the past year, this CMTF has taken remarkable strides to improve nutritional care in Canada.

At CNW 2012, Task Force leader Dr Johane Allard (Ontario, Canada) reviewed their strategy and early findings. The group first identified best nutritional practice for health care facilities—a stepwise strategy to (1) screen all patients for malnutrition and nutritional risk, (2) conduct full assessment for those identified to have risk, (3) develop and implement a nutritional plan for each high-risk patient, and then monitor each patient regularly to update the plan as needed (see Figure on right).

As a next step, CMTF members conducted a survey to get a snapshot of baseline nutritional characteristics for hospitalized patients (n=260). At the study hospital, CMTF results revealed an overall malnutrition prevalence of 43%. The survey showed that caregivers did not assess nutritional status at admission or at discharge for all patients. The survey also found that 1 of every 3 patients ate less than 50% of his or her meals, even though food quality was rated as high.

Subsequently, the CMTF developed a nutrition care action plan, which may serve as a model for others:

- Implement standardized, mandatory screening protocols.
- Develop programs to educate administrators, physicians, and nurses about how to integrate nutrition care into everyday practice.
- Emphasize protected, patient-focused mealtimes.
- Make use of a multi-disciplinary nutrition care team.

Nutritional strategies can reduce hospital readmissions

In reform of health care practice, hospital readmissions are a hot topic because they are common, costly, and potentially avoidable events. Readmissions cost the US Medicare program about $17 billion each year.

Sarah Feasal, dietitian and Clinical Nutrition Specialist, reminded her CNW 2012 audience that hospital performance comes with consequences today. Since readmission rates are considered a marker for quality of care, US hospitals face the prospect of reduced reimbursement for preventable readmissions. Not surprisingly, a recent public health survey showed that 86% of hospital executives have made readmission avoidance a priority over the last few years (National Association of Public Hospitals and Health Systems survey data, 2011). Poor nutritional status is a recognized risk factor for readmission, and appropriate nutritional interventions effectively lower rates of readmission.¹ ⁴ ⁶

How can we use nutrition to lower readmissions?

1. Start by identifying conditions that increase risk for readmission—at the time of admission.
2. Nutritional risk, and likewise risk for readmission, is significant in people who are frail, have severe disability, have lost weight recently, or are overweight or underweight. Chronic diseases such as cancer, renal failure, congestive heart failure, and COPD also increase risk of both malnutrition and readmission.
3. Provide patient-specific nutrition plans, and ensure timely nutritional interventions.
4. Include nutrition in discharge planning, and follow up 6-8 weeks after discharge.

Food for thought

Hospital readmissions are common, costly, and potentially avoidable events. Poor nutritional status is a recognized risk factor for readmission.
ICD-9 and ICD-10 codes raise awareness of malnutrition

Dr Gordon Jensen (Pennsylvania, USA) opened this educational session with the reminder, “Malnutrition is not a single condition.” The causes of malnutrition vary widely between individuals, as does its severity. Three types of malnutrition were recently defined: (1) starvation- (2) chronic disease-, and (3) acute disease-related; these subtypes are determined by the presence and severity of inflammation. The extent of underlying inflammation ranges from no inflammation at all (in starvation) to mild, moderate, or severe inflammation (as in critical illness or injury).

A.S.P.E.N. criteria for diagnosis of adult malnutrition

(≥ 2 of these criteria establish a malnutrition diagnosis)
- Reduced intake of food or calories
- Unintended weight loss
- Loss of muscle mass
- Loss of subcutaneous fat
- Evidence of fluid accumulation
- Diminished handgrip strength

It is imperative to identify and treat malnutrition early in its course. Untreated malnutrition leads to serious consequences—longer hospital stays, increased risk for hospital readmission, higher rates of infectious complications, impaired wound healing and pressure ulcers, loss of mobility and independence, and even higher risk for death. Although nutritional therapy can actually prevent malnutrition, Dr White expressed concern that there is no code for risk of becoming malnourished.

Nutrition Risk:

Low food intake or loss of lean body mass

Inflammation present?

NO
- Starvation-related malnutrition
  e.g. chronic starvation, anorexia nervosa

YES mild-to-moderate
- Chronic disease-related malnutrition
  e.g. cancer, rheumatoid arthritis, sarcopenic obesity

YES severe
- Acute disease-related malnutrition
  e.g. sepsis, burn, trauma

ICD-9/ICD-10 codes for malnutrition

<table>
<thead>
<tr>
<th>Code</th>
<th>Condition</th>
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<tbody>
<tr>
<td>260</td>
<td>Kwashiorkor*</td>
</tr>
<tr>
<td>261</td>
<td>Marasmus*</td>
</tr>
<tr>
<td>262</td>
<td>Other severe protein-calorie malnutrition</td>
</tr>
<tr>
<td>263</td>
<td>Other and unspecified protein-calorie malnutrition</td>
</tr>
</tbody>
</table>

*These codes are used for pediatric patients with starvation.
Dietary omega-3s promote health in young and old

Dr Sheila Innis (British Columbia, Canada) made biochemistry come alive in her review of omega-3 fatty acids and infant health. She discussed key roles of long-chain fatty acids: 18-carbon alpha-linolenic acid (ALA), 20-carbon eicosapentaenoic acid (EPA), and 22-carbon docosahexaenoic acid (DHA). During fetal development, less than 10% of energy is derived from fat; this proportion dramatically switches upward to 50% when the newborn infant begins feeding on a milk diet rich in long-chain fatty acids. The infant’s liver plays an important role in this crucial metabolic shift.

In infant growth and development, omega-3 fatty acids serve several roles. Omega-3s regulate certain genes involved in growth and also serve as precursors of mediators that control immune function. DHA, the longest chain omega-3 fatty acid, is particularly important as a component of plasma membranes in the fast-growing infant brain, which increases from just 80 grams in a 24-week-gestational infant to about 300 grams in a term infant and to 1,000 grams in one year-old child. During gestation and lactation, the mother’s diet is an important source of omega-3s for the baby. The precursor ALA comes from certain plant seeds (e.g., flaxseed), while dietary EPA and DHA are sourced from animals (e.g., coldwater fish and eggs). Inadequacy of omega-3s in the mother’s diet can have health effects even after the child reaches adulthood.

Dr Norman Salem (Maryland, USA) explained why he considers DHA to be the most important dietary omega-3 for adults. DHA is the principal omega-3 fatty acid in mammalian tissues, and its levels are highest in brain, retina, heart, and sperm. Clinical studies have shown that supplemental dietary DHA can improve cognitive function in older adults, including those with early Alzheimer’s disease. DHA also promotes cardiovascular health.

Other studies indicate that omega-3s are likely to play an important role for prevention and treatment of diabetes, arthritis, and cancer. Dr Salem concluded that adults, like growing babies, need adequate dietary supplies of DHA.

Despite marked benefits of dietary omega-3s, Dr Artemis Simopoulos (Washington DC, USA) noted remarkable changes in fatty acid content of the human diet from cave-man to modern man. Ten thousand years ago, the hunter-gatherers consumed a diet containing small and equal amounts of omega-6 and omega-3 fatty acids (ratio of 1-2:1). By contrast, the current western diet is relatively deficient in omega-3 fatty acids and very high in omega-6 fatty acids (ratio of omega-6 to omega-3 fatty acids is 10–20:1).

Intake of omega-3 fatty acids is much lower today because of the decrease in fish consumption and the industrial production of animal feeds rich in grains containing omega-6 fatty acids, leading to production of meat rich in omega-6s and poor in omega-3s. The same is true for cultured fish and eggs. Even cultivated vegetables contain fewer omega-3s than do plants in the wild. Dr Simopoulos proposed a novel yet practical solution: promote health-oriented agriculture to tailor the food chain, thus eliminating critical deficiencies and imbalances. Specifically, she advised changing animal feeds to balance the omega-6/omega-3 fatty acid ratio.

Food for thought
On the eye-opening evidence about benefits of dietary omega-3 fatty acids for people of all ages, US nutrition pioneer Dr Stanley Dudrick advised, “We need to move such scientific information about nutrition from the laboratory to the policy makers.”
Late-breaking trials on ICU nutrition: should we change practice?

In a well-attended and informative CNW 2012 session, experts reviewed results from newly published trials on nutrition for patients who are critically ill. Will such trial results change ICU practice? Read on for results, insights, and practical implications.

EPaNIC Trial. Not all experts agree about when to initiate supplemental parenteral nutrition in patients who cannot tolerate enough enteral nutrition to meet their energy and protein needs. Dr Michael Casaer (Belgium) summarized results of the EPaNIC trial on early versus late parenteral nutrition in critically ill patients. For this study, Casaer and colleagues compared early initiation of parenteral nutrition (European guidelines) with late initiation (American and Canadian guidelines) in adults in the intensive care unit (ICU). Patients were randomized to receive parenteral nutrition within 48 hours after ICU admission (n=2312; early-initiation group) or to have parenteral nutrition initiated before day 8 (n=2328; late-initiation group). Both groups had some early enteral nutrition, and insulin was infused to achieve normoglycemia. Patients in the late-initiation group had a small but significant increase in the likelihood of being discharged alive earlier from the hospital. They also had fewer complications and lower costs of hospital care. However, other experts highlighted the notion that it is probably too soon to switch to adopt this late initiation of supplemental parenteral nutrition. Dr Michael Casaer (Belgium) summarized results of the EPaNIC trial on early versus late parenteral nutrition in critically ill patients. For this study, Casaer and colleagues compared early initiation of parenteral nutrition (European guidelines) with late initiation (American and Canadian guidelines) in adults in the intensive care unit (ICU). Patients were randomized to receive parenteral nutrition within 48 hours after ICU admission (n=2312; early-initiation group) or to have parenteral nutrition initiated before day 8 (n=2328; late-initiation group). Both groups had some early enteral nutrition, and insulin was infused to achieve normoglycemia. Patients in the late-initiation group had a small but significant increase in the likelihood of being discharged alive earlier from the hospital. They also had fewer complications and lower costs of hospital care. However, other experts highlighted the notion that it is probably too soon to switch to adopt this late initiation of supplemental parenteral nutrition. With regard to adoption in other ICUs, the EPaNIC care protocol may not be optimal (did not report use of immune-modulating enteral formulas), practical (maintained very tight glucose control), or suitable for generalization to chronically malnourished patients at high risk for death.

PEP uP Trial. Dr Daren Heyland (Ontario, Canada) and colleagues conducted PEP uP to examine ways to increase intake of protein and energy for ICU patients. Results showed that the PEP uP protocol could push ICU feeding closer to target levels at both academic and community hospitals. This second generation feeding protocol used the following new strategies:

- Decide how to feed based on each patient’s hemodynamic stability and suitability for high-volume intragastric feeds.
- Target a 24h feeding volume rather than an hourly rate; allow nurses to adjust the rate to achieve target.
- Start with peptide-based formula, then progress to polymeric formula.
- Accept higher gastric residual volumes (≥ 250 mL threshold), and proceed with enteral feeding.
- Start motility agents and protein supplements early, rather than waiting until problems arise.

INTERSEPT Trial. Exciting new findings from Dr Alessandro Pontes-Arruda and colleagues (Brazil) showed that benefits of enteral nutrition containing EPA and gamma linolenic acid (GLA) can now be extended to patients with early sepsis. In INTERSEPT, patients with early sepsis were randomized to receive either EPA/GLA formula or an isocaloric, isonitrogenous control formula by tube feeding for 7 days. Over the 28-day follow-up period, patients on EPA/GLA nutrition: (1) were significantly less likely to progress to severe sepsis or septic shock (26.3% vs 50.0%, \( P = 0.026 \)); (2) had less cardiovascular failure (21.0% vs 36.2%, \( P = 0.04 \)) and respiratory failure (26.4% vs 39.6%, \( P = 0.04 \)); and (3) needed less invasive mechanical ventilation (18.9% vs 33.9%, \( P = 0.04 \)). These data suggest that enterally-fed nutrition containing EPA and GLA can benefit patients in the early stages of sepsis, likely by slowing the advance of sepsis-related cardiovascular and respiratory dysfunction.
How much to feed ICU patients

Debate continues on the optimal amount of energy and protein required by critically ill patients. On one hand, some studies show that a cumulative energy deficit is associated with adverse clinical outcomes in critically ill patients, while other study results suggest that feeding less than goal calories results in better outcomes.

Dr Daren Heyland (Ontario, Canada) led an observational study of mechanically-ventilated, critically ill patients in 352 ICUs of Canada (n=7,872 patients). He and his colleagues used various sample restriction methods to review the population and outcomes. Without statistical adjustment, they noted an association between increased calorie intake and increased mortality. However, when the research team restricted the analysis to patients with at least 4 days in the ICU before progression to oral intake and excluded days of observation after progression to oral intake, they found a benefit to higher calories. He suggested that the mixed signals may have resulted because younger patients with relatively short stays in the ICU may not benefit from goal amounts of calories.

Until further information is available, Heyland advised feeding to goal caloric intake. While randomized studies are needed to determine a causal relationship, Heyland concluded, “Attempting to meet caloric targets appears to be associated with improved clinical outcomes in critically ill patients. Based on the most appropriate evidence available, practitioners need to aim for 100% delivery of prescribed calories and protein to their critically ill patients.”

What to feed ICU patients

“In the past 2 years, 51 new clinical trials have been published on nutrition for critically patients,” reported Rupinder Dhaliwal (Ontario, Canada). With each literature re-review, Canada’s well-known Critical Care Nutrition Group updates their evidence-based guidelines. According to Dhaliwal, the latest evidence has given many earlier recommendations stronger-than-ever statistical signals, but new evidence also supports some practice changes. In the latest guideline update, prebiotics/probiotics are recognized as beneficial for reducing risk for infection. Likewise, antioxidants are clearly recognized to reduce risk for infections and mortality.

Room to improve ICU feeding practice

Naomi Cahill (Ontario, Canada) and colleagues conduct a survey every 2 years to assess compliance to nutrition guidelines in ICUs around the world. At CNW, she reported early findings from the 2011 survey, which showed some gains but also gaps. While the majority of ICUs are doing well to follow certain guidelines (e.g., preferential use of enteral over parenteral nutrition), there was much room for improvement in other areas. Consider the following numbers:

- 80% of ICUs surveyed did not meet patients’ calorie goals.
- Only 12% of ICU patients with gastric feeding intolerance (high gastric residual volumes) got small bowel feeding tubes.
- Use of formulas with pharmaconutrients was poor; only 5% got arginine-containing formulas for immune enhancement, less than 1% got glutamine, and only 13% of patients in acute respiratory distress received nutrition containing fish oil (inflammation-modulating properties).

Congratulations to the top 3 performing ICUs in the 2011 survey, “The Best of the Best” for nutrition care: (1) The Alfred ICU, Melbourne, Australia; (2) Gold Coast Health Services District General Adult ICU, Gold Coast, Australia; and (3) Trillium Health Center ICU, Mississauga, Canada.

Use enteral feeding for patients with severe pancreatitis

Jose-Ignacio Diaz-Pizarro was a keynote speaker in a session organized by Latin America nutrition experts (Latin American Federation of Nutrition Therapy, Clinical Nutrition & Metabolism, FELANPE). He discussed acute pancreatitis, the condition of sudden pancreatic inflammation, which can have severe complications and high mortality despite treatment. While mild cases (80%) are often successfully treated with conservative measures, severe cases (20%) may require admission to the intensive care unit or even surgery to deal with complications of the disease process. In the 70s, it was thought that enteral nutrition might worsen the condition. Based on substantial clinical evidence, enteral nutrition is now favored over parenteral nutrition for patients with acute pancreatitis.
Cancer patients need protein- and energy-dense nutrition

At a meet-the-expert session sponsored by Abbott Nutrition, Dr Anne Voss began, “For cancer patients, we need to shift our thinking from nutrition support to nutrition therapy.” One study of medical oncology patients found that 49% were malnourished, and 89% had ≥ 5 symptoms of poor appetite and nutritional status. Hence, nutrition must be taken seriously as a part of cancer treatment. When started early, nutritional interventions for people with cancer can reduce or reverse poor nutritional status, enhance performance in physical activities, increase tolerance of cancer treatments, and lower risk for complications.

Dr Voss cited a brand new paper by van der Meij and colleagues; study results showed that lung cancer patients who drank protein- and energy-dense oral nutritional supplements containing EPA had significantly improved quality of life along with better physical and social function. If you ask a person with cancer, such changes really make a difference.

**CNW 2012 Abstract of Distinction from Spain**

**Malnutrition Prevalence in Elders with Cancer.** Pilar Matia and colleagues from Madrid studied a population of patients with cancer (n=1608, with 46% over 64 years old). Of those older patients, 60% were malnourished according to the SGA nutrition tool. In spite of this high prevalence, many Spanish oncologists do not embrace nutrition as a part of multi-modal cancer therapy.

**CNW Cancer Nutrition Posters from Mexico and Slovakia**

**Fish oil-containing nutritional supplement attenuates weight-loss, inflammatory parameters, and increases energy intake in patients with non-small cell lung cancer treated with chemotherapy: A post hoc analysis.**

Patients with cancer, especially those undergoing chemotherapy, typically have high levels of systemic inflammation; dietary fish oil is known to lessen inflammatory responses. Dr J Sánchez-Lara and other researchers from Mexico City, Mexico conducted a study testing supplemental nutrition for lung cancer patients. Patients were assigned to drink either fish oil-containing (n=51) or isocaloric control (n=61) nutrition supplements (2 cans per day) during 2 cycles of chemotherapy. Study results showed that those who consumed at least 80% of the recommended fish oil (EPA/DHA)-containing oral nutrition (Abbott Nutrition) had significantly less weight loss, blunted inflammatory responses, and improved energy and macronutrient intake than did their control-supplemented peers.

**Effect of a protein and energy dense eicosapentaenoic containing oral supplement on loss of weight and inflammation in cancer cachexia.** Peter Vanek and colleagues studied 482 cancer patients in Slovakia to determine whether oral nutrition supplementation makes a difference. The tested supplement is a protein- and energy-dense EPA-containing formula for oral nutrition (Abbott Nutrition). Weight-losing patients being treated for solid tumor malignancies took oral supplements over a period of 4 months. Supplements were well tolerated, and their consumption stabilized weight loss. Further, evidence of inflammation lessened, as demonstrated by a significant decrease in C-reactive protein and an increase in serum albumin.
What is sarcopenia?

Dr Refaat Hegazi (USA, Abbott Medical Director of Adult Nutrition Research and Development) set the stage for the Abbott Nutrition Night (ANN) session, “Together we can make a difference in recognizing and treating malnutrition.” Malnutrition results from reduced food intake, malabsorption, increased nutrient losses, and/or increased metabolic demands—conditions that occur alone or in combination in older people and in those with illness or injury. When energy needs are unmet, body reserves are sacrificed. With diseases characterized by inflammation, body proteins are broken down for energy, especially muscle (also called lean body mass, LBM). This loss of LBM results in a condition known as sarcopenia.

Abbott Nutrition Night (ANN) 2012 focused on primary and secondary sarcopenia—the identification and treatment. Sarcopenia is a syndrome characterized by progressive and generalized loss of skeletal muscle mass and strength with a risk of adverse outcomes, such as physical disability, poor quality of life, and death. The diagnosis of sarcopenia is based on the presence of both low muscle mass and low muscle function (strength or performance). To guide research and treatment, sarcopenia has been staged as presarcopenia, sarcopenia, and severe sarcopenia (see Table below).

<table>
<thead>
<tr>
<th>Stage</th>
<th>Muscle mass</th>
<th>Muscle strength</th>
<th>Performance</th>
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<tr>
<td>Presarcopenia</td>
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<tr>
<td>Sarcopenia</td>
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<td>↓</td>
<td>Or ↓</td>
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<tr>
<td>Severe sarcopenia</td>
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To promote identification and appropriate treatment strategies, experts use categories of primary and secondary sarcopenia (see Table on right). Primary sarcopenia is associated with aging processes; a person over age 80 years can lose nearly half of his or her lean body mass (compared to peak LBM in early adulthood). Secondary sarcopenia is caused by disuse-, disease-, or nutrition-related conditions. In older adults, age-related sarcopenia is often exacerbated by coincident chronic disease and sedentary lifestyle. Secondary sarcopenia can occur at any age, as in people with serious health problems such as chronic kidney disease or chronic heart failure.

### Sarcopenia category

<table>
<thead>
<tr>
<th>Sarcopenia category</th>
<th>Examples</th>
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<tbody>
<tr>
<td><strong>Primary sarcopenia</strong></td>
<td>No other cause evident except aging</td>
</tr>
<tr>
<td><strong>Age-related sarcopenia</strong></td>
<td>Can result from bed rest, sedentary lifestyle, or deconditioning</td>
</tr>
<tr>
<td><strong>Secondary sarcopenia</strong></td>
<td>Associated with inflammatory diseases, malignancy, advanced organ failure, or endocrine disease</td>
</tr>
<tr>
<td><strong>Disuse-related sarcopenia</strong></td>
<td>Results from inadequate dietary intake of energy and/or protein, as with malabsorption, GI disorders, or use of medications that cause anorexia</td>
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<tr>
<td><strong>Disease-related sarcopenia</strong></td>
<td></td>
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<tr>
<td><strong>Nutrition-related sarcopenia</strong></td>
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Clinical Nutrition Research and Practice

New treatment strategies for sarcopenia

During the past few years, 3 nutritional concepts have emerged as important for preventing and treating sarcopenia, especially in older people: (1) higher intake of dietary protein and amino acids,27 (2) a role for vitamin D to help build and maintain muscle,28 and (3) \( \beta \)-hydroxy \( \beta \)-methyl butyrate (HMB) for muscle repletion.29 At ANN, Dr Hegazi reviewed some ways these new concepts can be put into practice. For example, since protein and vitamin D needs increase in older people, he suggested that nutrition experts could create updated age-specific daily recommended intakes (DRIs). As a practical strategy that is immediately available, he recommended use of oral nutritional supplements to ensure that the special nutritional needs of older people are met. He further suggested increasing availability of amino acids by distributing protein intake evenly through the day (both from meals and nutritional supplements). Lastly, he advised intake of specific substrates known to promote protein synthesis, e.g. HMB, the highly-active metabolite of leucine.

Disease-related sarcopenia

Critical care and nutritional specialist physician Dr Paul Wischmeyer (Colorado, USA) discussed the role of nutrition and disease-related sarcopenia. He asked, “Are you successful if your patient leaves the ICU alive?” His answer to this rhetorical question was, “Of course not.” Success depends on the patient’s recovery, quality of life, and long-term survival. Malnutrition in the ICU, especially loss of LBM, is such a large problem that it has been given a name and diagnostic criteria—ICU-acquired weakness. Its incidence is 70% among patients with sepsis, 60% in those with acute respiratory distress syndrome (ARDS), and 50% to 70% in patients who remain in the ICU more than 7 days.30

Dr Wischmeyer noted that predictors of risk for ICU-acquired weakness are systemic inflammatory response syndrome (SIRS) or multi-organ failure (MOF), muscle inactivity, hyperglycemia, and therapeutic use of corticosteroids or neuromuscular blockers.

Exercise is a well known antidote to muscle weakening; Dr Wischmeyer raised the next important question, “Can we exercise critically ill patients on vents?” His response was, “We can, and we should.” This practice is in fact supported by sound medical evidence. Schweickert and colleagues showed that physical and occupational therapy in the earliest days of critical illness was safe and well tolerated, and resulted in better functional outcomes at hospital discharge, a shorter duration of delirium, and more ventilator-free days compared with standard care.31 As a step toward improving outcomes in critically ill patients, Dr Wischmeyer offered the following practice recommendations:

- Treat hyperglycemia.
- Use daily wake-ups and spontaneous breathing trials.
- Avoid over-sedation.
- Mobilize and walk patients early, even those on ventilators.
- Exercise patients in the ICU.
- Send patients to post-ICU rehabilitation programs for continuing exercise therapy.

Dr Wischmeyer also discussed sarcopenia caused by chronic diseases such as cancer and inflammatory bowel disease, reviewing how nutritional intervention can modulate disease-related sarcopenia.
Breaking down barriers to use of early enteral nutrition

The Abbott Nutrition Health Institute Continuing Education symposium at CNW 2012 focused on enteral nutrition. Speakers included dietitian Gail Cresci (Ohio, USA), dietitian Susan Lessar (Virginia, USA), critical care nurse specialist Patricia Baker (Virginia, USA), and physician Paul Ulich (Virginia, USA).

Use enteral nutrition preferentially

The enteral route of feeding is preferred over parenteral for the vast majority of hospitalized patients who require nutritional support. Enteral nutrition is considered safer because it results in fewer infectious complications in comparison with parenteral nutrition. Further, there are metabolic, immunity-related, and survival advantages of feeding via an enteral route. Such observations underscore the longstanding adage, *If the gut works, use it.* Why then do we still see overuse of parenteral nutrition, particularly in the face of shortages, as occurred in 2010? asked dietitian Gail Cresci.

Dr Cresci described her 7-year hospital experience of reducing parenteral feeding of trauma patients from 30% to 10%. Drivers for change were to (1) establish a hospital protocol for placement of feeding tubes, (2) train dietitians, nurse practitioners, and physician assistants to place small bowel feeding tubes; and (3) collect benchmark data on time to tube placement, time to start enteral feeding, and frequency of inappropriate parenteral feeding practices.

Recognize decision points for enteral feeding

Next, nurse Patricia Baker discussed decision points where health care providers can have a positive impact on delivery of enteral nutrition. Beginning with education, she emphasized the importance of training nurses on how and why different tube placements are used to meet specific patient needs. At the practice level, Ms Baker reviewed reasons for interrupted feeding such as flushing tube occlusions, administering medications, halting due to high residual volumes, breaks for x-rays and other procedures, as well as bathing and linen changes. Practice review can identify ways to avoid or shorten such interruptions or to use compensatory feeding strategies to offset necessary interruptions. Finally, it is possible to facilitate early enteral feeding by attention to use of computerized orders and computer-based documentation. While achieving optimal enteral feeding in any hospital is a challenge, it is much easier to make changes in a stepwise manner.

Reduced use of parenteral nutrition pays benefits

Susan Lessar is a dietitian at a 411-bed hospital where the pharmacy and dietitian subcommittees sought to educate physicians on proper and improper utilization of parenteral nutrition. According to current practice guidelines, parenteral nutrition should be used only when the GI tract is not functioning and is not expected to support nutritional needs for more than 7 days, e.g. GI fistulae, short bowel syndrome, acute necrotizing pancreatitis, and mesenteric ischemia. In an effort to improve practices, the hospital’s Nutrition Support Team reviewed all new parenteral nutrition requests. Using this approach, average monthly prescriptions of new parenteral nutrition were reduced by 65% from 2009 to 2011. Estimating costs of parenteral feeding (line placement, pharmacy expenses, dietitian and physician time, and intravenous supplies), the per-patient cost was more than $5,000 for a 5-day feeding interval. By eliminating inappropriate parenteral feeding for an average of 10 patients per month, the annual savings was nearly $700,000.

Good nutrition practice needs a physician champion

Dr Paul Ulich closed the session with the message: “Find a physician ‘champion’ at your hospital—one who is willing to interact, intervene, and educate on behalf of nutrition therapy.”
References


