Economic Burden of Disease-Associated Malnutrition at the State Level

STUDY SUMMARY

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Objective:

Examine and quantify the state-level economic burden of disease-associated malnutrition (DAM). Direct medical costs of DAM were calculated for 8 diseases: Stroke, Chronic Obstructive Pulmonary Disease, Coronary Heart Failure, Breast Cancer, Dementia, Musculoskeletal Disorders, Depression, and Colorectal Cancer.

Method:

- Direct medical costs were estimated using methodology from previous health economic (HE) studies, with necessary adjustments to enable results at the state level.
- Malnutrition was defined as having less than 90% of ideal body weight and/or serum albumin levels less than 3.5 g/dL.
  - Low albumin has been shown to predict mortality, but it can be affected by factors other than nutritional status, including inflammation. Albumin was included in this economic model to enable comparability between these findings and findings from previous studies in this area.
- State-level direct medical cost of DAM was calculated in five steps:
  1. Prevalence of malnutrition within each of the 8 diseases was calculated using data from National Health and Nutrition Examination Survey and the National Health Interview Survey (NHANES 2009–2014).
  2. Disease prevalence for each age-sex-race group was calculated using the National Health Interview Survey (NHIS).
  3. State population estimates for each age-sex-race group were obtained from the 2016 U.S. Census.
  4. Estimates of the average direct medical cost for each condition, and the proportional increase attributable to malnutrition, were identified from the literature.
  5. The total state-level direct medical cost of DAM for each condition was estimated using an equation taking into account variables such as costs, prevalence of malnutrition in each disease group, and prevalence of the disease within a specific age-race-sex group.

Results:

- Nationally, the annual cost of DAM is over $15.5 billion.
- Direct medical costs attributable to DAM vary among states from an annual cost of $36 per capita in Utah to $65 per capita in Washington, D.C.
- Based on using NHANES data, analyses of the data by disease state shows that dementia is the greatest contributor to DAM at $ 8.7 billion annually. The average medical expenses for dementia are high ($36,397/patient/year), the prevalence is high (7%), and the occurrence of malnutrition is high (7%).
- The second largest contributor to DAM is depression at $2.46 billion annually.
- As expected, the more populated states face the highest burden of DAM.
  - California has the largest burden of DAM with direct medical expenditures of over $1.7 billion annually.
  - Texas, Florida, and New York also face a significant burden of DAM—each with expenditures of over $1 billion annually.
- The elderly (65 years and older) bear a disproportionate share of this cost on both the state and national level.
  - The elderly account for 28% ($4.3 billion) of total DAM and the per capita cost is nearly double that of the general population ($93/capita for 65+ vs. $48/capita for the general population).

Conclusions:

Malnutrition is a huge cost to the healthcare system—$15.5 billion annually. Identifying malnutrition and the risk of malnutrition provides the opportunity to appropriately tailor nutrition interventions. Providing a low cost ONS, initiating early enteral nutrition, utilizing well-tolerated, evidence-based, formulas for adults and children, and implementing a perioperative immune-nutrition protocol may have a major impact on reducing the economic burden of disease-associated malnutrition.

The complete article can be accessed at:
http://journals.plos.org/plosone/article/asset?id=10.1371/journal.pone.0161833.PDF.

Summary prepared by Nestlé Healthcare Nutrition.

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