

# HOSPITAL MALNUTRITION: PREVENTION or DETECTION

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**There is now a growing body of evidence that the nutritional support of hospitalized patients is far from ideal. In fact, it could be described as shocking.**

**Bistrian et al studies the nutritional status of the entire population of 131 surgical patients on one day in March 1974 (READ NUTRITION DAY).**

**Comprehensive nutritional care for hospitalized patients are lagging far behind other areas.**

**A major burden of responsibility must fall on the shoulders of the physician.**

**The inevitable consequence of the long-standing neglect of nutrition education in our medical schools.**

C. E. Butterworth, Jr., MD  
Editorial Board



# NUTRITION DAY 1974

## Bistrian et al.

In a survey of the protein nutritional status of all patients on the surgical wards of an urban municipal hospital, accepted standards indicated **moderate to severe protein-calorie malnutrition (PCM) in one half** of these patients as judged by triceps skin fold and arm muscle circumference measurements.

(JAMA 230:858-860, 1974)

# Prevalence of Malnutrition

1. Prevalence of Malnutrition varies from 20-40% in the studies done below from : Belgium, Denmark, Germany, Netherlands, Spain, Switzerland, UK
2. Edington J, et al. *Clin Nutr*. 2000;19:191-195.
3. Pirlich M, et al. *Nutrition*. 2005;21:295-300.
4. Pirlich M, et al. *Clin Nutr*. 2006;25:563-572.
5. Kyle UG, et al. *Nutrition*. 2002;18:463-469.
6. Gazotti E, et al. *J Nutr Health Aging*. 1997;1:23-27.
7. Kondrup J, et al. *Clin Nutr*. 2002;21:461-468.
8. Rasmussen HH, et al. *Clin Nutr*. 2004;23:1009-1015
9. McWhirter JP, Pennington CR. *BMJ*. 1994;308:945-958.
10. Gerasimidis K, et al. *Eur J Clin Nutr*. 2007;61:916-921.
11. Olmos MM, et al. *Eur J Clin Nutr*. 2005;59:938-946.
12. Pablo AM, et al. *Eur J Clin Nutr*. 2003; 57:824-831.
13. van Bokhorstdevander Schueren MAE, et al. *Eur J Clin Nutr*. 2005;59:1129-1135.
14. Kruijenga HM, et al. *Clin Nutr*. 2003;22:147-152•



## Risk of malnutrition in a sample of acute and long-stay NHS Fife in-patients: an audit.

J Hum Nutr Diet, 2008;21:81-90

Hospital malnutrition and its consequences came to attention 15 years ago with the publication of the King's Fund report...**Since then, a plethora of studies has considered the issue !**

NHS Fife has 12 hospitals with a total of 55 wards

Risk of malnutrition varied from 14 to 25%.

The prevalence was lower than that reported previously

Obesity was also evident with 42%.

Mean weight change from admission to audit +0.4 kg( -11 kg to +13 kg).

Time from Admission to Audit: Mean 3 months



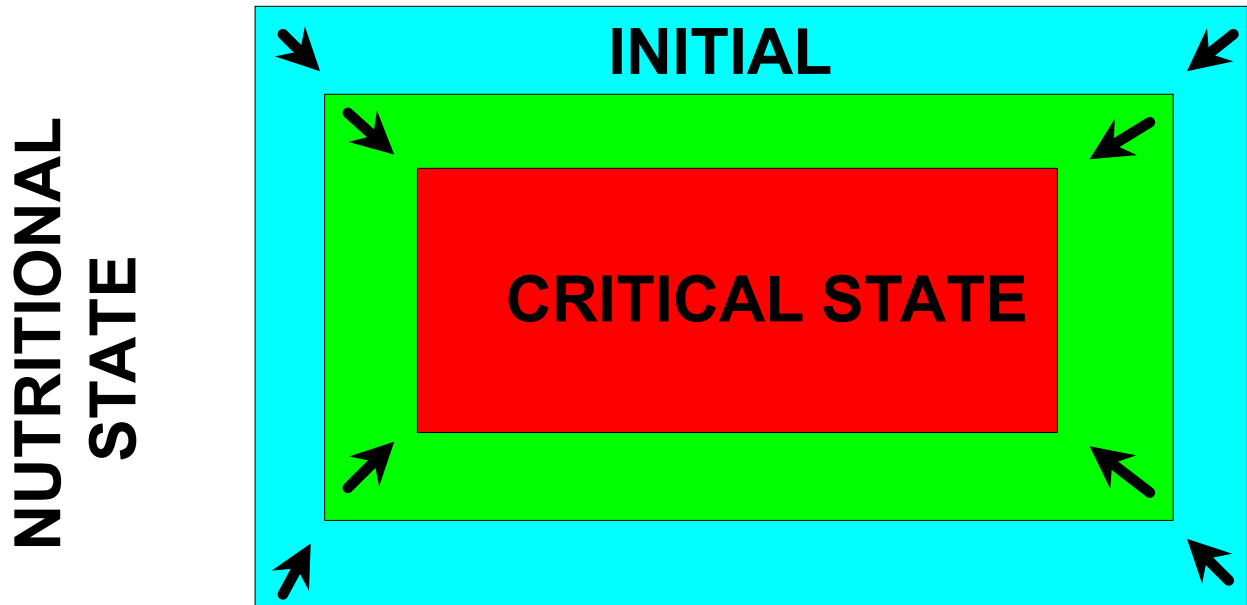
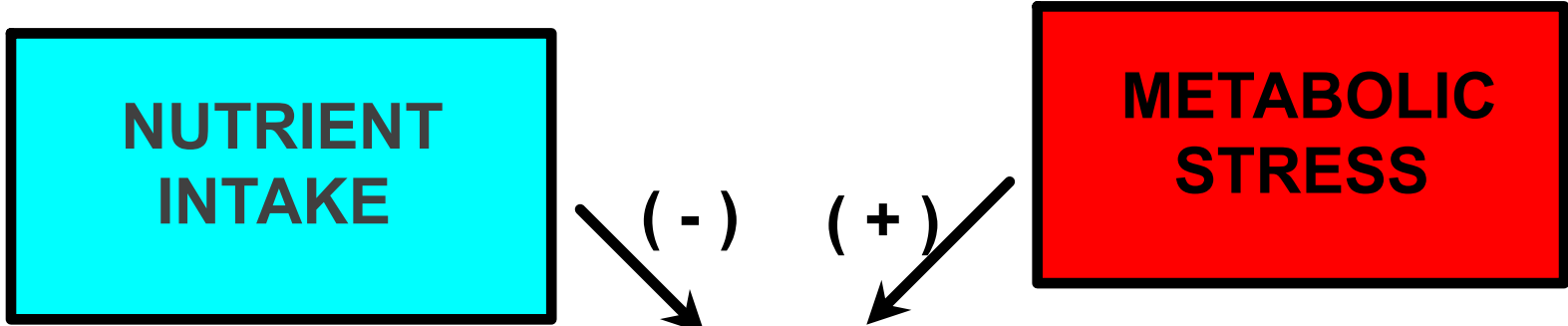
# Role of Nutritional Assessment

- Shown that there are variable degrees of Malnutrition in hospitals 15-50%
- Recent studies have added a 42% Obesity Rate
- Malnutrition as defined by reduced body mass increases Morbidity and Mortality
- Does Hospital Obesity also increase morbidity and mortality?
- Plethora of studies (Do we need MORE ?)



# Proposed Nutritional Objectives

- Keep on showing that malnutrition occurs
- Identify Factors which alter Hospital Nutrition.
- Prevent increased Morbidity and Mortality in Hospital due to Nutritional Factors.





# Identifying Factors altering Nutrition Associated complications

**Clin Nutr 2009; 28:484-91**

**16,455 patients**

**748 wards in 256 hospitals**

**25 countries**

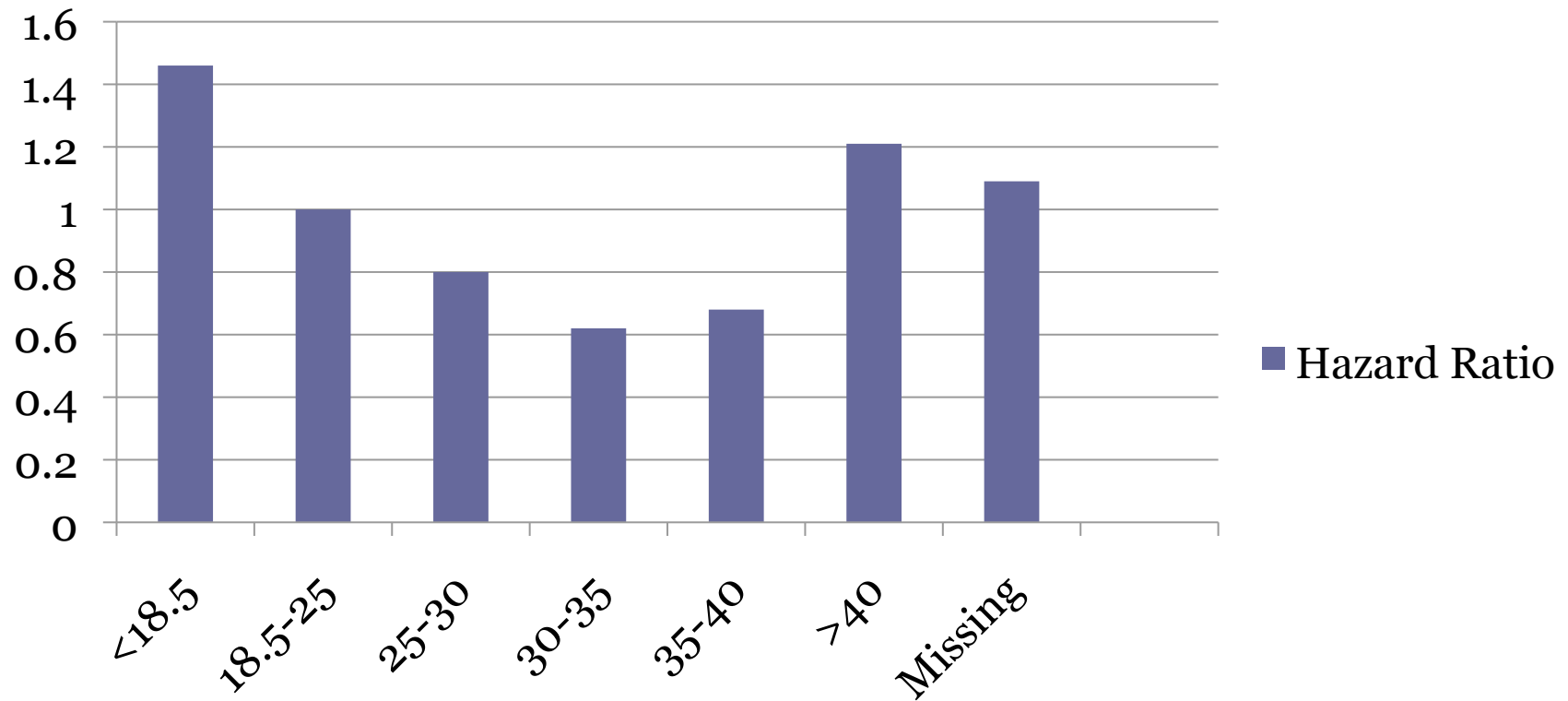
**“We did not determine the prevalence of the malnutrition based on a scoring system or expert opinion because our focus was to quantify the independent effect of single nutrition related factors on outcome”**

# Method :

- Questionnaire 1. Structure of Ward
  - Head Nurse and Physician
- Questionnaire 2. Caregiver view of Patient
  - Age, weight, height, medical history co-morbidities, nutritional intake type.
- Questionnaire 3: Self-reported Food intake
  - Foods, Portion size, daily intake
- Follow up: 30 day outcome.

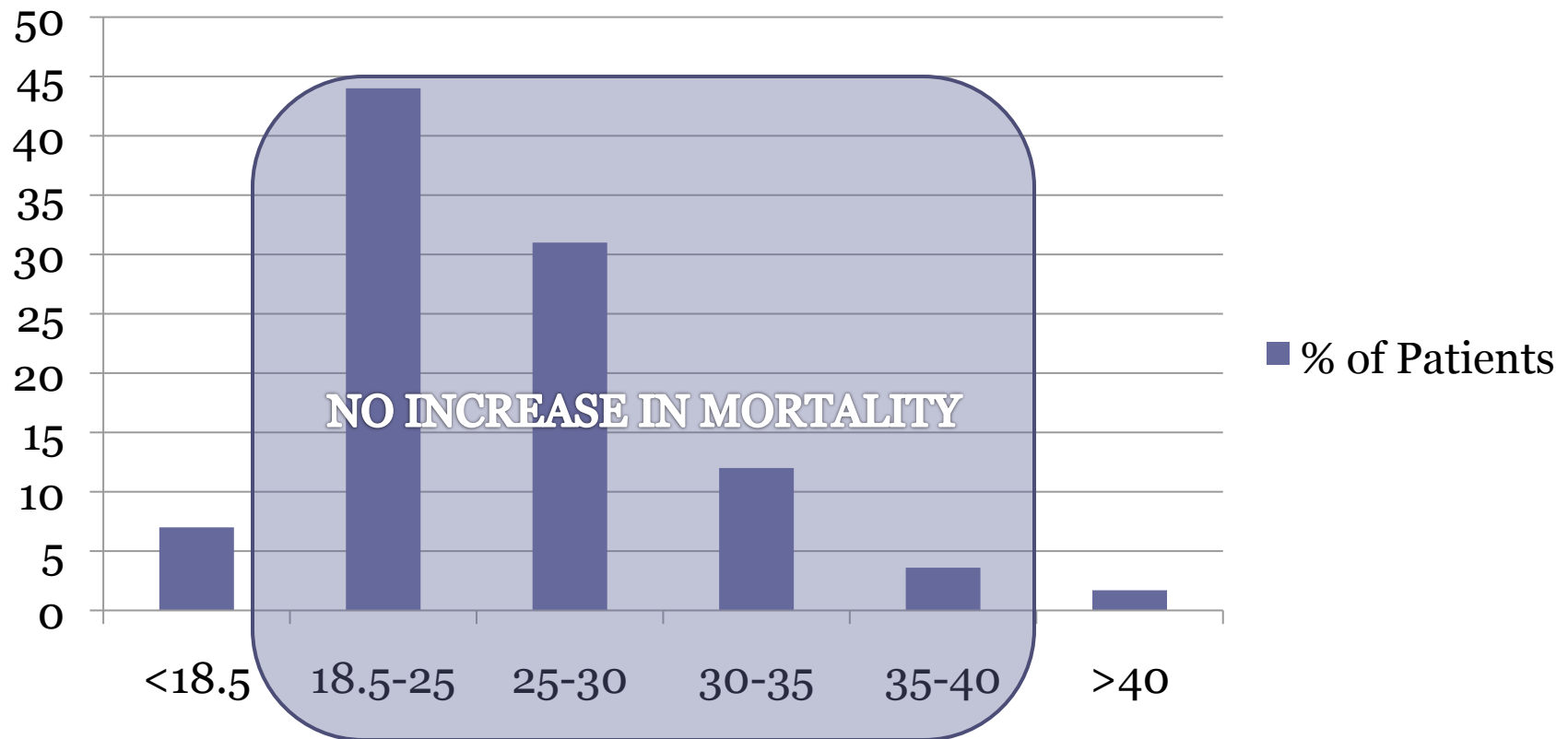
# BMI and Mortality

## Hazard Ratio

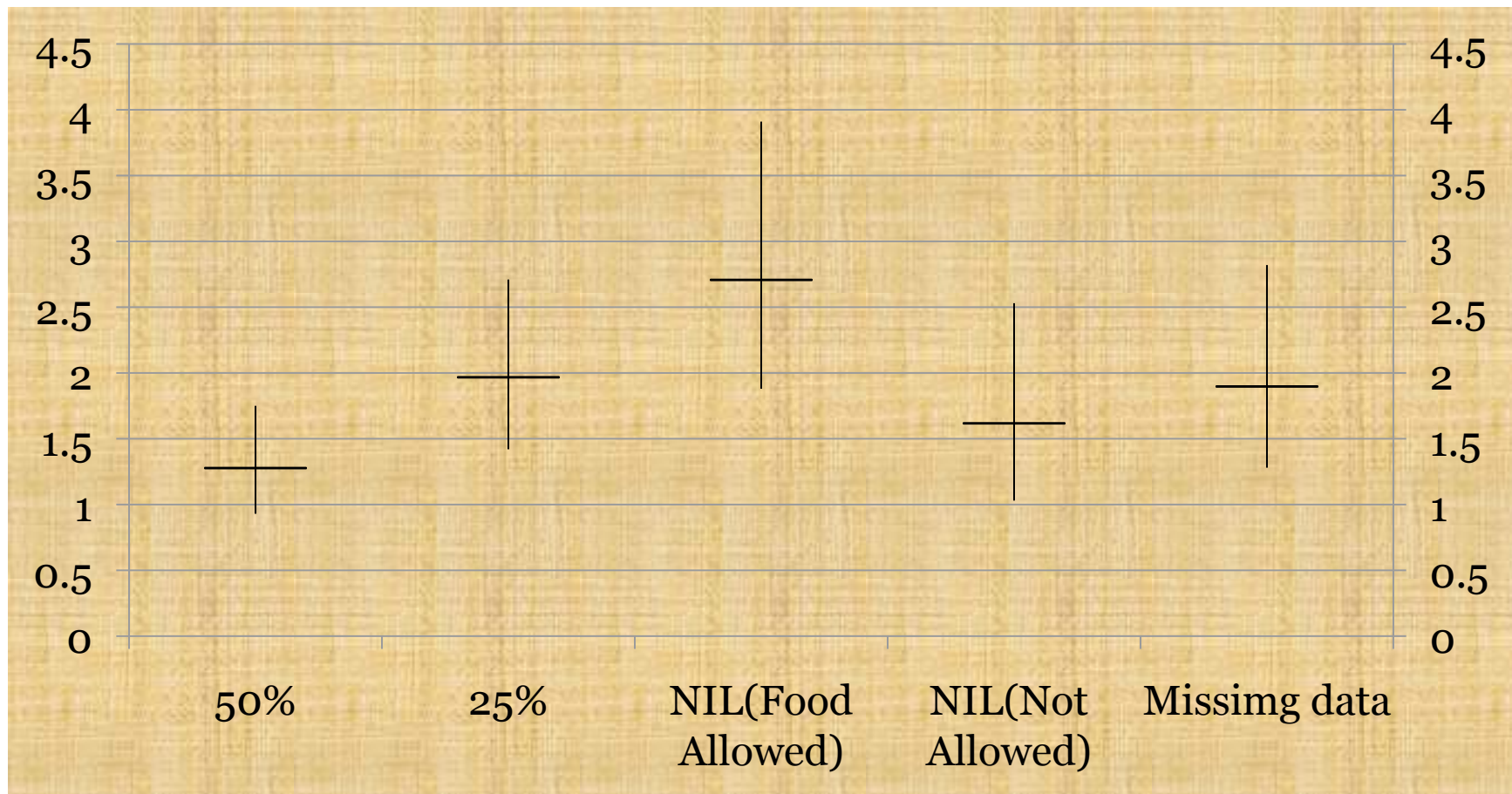


# BMI and Mortality

**% of Patients**

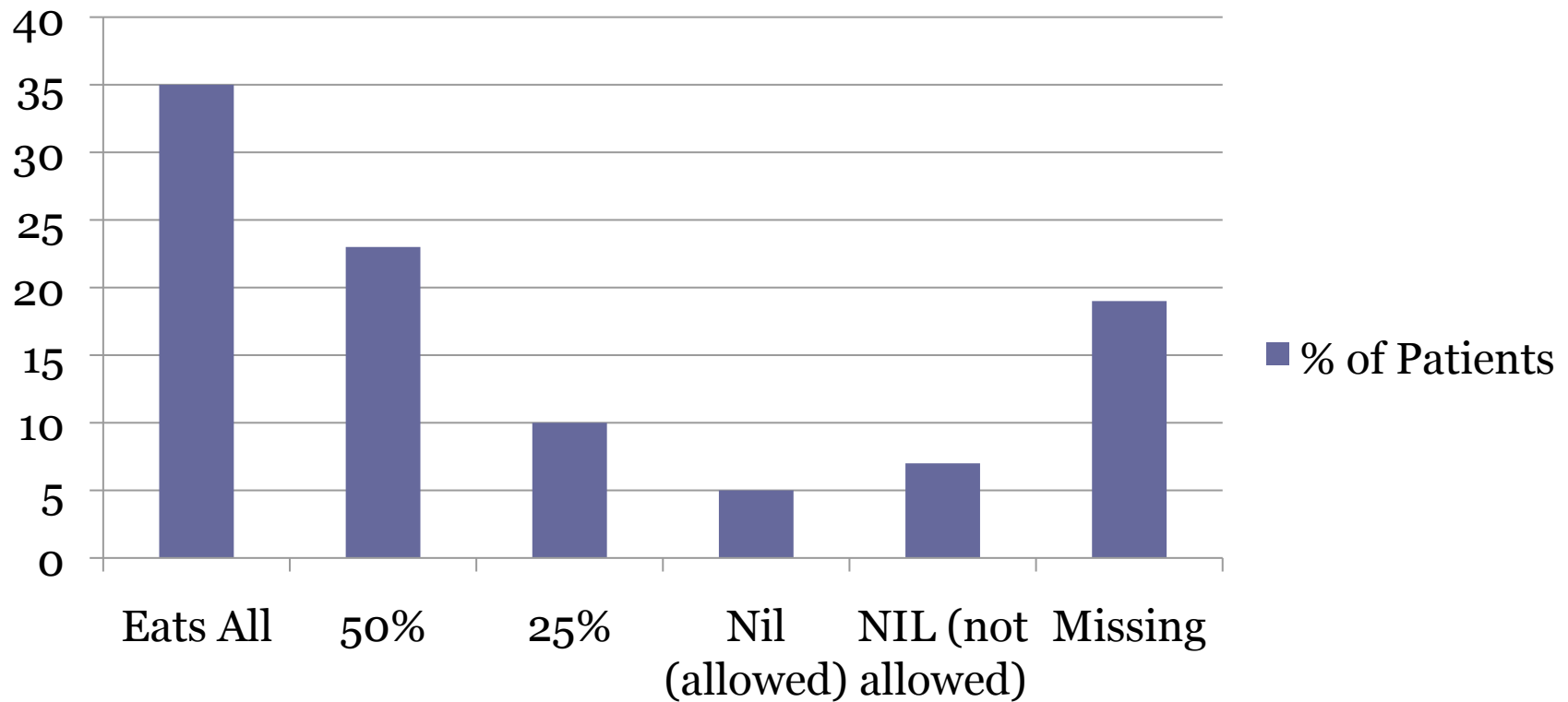


# FOOD intake and Mortality Hazard Ratio



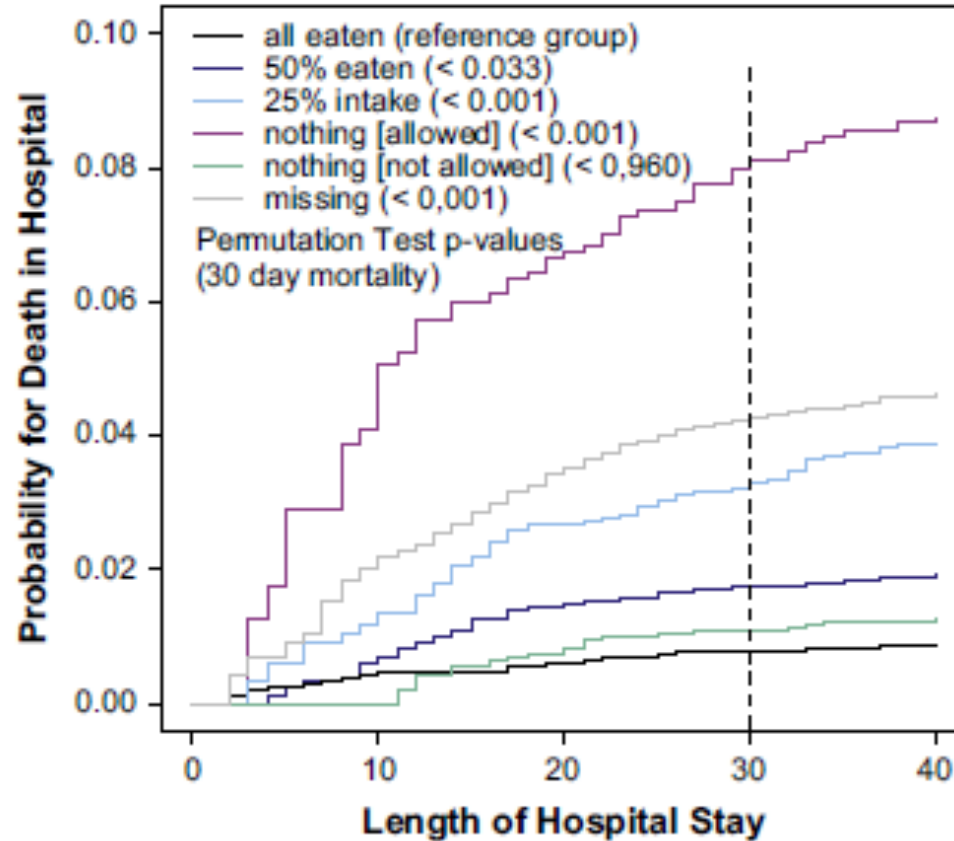
# Food intake and Mortality

**% of Patients**



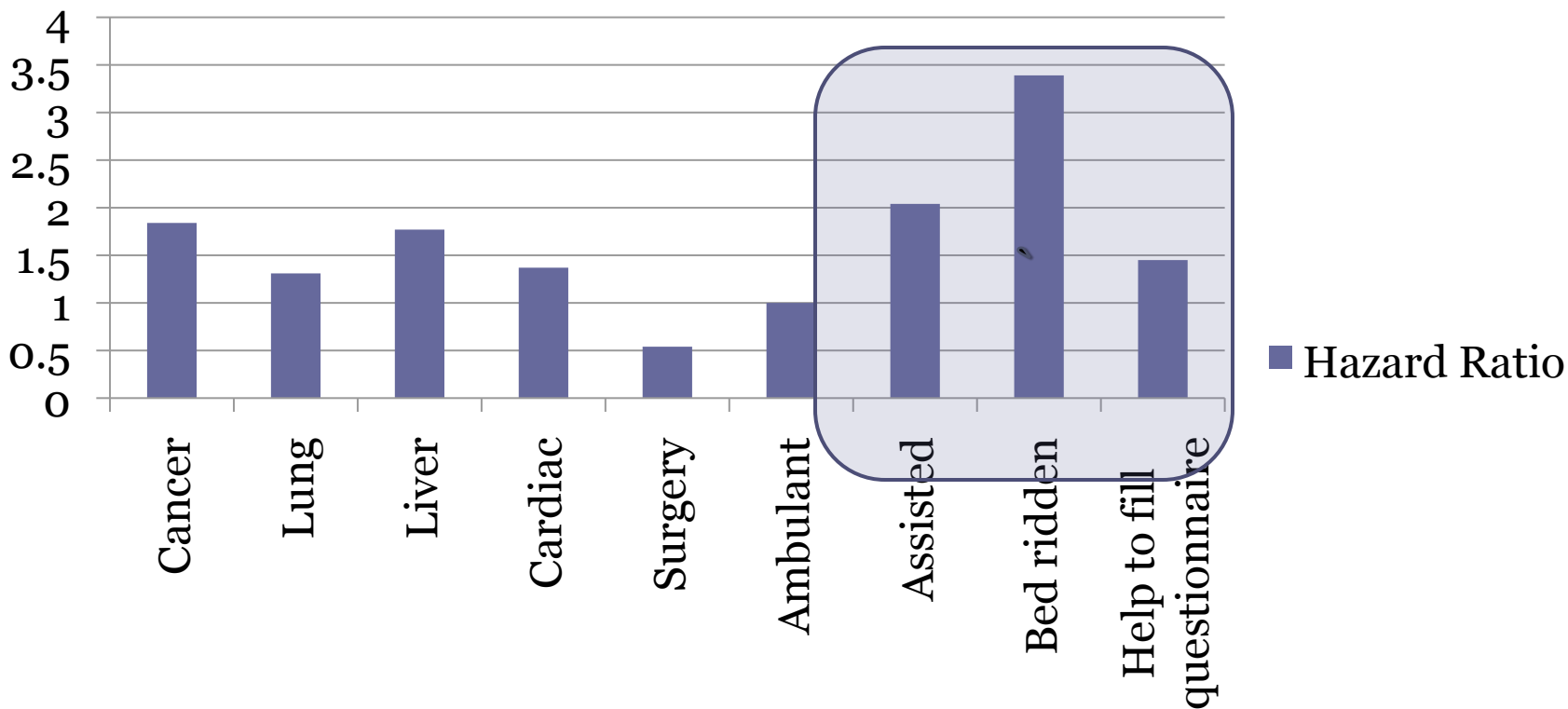
# Food intake and Mortality

ii Adjusted Cumulative Incidence for Death in Hospital



# Interacting Factors and Mortality

## Hazard Ratio





Relative Value of Weight, Food intake Disease, Function in predicting Mortality

- **BMI would identify only 6% of patients who have excess mortality.**
- Food intake of less than 50% Normal would identify 46%
- Disease 46%
- Poor Function 27%

# Why was Food intake less than 50%

Clinical Nutrition 2009; 28: 484-491

- Lack of Hunger 50%
  - “Felt hungry but no food”! 29%
- Physical Barrier 24%
  - “Difficulty opening packets/ unwrapping food”
- Organization Barrier 29%
  - “My mealtimes are interrupted by the hospital staff”
- Food Choice 24%
  - “Choosing the right food is difficult, there isn’t enough information”



## **Nutritional care of medical inpatients: a health technology assessment**

**BMC Health Services Research 2006; 6:7**

### **PURPOSE:**

1. To clarify existing problems in the nutritional care of Danish medical inpatients
2. How the nutritional care for these inpatients can be improved.
3. Analyse the costs of this improvement.



## **Nutritional care of medical inpatients: a health technology assessment**

**BMC Health Services Research 2006; 6:7**

1. Qualitative and quantitative methods of nutritional care
  1. medical
  2. Three Danish hospitals.
2. Practices compared with official recommendations
3. Health economic analysis was performed to elucidate the savings potential



## **Nutritional care of medical inpatients: a health technology assessment**

**BMC Health Services Research 2006; 6:7**

### **IMPEDIMENTS TO NUTRITIONAL CARE**

#### **The hospital management's perspective:**

1. Lack of the importance of nutritional care
2. Access to management tools for quality assurance
3. Resources to follow-up and support implementation of nutritional care



## **Nutritional care of medical inpatients: a health technology assessment**

**BMC Health Services Research 2006; 6:7**

### **IMPEDIMENTS TO NUTRITIONAL CARE**

#### **The hospital ward's perspective:**

1. Lack of time for nutritional care, which is accorded low priority
2. Lack of Multidisciplinary implementation of nutritional care
3. That formal responsibility for nutritional care lies with the physicians, who rarely involve themselves in nutritional issue.
4. That the clinical dietician's expertise is underutilised



## **Nutritional care of medical inpatients: a health technology assessment**

**BMC Health Services Research 2006; 6:7**

### **IMPEDIMENTS TO NUTRITIONAL CARE**

#### **The production kitchen's perspective:**

1. Lack of contact with the nursing staff and patients
2. The kitchen does not have any influence on how the food is served
3. Poor interaction of kitchen staff with other professional groups
4. Lack of economic latitude



## **Nutritional care of medical inpatients: a health technology assessment**

**BMC Health Services Research 2006; 6:7**

**ESTIMATED COST SAVING : DENMARK**

Overall cost reduction with improved nutrition is USD 22 million/Yr

Assumptions:

1. Reduced stay of of 3.4 days
2. Malnourished Patients 35 percent.
3. Patients above 59 years of age.



# CONCLUSION

- Analysis of Nutritional Care in Hospitals
- Impediments to providing Nutritional Care
- Formulation of plan to overcome impediments:
  - Administrative and Political Straitjacket
  - Professional apathy towards Nutrition
  - Patient and community education about Nutritional care