



## Conference Summary

**G**lobally, malnutrition among hospitalized patients is widespread and increases risk for serious negative health outcomes. Yet the nutritional status of patients is frequently unassessed and untreated. A plethora of research data has shown that screening patients for nutritional risk, assessing those with risk factors, and providing nutrition intervention to those who could benefit improves outcomes and helps contain healthcare costs. This is the backdrop for the 113th Abbott Nutrition Research Conference (ANRC) on Nutrition Health Economics and Outcomes Research.

In opening remarks, Dr Robert Miller, Divisional Vice President of Research & Development and Scientific Affairs, Abbott Nutrition, emphasized that nutrition is the simple solution to malnutrition. Yet malnutrition can be difficult to identify, and outcomes are difficult to document. In addition, executing nutrition programs in healthcare systems is hard, and making nutrition relevant to stakeholders is harder still. Dr Miller's call to action focused on the need to identify who the decision makers are and what evidence they need to be convinced of the value of nutrition intervention. In essence, we must target our efforts where nutrition will have the greatest benefits.

The participants of the 113th ANRC offered their expert perspectives on research methods that can help determine the value of nutrition interventions. Although randomized controlled trials are viewed as the gold standard for research methods, their results apply only to the circumscribed patient populations that are recruited and enrolled. The ANRC participants explored the value of other methods such as patient registries, observational studies, patient-reported outcome measures, and retrospective data analysis of hospitalized patients for demonstrating the effectiveness of nutrition interventions in larger, more diverse patient populations.

Participant contributions were organized into three broad areas of investigation:

- What Is Health Economics and Outcomes Research (HEOR)?
- HEOR Evidence That Nutrition Interventions Are Cost Effective
- The Economics of Nutrition Care in Asia's Healthcare Systems

### **What Is Health Economics and Outcomes Research (HEOR)?**

Health economic studies are used to improve health through rational decision making by focusing on financial information, such as costs, charges, and expenditures. Economic evaluations represent a policy tool that is useful in determining the price of obtaining a health improvement by using a certain intervention compared to an alternative use.

#### ***Economic Evaluations in Healthcare: Overview, Policy, and Uses***

As a starting point for the discussion of health economics, Dr John A. Nyman reviewed two key metrics commonly used in economic evaluations—incremental cost-effectiveness ratio (ICER) and quality-adjusted life-years (QALY). Dr Nyman also discussed the differences in cost analysis, cost-effectiveness analysis, cost-benefit analysis, and cost-utility analysis, and described some areas in which these evaluations are in use today.

#### ***The Role of Registries in Nutrition Health Economics and Outcomes Research***

Observational patient registries can complement randomized clinical trials by focusing on the processes used and outcomes achieved in the real world. According to Mr Jeffrey P. Trotter, patient registries are a way to collect, analyze, and communicate clinical, economic, and humanistic aspects of a health problem or its treatment. When carefully designed, registries can provide important insight into best practices that can achieve the best outcomes, while further examining the impact of critical variation that occurs in actual medical practice. Mr Trotter explained that the most successful registries are exemplified by the involvement of a multidisciplinary group, with each member lending unique perspectives to the overall design.

#### ***Patient-Reported Outcome Measures (PROs): Overview and Relevance to Research on Nutrition***

Clinicians have long measured healthcare outcomes in terms of morbidity and mortality, while patients care about issues such as symptom bother, pain and fatigue, ability to keep up with daily activities, and the convenience of treatment options. In fact, many aspects of medical conditions such as pain and fatigue are known only by patients themselves. According to Dr Louis Matza, a PRO instrument



involves the report of health status coming directly from the patient without interpretation of the patient's response by a clinician or investigator. Increasingly, clinical trials and other treatment outcome studies are relying on PRO measurement as primary outcomes or as instruments that can add information to clinical measures. Dr Matza reviewed the uses of both generic and condition-specific PRO instruments in nutrition research, describing both their value and their shortcomings in measuring outcomes of nutrition interventions.

## **HEOR Evidence That Nutrition Interventions Are Cost Effective**

Research results for three different types of nutrition intervention—a stepped-care weight loss intervention program, surgery for obesity, and oral nutritional supplementation for malnourished hospital patients—demonstrated that such interventions are economically viable methods for improving patient outcomes.

### ***Examples of Economic Analyses of Weight Loss Interventions***

Economic evaluation is a framework that assists individuals in their decision-making process, with the ultimate goal of helping inform them about how best to allocate scarce resources. For those who focus on net costs and time to break even, cost-minimization studies are most relevant. Researchers who also want to consider health improvements of the target population should choose the cost-effectiveness analysis method. Dr Eric Finkelstein discussed two studies—one that evaluated the effectiveness of a stepped-care weight loss intervention program (cost-effectiveness analysis), and another that estimated the break-even time and 5-year costs of laparoscopic adjustable gastric band (LAGB) surgery (cost-minimization analysis).

### ***Credible Evidence in Nutrition Health Economics Outcomes Research: The Effects of Oral Nutritional Supplementation on Hospital Outcomes***

Malnourished patients face a heightened risk of poor outcomes, including increased length of stay, higher rates of complications and readmissions, and greater risk of mortality. Dr Tomas J. Philipson discussed nutrition health economics outcomes research, sharing observational data that examines the impact of oral nutritional supplements (ONS) on hospitalization outcomes. Using a database that included tens of millions of adult inpatient stays with hundreds of thousands of episodes of ONS use, Dr Philipson's study team compared length of hospital stay, episode cost,

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and 30-day readmission rate of patients receiving ONS to those same outcome variables in patients not receiving ONS. The study team hypothesized that ONS would have the following outcomes:

- Shorter length of hospital stay
- Decreased cost of the hospitalization episode
- Reduced likelihood of 30-day hospital readmission

## The Economics of Nutrition Care in Asia's Healthcare Systems

Describing nutrition care in Asian hospitals at a single point in time is a complex process. In fact, many different descriptions are necessary to tell the whole story. The governments, people, healthcare issues, and healthcare practices differ in China, India, the Philippines, Singapore, Taiwan, and other Asian countries. Furthermore, rapid economic and social change throughout Asia means that nutrition issues and care practices also are changing constantly and rapidly.

### *Healthcare Policy and Burden of Diet- and Nutrition-Related Chronic Diseases in China*

In the last 3 decades, the rapid development of the Chinese national economy has been accompanied by social change and an improved standard of living. These changes have brought about significant changes in food consumption, dietary patterns, and lifestyle, as well as in health and disease patterns. Prof Wenhua Zhao discussed emerging healthcare concerns in China brought about by these changes—the burden of diet and nutrition-related noncommunicable diseases such as diabetes and hypertension. Prof Zhao described the policies, strategies, and actions that the Chinese government has implemented and needs to implement in the future to control these diseases.

### *Nutrition Support and Disease-Related Malnutrition in China*

In recent years, Chinese hospitals have focused more seriously on malnutrition prevalence than they did 30 years ago. Prof Chen Wei examined four major aspects of this focus—the epidemiology of disease-related malnutrition, approaches to and indications for nutrition support in China, the issue of who can provide nutrition support, and the management of nutrition support. Prof Chen argued that physician training is needed to increase awareness of the benefits of nutrition therapies in



hospital care, and more frequent and effective use of hospital dietitians is needed to reduce malnutrition-related conditions.

### ***Challenges of Health Economics and Observational Research in China***

As a country in economic transition, China faces fundamental barriers to providing sufficient and good-quality healthcare to the population, including limited market accessibility and limited healthcare affordability. Using data drawn from a national health and wellness survey, Mr Graeme Jacombs discussed some of the basic characteristics and attitudes of patients in China compared to those in the United States and Europe. Mr Jacombs also described the aims of the Chinese government's program of reforms created to address healthcare issues, and cited some of the challenges of conducting economic and observational research in that country.

### ***Healthcare Demographics, Prevalence, and Pharmacoconomics of Hospital Malnutrition in the Oncology Setting: Indian Perspective***

Cancer in India has reached 1 million incident cases per year, and nearly two thirds of these people die within the year. Dr Mohandas K. Mallath described the burden of cancer and malnutrition in India, and discussed the advantages and limitations in addressing hospital malnutrition. He cited data from one hospital showing that poor nutritional status was associated with higher morbidity, longer lengths of stay in the hospital and in the intensive care unit, more days on antibiotics, and lower tolerance of chemotherapy and radiotherapy. Because of the high likelihood of malnutrition in cancer, Dr Mallath recommends nutrition assessment of all cancer patients. Identifying individuals at risk of malnutrition and grading the severity of malnutrition are the most fundamental steps toward appropriate nutrition therapies.

### ***Diabetes in Indians—Potential Solutions: Primary Prevention a Way Forward?***

Prevalence of type 2 diabetes is increasing globally, but the change is significant in developing countries such as India, which has 61.3 million people affected by the disease. That number is expected to grow to 100 million by 2030. Dr A. Ramachandran stated that Indians have a high ethnic and genetic susceptibility to diabetes, as well as lower threshold limits for environmental risk factors. It is a matter of major concern that Indians develop type 2 diabetes at a younger age than Western populations. Thus, diabetes presents a serious economic burden to both the nation and individuals within it. Dr Ramachandran discussed

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new efforts in India to prevent or delay diabetes onset. He argued that creating general awareness about diabetes and complications is the primary step in the crusade against the disease, and that research should continue to seek feasible and practical tools for primary prevention of diabetes. If successful, such strategies are expected to have both health and cost benefits.

### ***Healthcare Demographics, Prevalence, and Pharmacoeconomics of Hospital Malnutrition in the Nephrology Setting: Indian Perspective***

With a population of 1.2 billion people, India is one of the rapidly emerging economies of the world. However, the country still has a low-income economy. Dr Georgi Abraham stated that about 10% of the population has chronic kidney disease (CKD), and the prevalence of stage IV CKD, age adjusted, is 150–232 per million population. Due to cost and unaffordability of healthcare services, more than 95% of Indian patients with CKD die when they reach end-stage kidney failure. Malnutrition is common among patients with CKD, especially those on dialysis, with resulting increased morbidity and mortality. Protein-energy wasting plays a major role in the high risk of death in advanced CKD. Dr Abraham argued that nutrition assessment using multiple parameters is essential for early intervention and has significant impact on patient care. He presented evidence showing that renal-specific nutritional supplements during dialysis can improve nutritional status, an affordable strategy that is expected to help contain costs.

### ***Healthcare Landscape and Benefits of Aggressive Nutrition Intervention in Hospital Systems in the Philippines***

Some private and government healthcare systems in the Philippines have made great strides in addressing hospital malnutrition. According to Dr Marianna Sioson, much of this change has been driven by the Philippine Society of Parenteral and Enteral Nutrition. Despite having the lowest per capita government expenditure on healthcare in Southeast Asia, some hospitals in the Philippines have made important strides in tackling malnutrition. Dr Sioson stated that The Medical City hospital in Manila exceeds basic international accreditation standards by conducting full nutrition assessments for all patients and providing each at-risk patient with a personalized nutrition care plan.



## ***Interventions to Change Health Behaviors and Prevention of Type 2 Diabetes in Asian Populations***

More than half of all people with diabetes today live in Asian countries, creating the potential to overwhelm the capacity of healthcare systems in Asia in the near future. Dr Rob M. van Dam summarized the risk factors for and burden of type 2 diabetes in Asian populations. He compared the strengths of high-risk and population approaches for the prevention of type 2 diabetes, and illustrated the role of education and environmental changes for the lifestyle prevention of type 2 diabetes. He indicated that randomized trials have shown that lifestyle interventions (diet and physical activity) can substantially reduce the incidence of type 2 diabetes in high-risk groups, including Asians. Other emerging evidence shows that lifestyle interventions are indeed feasible and effective in real-life settings.

## **Conclusion**

The participants of the 113th Abbott Nutrition Research Conference demonstrated that nutrition-related health issues are evolving, not just in Asia, but globally. As healthcare decision makers seek ways to improve health outcomes while containing costs of medical care, it is reasonable to expect that they will rely on both the results of randomized controlled trials and the real-world evidence offered by HEOR to help inform their decisions about nutrition interventions.