EU4Nutrition
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Malnutrition from awareness towards control

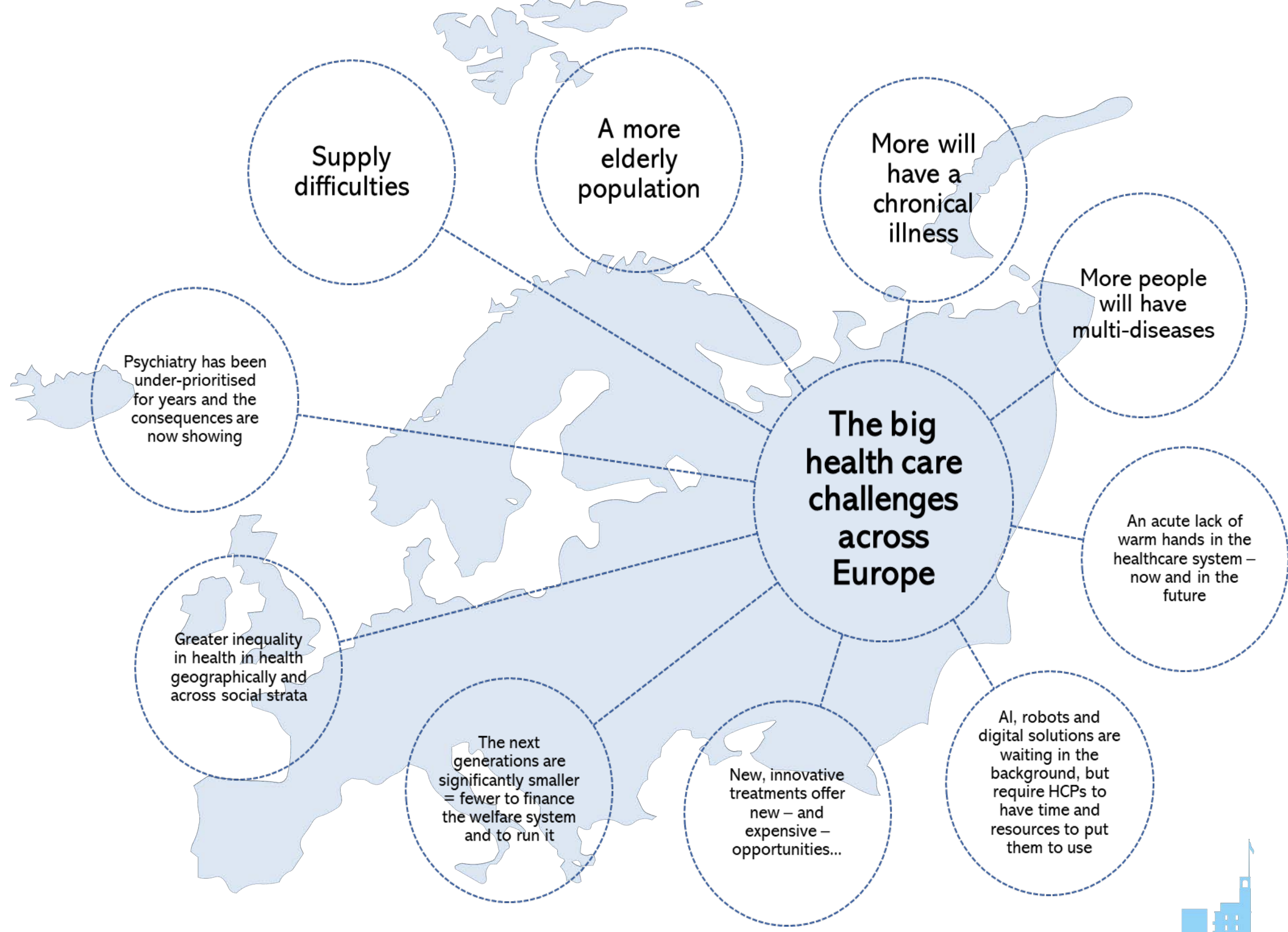# Steering Nutritional Care Policies Towards Health

Experiences from Denmark

Henrik Højgaard Rasmussen, Professor, MD
Head of Center for Nutrition and Intestinal Failure & Danish Nutrition Science Center
Department of Gastroenterology and Hepatology
Clinical Institute, Aalborg University Hospital and Aalborg University
Denmark

ONCA 2024

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Supply difficulties

A more elderly population

More will have a chronical illness

More people will have multi-diseases

Psychiatry has been under-prioritised for years and the consequences are now showing

The big health care challenges across Europe

An acute lack of warm hands in the healthcare system – now and in the future

Greater inequality in health in health geographically and across social strata

The next generations are significantly smaller = fewer to finance the welfare system and to run it

New, innovative treatments offer new – and expensive – opportunities...

AI, robots and digital solutions are waiting in the background, but require HCPs to have time and resources to put them to use

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The burning platform

The health care system faces significant challenges and the arena is filled with a lot of strong voices and opinions on what to prioritise – all wanting to be heard…

Now more than ever we need to speak the same language as the politicians and show them what we alle know:

That investing in nutritional treatment is of great societal value.

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European malnutrition in numbers

33 million people at risk of malnutrition i Europe

Costs of **170 billion euros** a year across Europe

1 in 3 elderly in care homes are malnourished

1 in 3 cancer patients are malnourished
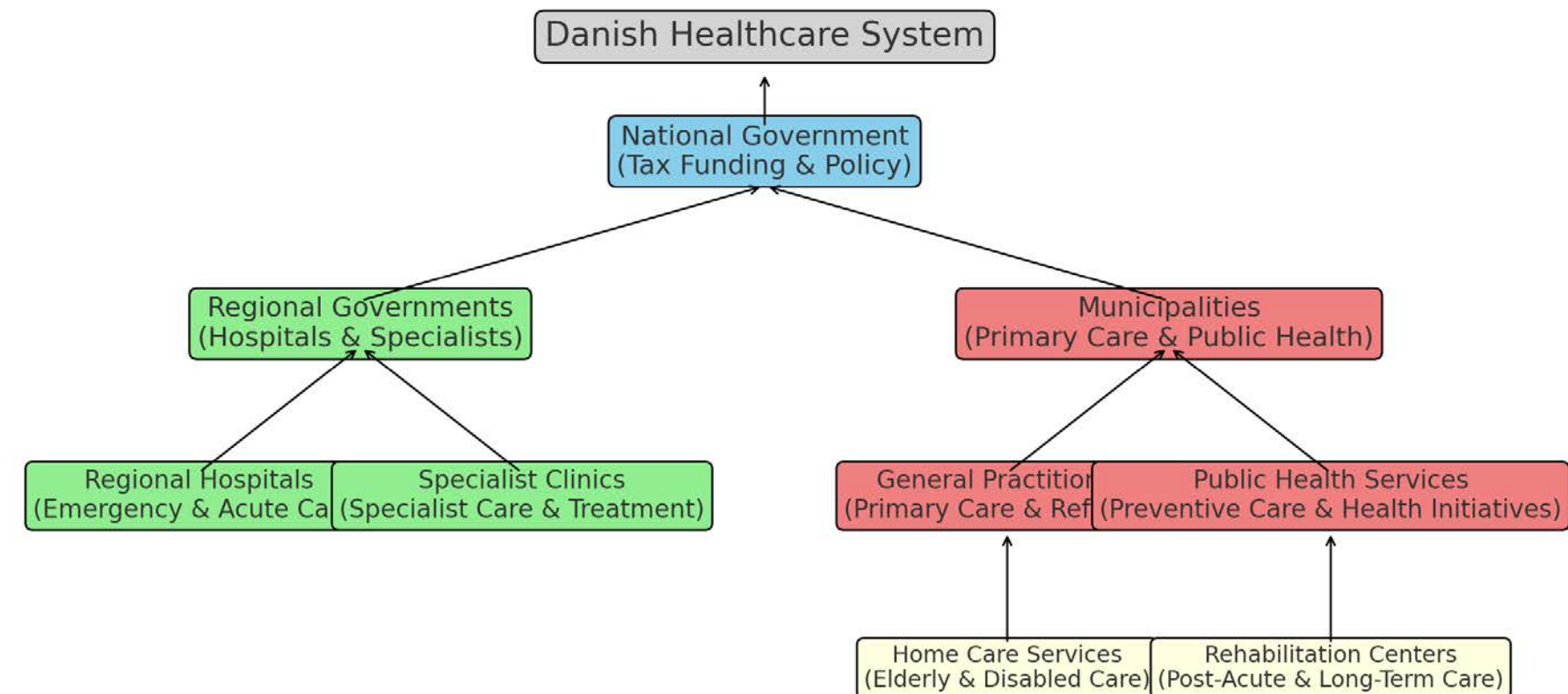
1 in 4 patients in hospitals are malnourished

Source: MNI

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Tax-Funded: The system is primarily funded through national and municipal taxes, which ensures that healthcare services are free at the point of use.

Decentralized Administration: Healthcare services are managed at the regional level by five regional governments, which are responsible for hospitals, psychiatric care, and health insurance. The 98 municipalities handle primary care, prevention, rehabilitation, and long-term care.
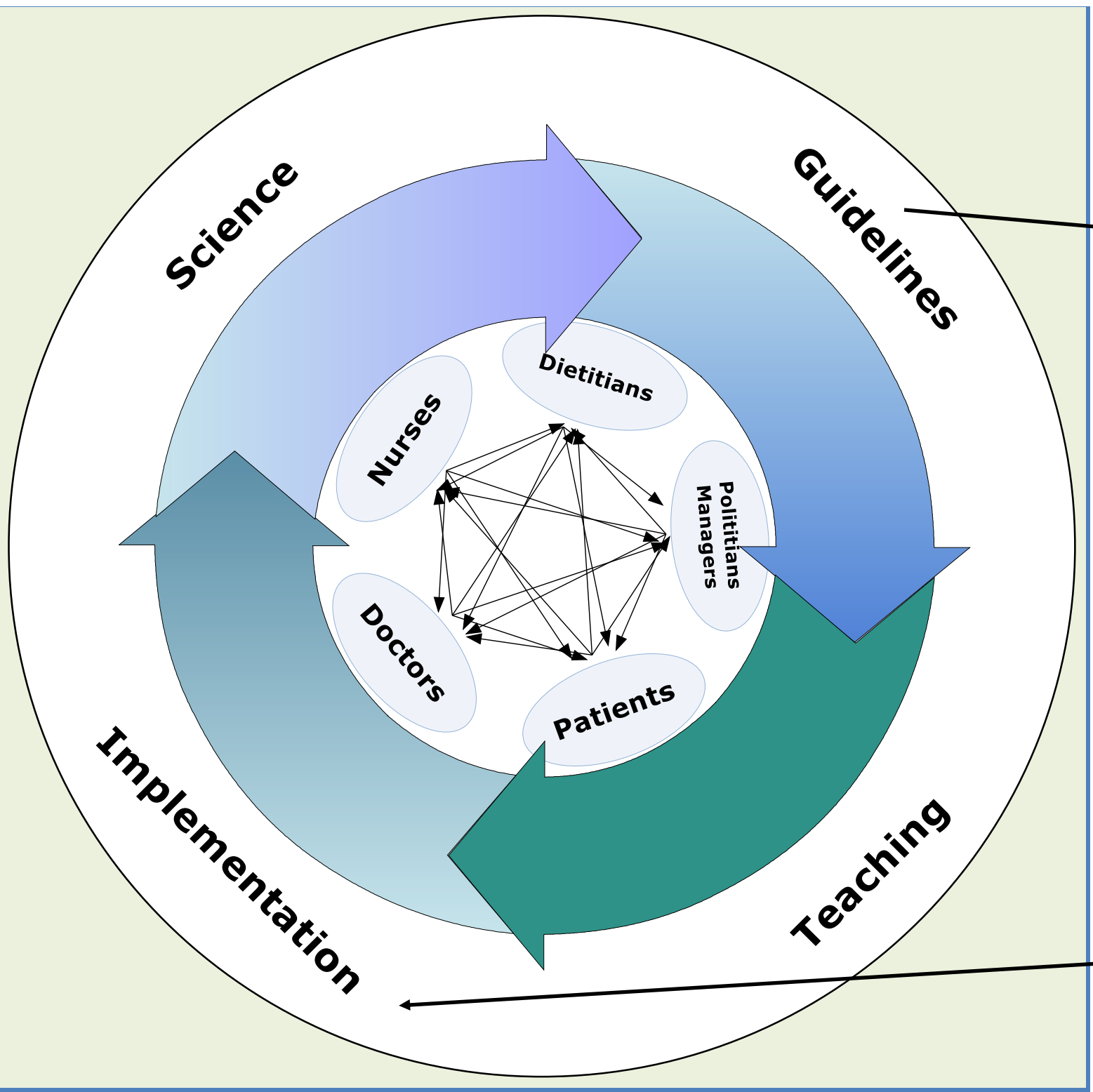
Danish Health Care System

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Ask AI ☺

Getting politicians to invest more in healthcare (DRM)

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1. Data-Driven Evidence: Use robust data to demonstrate the prevalence and consequences of disease-related malnutrition. Highlight the costs to the healthcare system, the economy, and society at large.

2. Personal Stories: Share compelling stories from individuals affected by disease-related malnutrition to humanize the issue and make it more relatable.

3. Economic Arguments: Illustrate the economic benefits of investing in healthcare to address malnutrition, such as reduced healthcare costs, increased productivity, and improved quality of life.

4. Public Support: Show that there is widespread public and expert support for increased investment in healthcare. Use polls, endorsements from medical associations, and statements from public health experts.

5. Policy Success Stories: Highlight examples from other regions or countries where investments in healthcare have successfully addressed disease-related malnutrition and improved outcomes.

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Danish Health Authority

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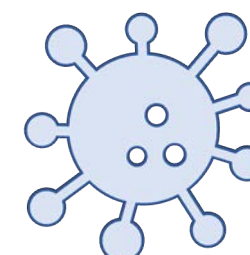
Malnutrition and Economics in Denmark

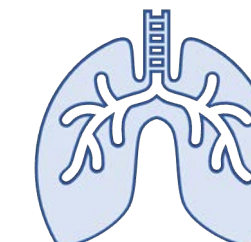**An est. 300.000** patients are at risk of malnutrition

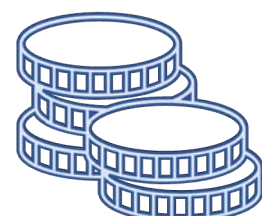Up to **30 pct.** patients in hospitals are malnourished

60 pct. of elderly in nursing homes and home care are malnourished

30-40 pct. of cancer patients are malnourished

30-60 pct. of COPD patients are malnourised

Malnutrition costs society an estimated **22 billion DKK** a year

Parenteral nutrition **is free** in hospitals and in home care

Enteral nutrition has a **60 pct.** reimbursement

Malnutrition is a driver for **unequality in health**

Reliable data on the area is **deficient**

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"More2Eat" in patients at nutritional risk during hospital stay lowers the risk of three-month mortality

Mikkelsen S, Tobberup R, Skadhauge LB, Rasmussen HH, Holst M
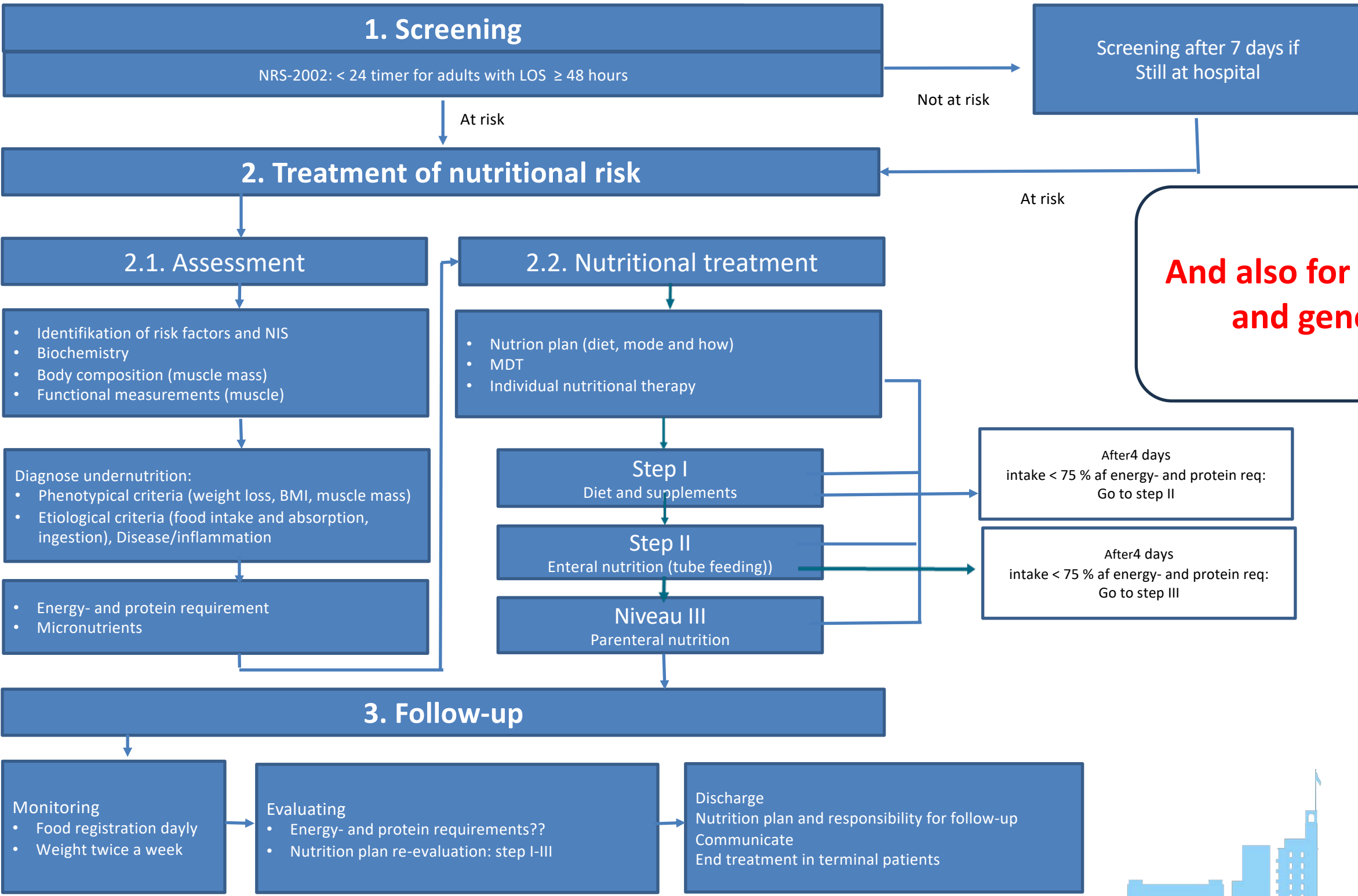*Clin Nutr ESPEN. 2023*

Collect data including

1. Good Clinical Practice (prevalence, screening, assessment, monitoring and clinical outcomes)
2. Create awareness (local hospital manager, politician)
3. Build up an organization (nutrition committtee)
4. Audits and Quality-improvement studies
5. What do we need (more dieticians, education, resources)?

6. Calculate economic implications (based on local and international studies)

Local level data

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HOSPITALS – Danish Health Authorities (www.SST.dk)

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1. Screening

NRS-2002: < 24 timer for adults with LOS ≥ 48 hours

Not at risk

Screening after 7 days if
Still at hospital

At risk

At risk

2. Treatment of nutritional risk

And also for the municipality and general practice

2.1. Assessment

- Identifikation of risk factors and NIS
- Biochemistry
- Body composition (muscle mass)
- Functional measurements (muscle)

Diagnose undernutrition:
- Phenotypical criteria (weight loss, BMI, muscle mass)
- Etiological criteria (food intake and absorption, ingestion), Disease/inflammation

- Energy- and protein requirement
- Micronutrients

2.2. Nutritional treatment

- Nutrion plan (diet, mode and how)
- MDT
- Individual nutritional therapy

Step I
Diet and supplements

Step II
Enteral nutrition (tube feeding))

Niveau III
Parenteral nutrition

After 4 days
intake < 75 % af energy- and protein req:
Go to step II

After 4 days
intake < 75 % af energy- and protein req:
Go to step III

3. Follow-up

Monitoring
- Food registration dayly
- Weight twice a week

Evaluating
- Energy- and protein requirements??
- Nutrition plan re-evaluation: step I-III

Discharge
Nutrition plan and responsibility for follow-up
Communicate
End treatment in terminal patients

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The burning platform

1 A big reform of the Danish healthcare system is underway.

An expert group will present it's **cost neutral** recommentations on how the deal with the challeges any day now.

The Danish parliament is expected to adopt the new reform in the beginning of October.

2 We have a window of opportunity to put the spotlight on the fact that investing in nutritional treatment is of great societal value.

But we need to speak the same language as the politicians and **show them in stead of telling them**.

3 In Denmark we have lauched two concrete initiatives:

1. A **health economic report** mapping the socio-economic cost of disease related malnutrition

2. Malnutrition as part of BIS – a dynamic effects calculator which can **show the value of investing in nutritional treatment** (among other things)

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A partnership of multiple partners ….

ONCA-Denmark

DAPEN
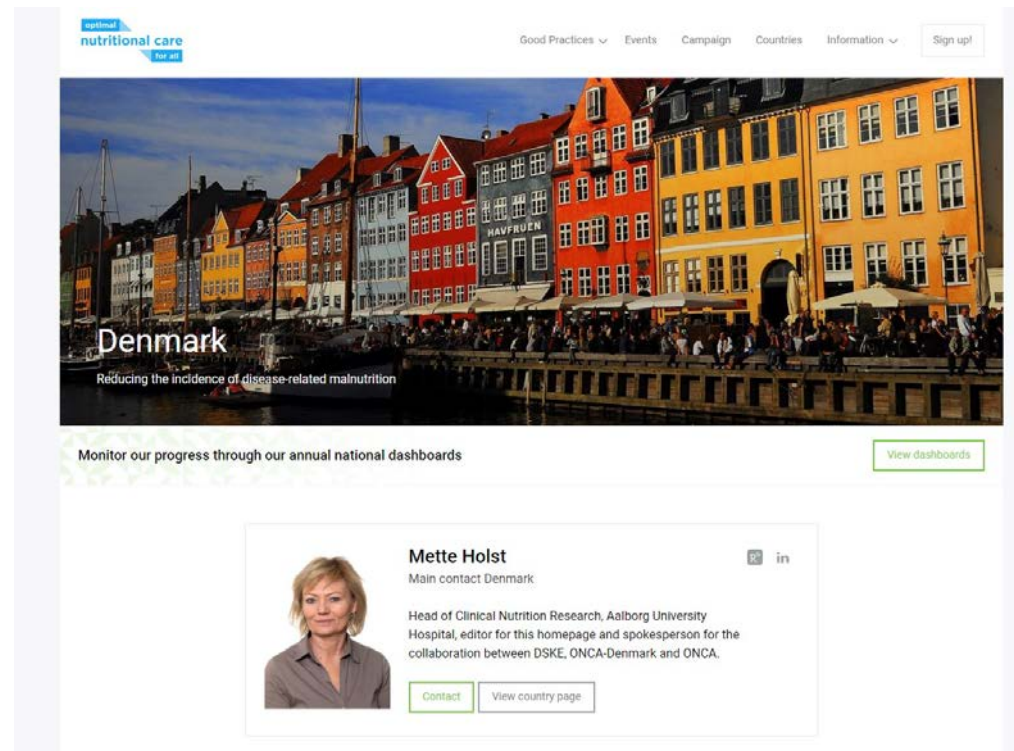
Other partners:

- ALMU (stakeholder organization)
- Regions and municipalities
- Universities
- Economic partners
- International partners (scientists)
- Others

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→ **National Datadriven Evidence – Implementation**

Needs funding (governmental – private)

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Danish report including economic speculations based on calculations from the Netherland - 2014

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Tabel 3. Kendte udgifter og mulig besparelse.

Plejehjem og hjemmepleje	39 mia. kroner
Hospitaler	78 mia. kroner
Totale udgifter	117 mia. kroner
Merudgifter underernæring*)	6 mia. kroner
Besparelse ved behandling*)	1,5 mia. kroner

Kilde: Beregninger foretaget med udgangspunkt i de Hollandske undersøgelse og baseret på tal fra Wittrup, J et al: "Kommunale service- niveauer og produktivitet", KORA, juni 2013 samt http://www.regioner.dk/aktuelt/temaer/fakta+om+regionernes+effektivitet+og+øko nomi/kopi+af+fakta+om+sundhedsvæsenet
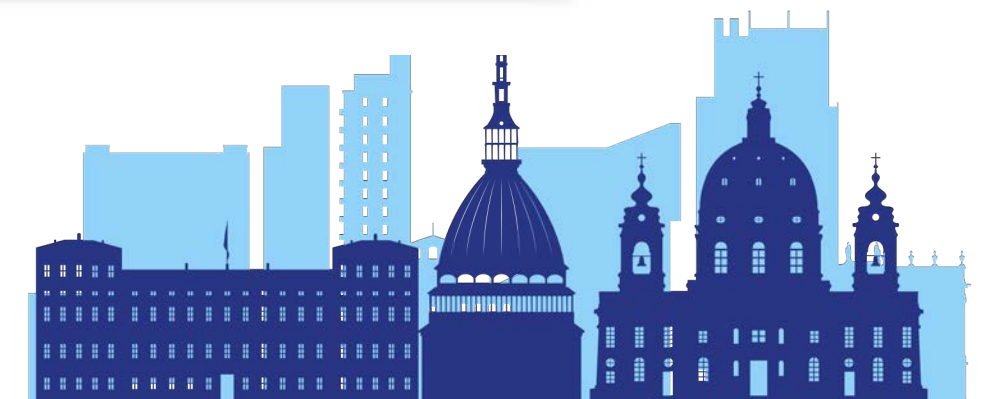
Added cost for undernutrition in DK: 120 mill EURO per year)

Cost-saving if treatment of undernutrition in DK: 1,5 billion DKR (20 mill EURO per year)
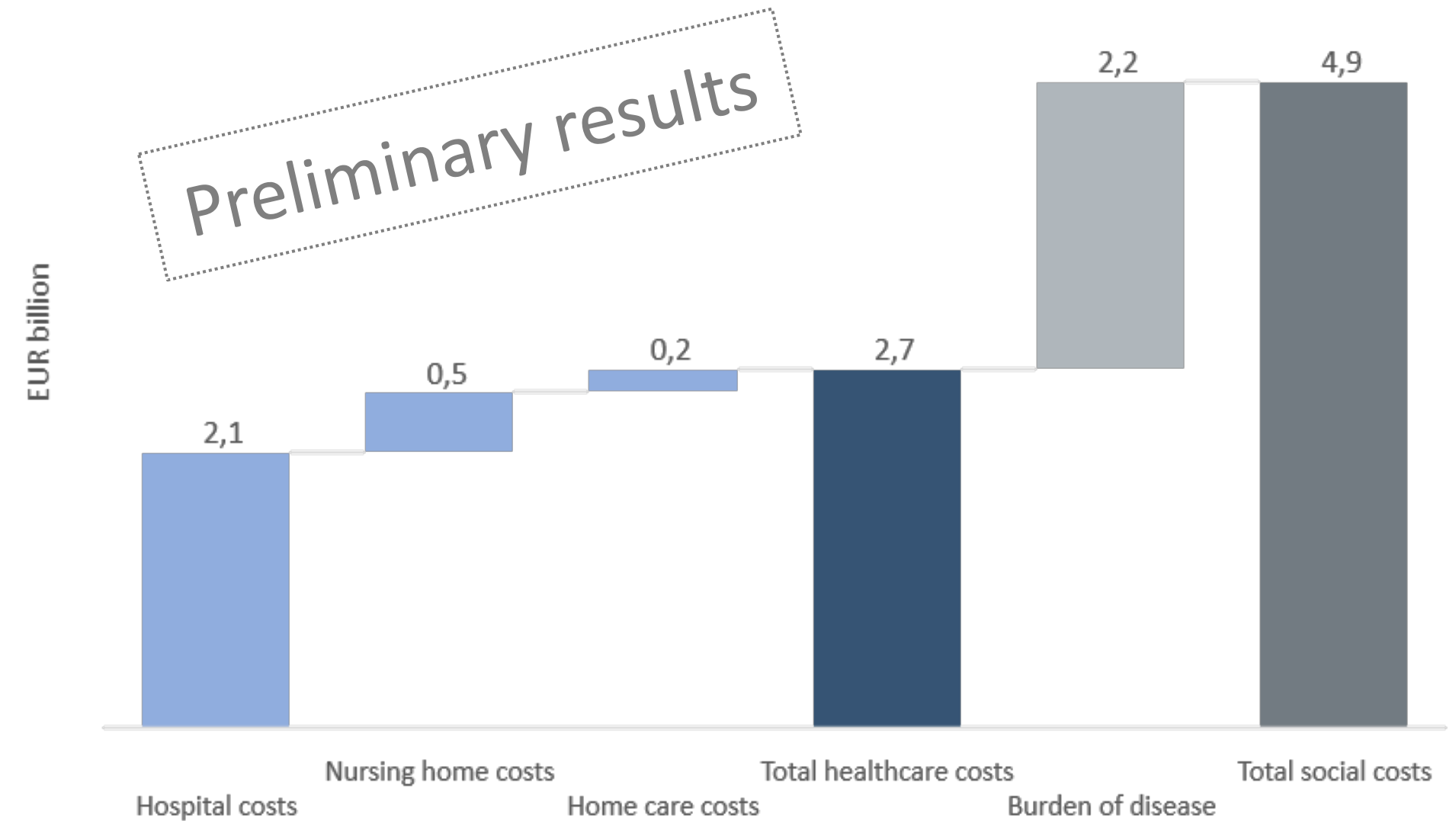
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The socio-economic cost of malnutrition

> ONCA Denmark is sponsering a Danish adaption of the 2022 Menon report "Samfunnskostnader knyttet til underernæring" – Social cost associated with malnutrition

> The report will detail the cost of malnutrition as well as consequense for the Danish society, healthcare system and patients

> The report will also point towards a larger socio-economic potential in prevention and treatment of disease related malnutrition

> It is in the works as we speak … but we can give you a little sneak peek

RAPPORT
SAMFUNNSKOSTNADER KNYTTET TIL UNDERERNÆRING

MENON-PUBLIKASJON NR. 123/2022

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Social costs of malnutrition in Denmark in 2024

- The total social costs associated with malnutrition in Denmark are estimated to reach EUR 4.9 billion in 2024.

- However, the prevalence of malnutrition lacks reliable data, and estimates vary significantly across different studies.

- This variability introduces considerable uncertainty into the estimated social costs.

- The uncertainty analysis indicates that the total social costs range between **EUR 2.16 billion** and **EUR 7.6 billion**, with an 80% probability interval.

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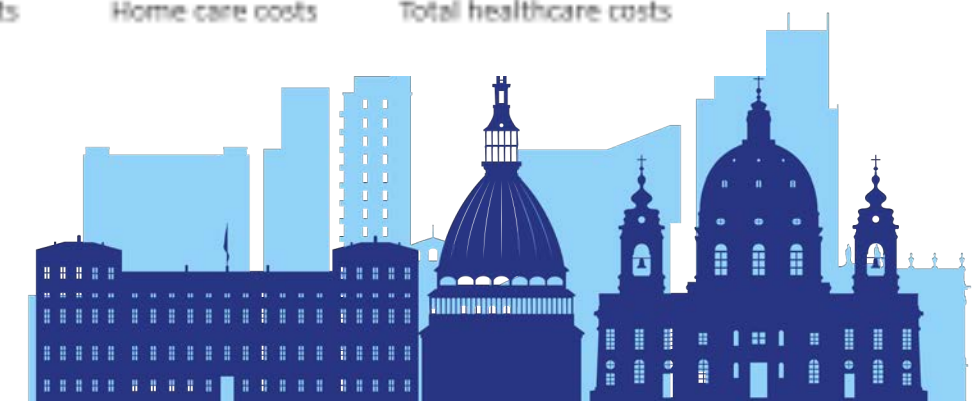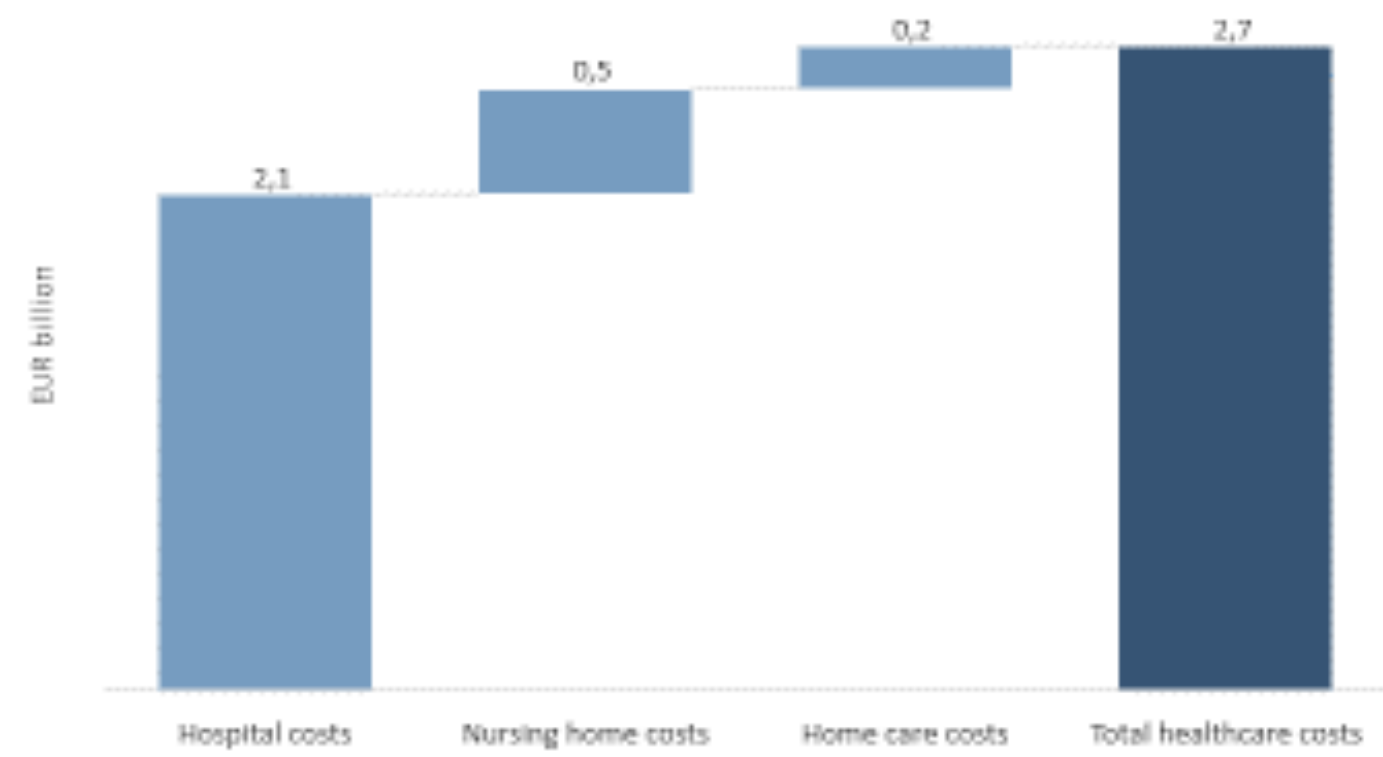Società Italiana di Nutrizione Artificiale e Metabolismo

Healthcare costs

Preliminary results

- Overall, the estimated healthcare costs related to malnutrition amounts to **EUR 2.7 billion** in 2024.

- Hospital costs: **77% (EUR 2.1 billion)**

- Nursing homes and municipal home care services: **23% (EUR 0.6 billion)**

- The primary cost driver is **the duration and frequency** of hospital stays.

- Additional resource associated with informal care due to undernutrition **is not** included in the cost estimates

Healthcare costs related to undernutrition in Denmark, distributed on hospital stays, nursing homes and home care services in 2024
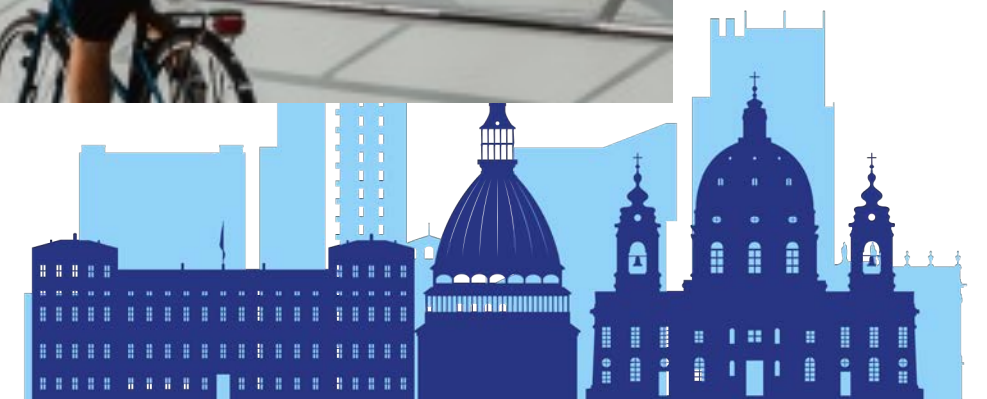

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Significant potential for cost savings related to prevention

Preliminary results

With yearly social costs of more than EUR 4,9 billion, undernutrition is a major social problem.

This means that there is a large potential related to the prevention of malnutrition, which is important to reduce the scale of the problem.

Both the findings from this report and several other studies substantiate that there will be potential socio-economic benefits related to the prevention of undernutrition.

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Show it – don't tell it: the societal value of investing in health care

A new, Danish database, BIS, based on 30+ diseases – also malnutrition –and wide array of national, regional and municipal patient and medicine data can now show and compare e.g.

- The number of public health care services

- Number of sick days

- Medicin reimbursement

… and can be used to show the *dynamic effects* of investing in health in terms of survival, life quality, greater production value, and savings in the regional and municial health care system.
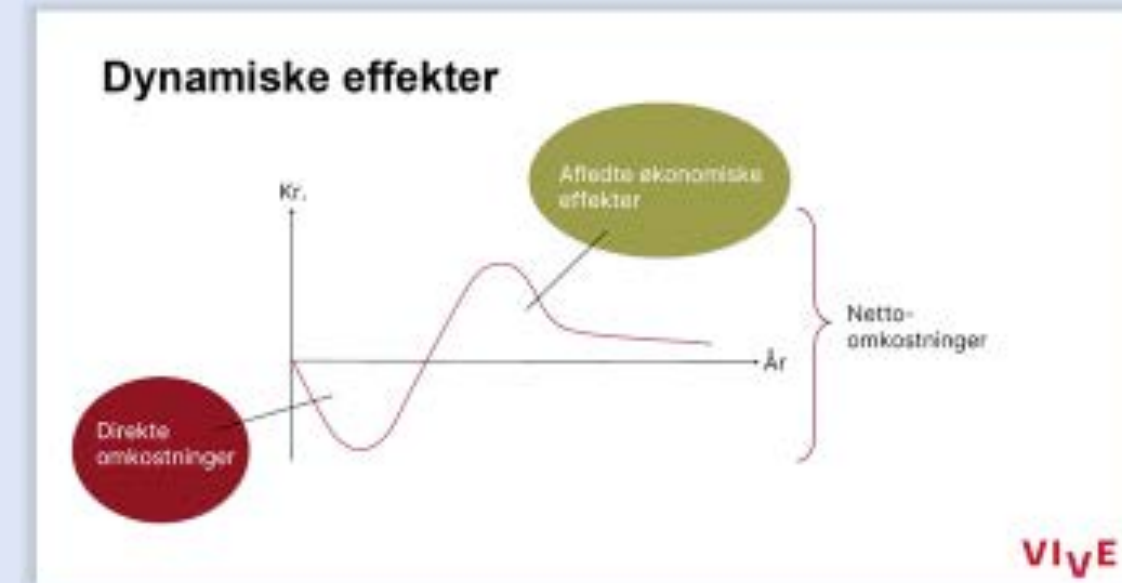
The database is developed by Danish Center for Social Science Research, VIVE and is free of cost.

Teknisk dokumentation. BIS 2.0 – Beregner for Investeringer i Sundhed - vive.dk

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NATIONAL

WHO: ICD-code for malnutrition

Nutritional research- and quality registry

In the future, these data and intervention studies will eventually show the 'EFFORT' of personalized nutrition therapy in disease-related malnutrition

THANKS

hhr@rn.dk

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International Conference

MALNUTRITION: FROM AWARENESS TOWARDS CONTROL

A NUTRITIONAL CARE POLICY SUMMIT

Turin 6 & 7 June 2024

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Interactive Break-out Workshops

Economic Foundations: Steering Nutritional Care Policies toward Health

Emanuele Cereda MD, PhD

Clinical Nutrition and Dietetics Unit, Fondazione IRCCS Policlinico "San Matteo"

E-mail: e.cereda@smatteo.pv.it

OSPITALE DI S. MATTEO
PAVIA

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Background: seeking value in healthcare

Health economics and outcomes research (HEOR) examines the value of healthcare treatments, including nutritional interventions.

Healthcare systems and patients today are challenged by high and ever-escalating costs for care.

With increasing costs and declining affordability, public and private healthcare payers are all seeking value in care.

Overview of methods and tools used in HEOR

Study tools assess information about the impact of a medical condition and its care in terms of cost and health outcomes:
- ✓ the burden of an illness or medical condition
- ✓ the cost of an interventional treatment
- ✓ the value of a treatment as the cost per health benefit
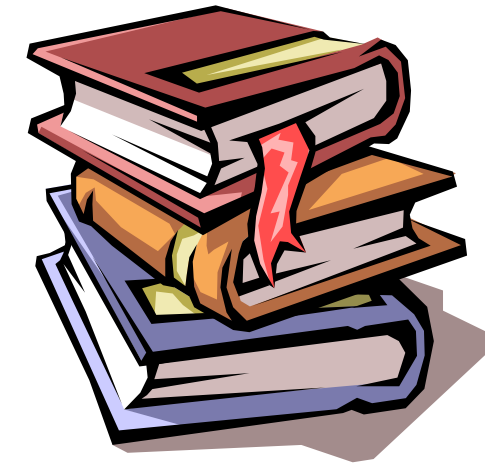
Despite heterogeneous data, the prevalence of malnutrition across settings remains high.

In 2014, a HEOR study identified an annual cost of $156.7 billion for disease-related malnutrition in the US, or about $500 per resident.
- ✓ 80% from treating associated morbidity,
- ✓ 16% from mortality
- ✓ 4% from the direct medical costs of treating malnutrition

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DIRECT COSTS

Hospitalization,
Length of hospital stay,
Institutionalization,
Medications for treating
comorbdities,
Nutritional support,
Etc...

INDIRECT COSTS

Productivity loss (absence at work),
Insurance costs,
Etc ….

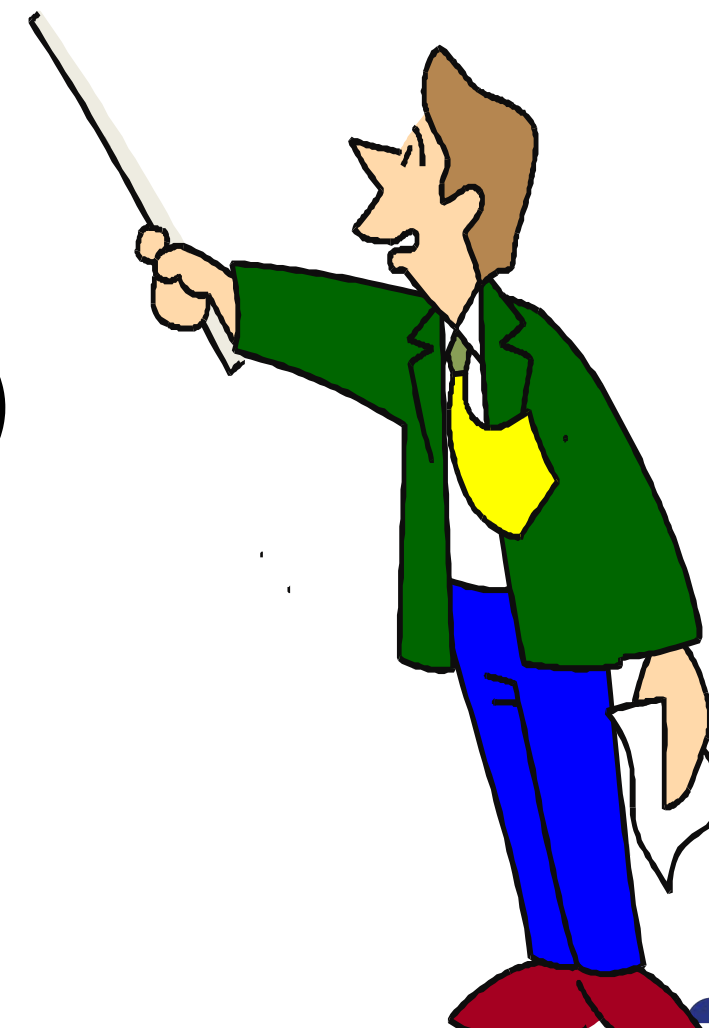Malnutrition from awareness towards control

PERSPECTIVE

Overall, findings from HEOR studies over the past decade build considerable evidence to show that nutrition care effectively improves health of at-risk or malnourished patients and at reasonable cost.

Definition of value-based care*

Healthcare focused on:
- quality of care
- provider performance
- patient experience (and outcome)

* The US Centers for Medicare & Medicaid Services (CMS)

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Type of analysis	Information obtained
Cost-benefit analysis, CBA	An economic analysis that compares the costs of an intervention with its benefits, both expressed in monetary terms. CBA can also be used to compare alternative interventions
Cost-effectiveness analysis, CEA	An economic analysis that compares the costs and outcomes of alternative interventions
Cost-utility analysis, CUA	A CEA type in which the outcome of an intervention is measured in terms of improvement in patients utility
Budget Impact Analysis (BIA)/ Budget Impact Model (BIM)	Economic assessment estimating the financial consequences of adopting a new intervention
Incremental cost-effectiveness ratio, ICER	A comparison of the cost to attain a fixed amount of health benefits under one intervention, relative to another intervention; calculated by dividing the difference in intervention costs by the difference in health benefits of the interventions
Health-related quality of life, HRQoL	A multi-dimensioned concept often used to examine the impact of health status (disease and its treatment) on life quality as perceived by the patient
Quality-associated life years, QALY	A measure of patient utility. Unit used in the prediction of both quality and duration of life after a specific healthcare treatment QALYs are calculated from health state utility values range from 0 (death) to 1

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Assessing healthcare interventions

Three different study formats are commonly used to generate data for comparisons of health outcomes:

➢ the randomized, controlled trial (RCT),
➢ real-world evidence (RWE),
➢ the quality improvement program (QIP).

Indeed, based on the methodology adopted and the design, each study type has strengths and limitations.

Trial features	Randomized Controlled Trial (RCT)	Real-world Evidence (RWE)	Quality Improvement Program (QIP)
Perspective	**Prospective** The study is designed, and then data are collected to measure well-defined study outcomes	**Retrospective** The study relies on preexisting data sources (such as health insurance claims) to study relationships between treatments and outcomes that have already occurred	**Prospective** or **retrospective**
Risk of selection bias	**Low** Controlled by restrictive exclusion criteria, more complete data collection and observation, and randomization	**Moderate** heterogeneous population with nonrandomized assignment to treatment; numerous tools exist to control for bias	**Moderate** heterogeneous population with nonrandomized assignment to treatment;
Sample size	**Limited** by cost and practical considerations	**Potentially very large**	**Moderate**
Research cost	**Relatively high**	**Moderate**	**Moderate**
Outcomes of interest	Well-measured clinical endpoints such as change in lean body mass or handgrip strength	Clinical endpoints, economic outcomes, costs, readmission risks	Clinical endpoints, economic outcomes, costs
Adherence	**High** adherence due to study design and execution	**Reflect real-world adherence**	**Reflect real-world adherence**
Follow-up periods	**Generally short** because of cost and difficulty keeping participants in long-term studies	**Potentially long** due to the nature of data sets (e.g., Medicare data include all claims for a patient over many years)	**Generally short** due to cost and difficulty in long-term tracking of patients
Generalizability	**Limited generalizability** due to narrow study populations and regulated behaviors	**More generalizable** because large study populations and varying behavior reflect real-world heterogeneity and decision making	**More generalizable** because large study populations and varying behavior reflect real-world heterogeneity and decision-making

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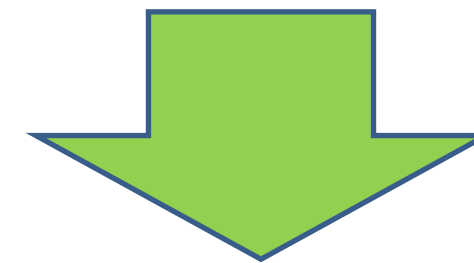Malnutrition from awareness towards control

A key message for resource allocators is that nutritional care brings value to healthcare. This applies to multiple settings and populations.

HEOR studies provide powerful data and informed insights to help improve health outcomes, to identify care that is cost-effective, and ultimately, to **broaden overall access to care**.
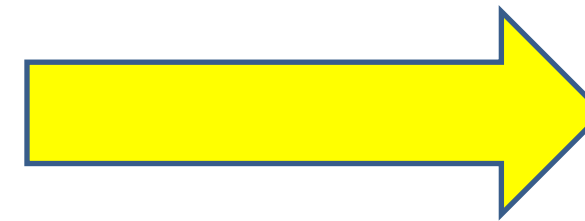
Treat!!

But....when implementing policies....do not forget identfying those who can benefit from an intervention!!!

Screening and assessment

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Treatment must be patient-tailored

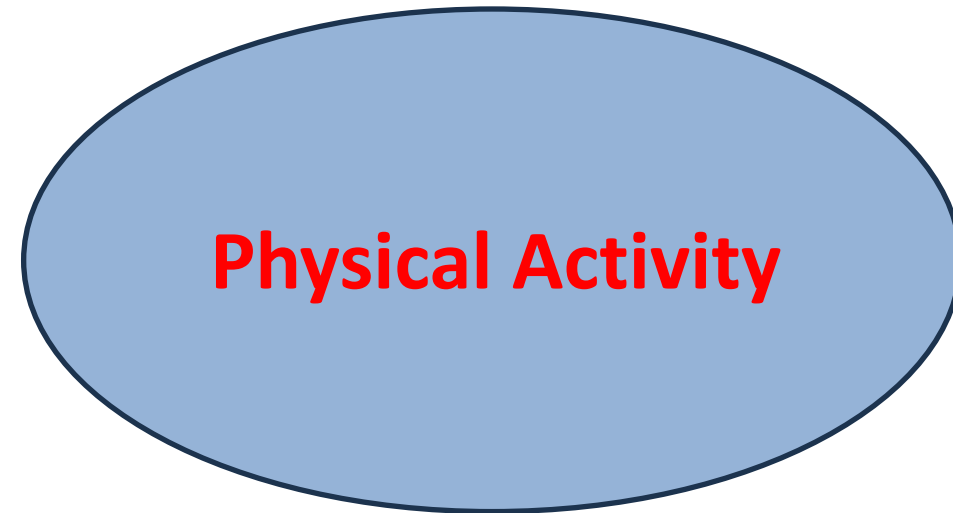Esempio di protein provision exercise vs no exercise Jurgen

Nutritional support during the hospital stay reduces mortality in patients with different types of cancers: secondary analysis of a prospective randomized trial

| Nutritional intake during the hospital stay			
Mean caloric intake (kcal/24h) Day 5	1121.2 (581.6)	1364.9 (687.7)	<0.001
Mean protein intake (g/kg bodyweight/24h) day 5	44.8 (21.3)	53.6 (23.5)	<0.001
Mean caloric intake (kcal/24h) day 7	1141.6 (584.9)	1391.0 (682.6)	<0.001
Mean protein intake (g/kg bodyweight/24h) day 7	43.9 (22.6)	52.2 (24.8)	<0.001
Mean caloric intake (kcal/24h) day 10	1153.9 (584.8)	1410.7 (681.5)	<0.001
Mean protein intake (g/kg bodyweight/24h) day 10	44.2 (22.6)	52.7 (25.2)	<0.001
Mean caloric intake per kilogram per day	16.6 (9.0)	20.9 (10.4)	<0.001
Mean protein intake in grams per kilogram per day	0.6 (0.4)	0.8 (0.4)	<0.001

Bargetzi L et al. Ann Oncol. 2021 Aug;32(8):1025-1033.

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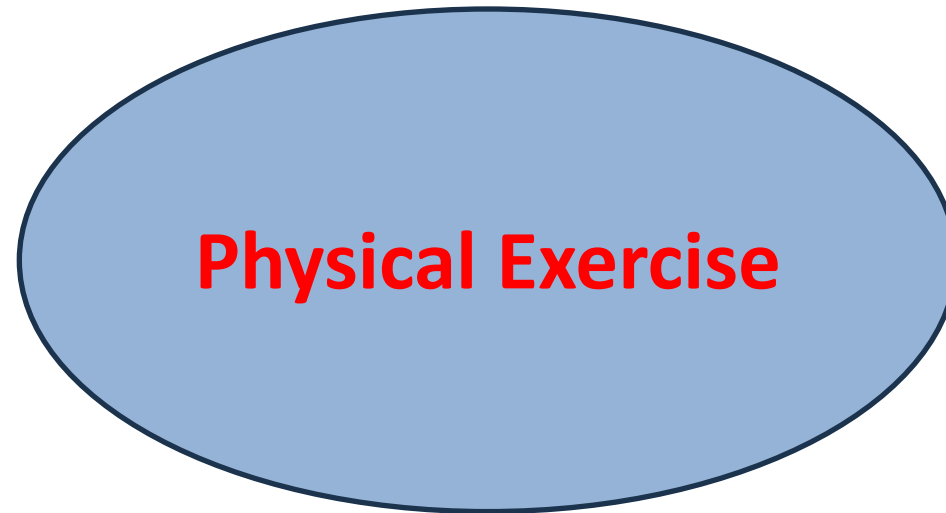**Malnutrition from awareness towards control**

Physical Activity

Any bodily movement produced by skeletal muscles that significantly increases energy expenditure. Intensity and duration can vary substantially.
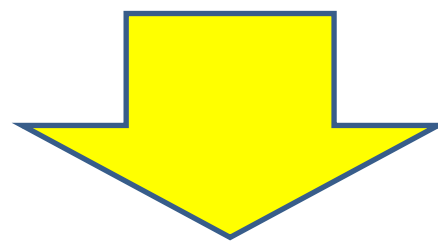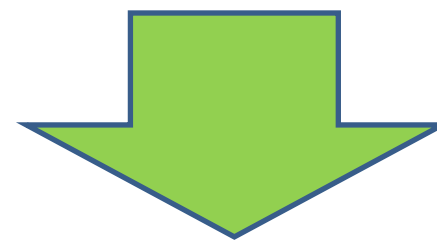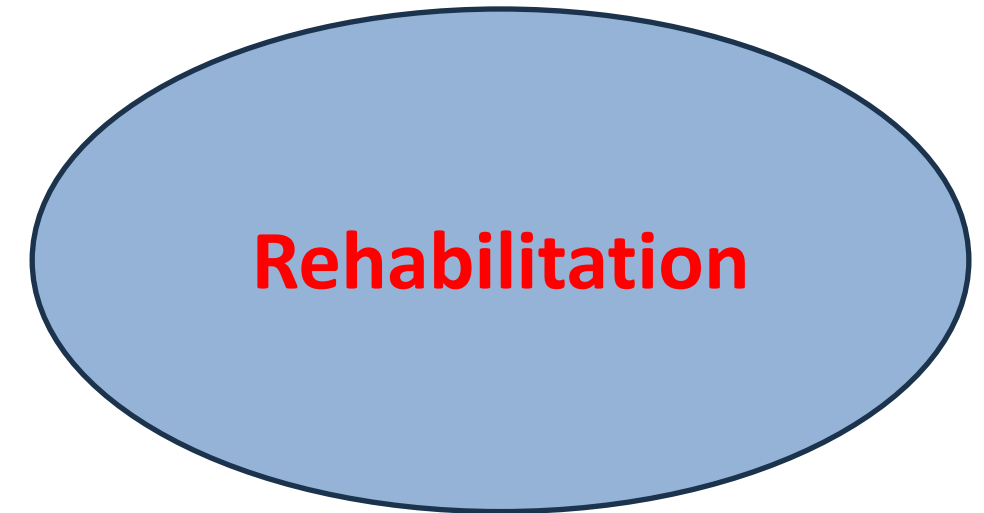
Sedentary persons

Physical Exercise

Activity planned, structured, and repetitive (bodily movements are performed with or without the explicit intent of improving or maintaining physical fitness).
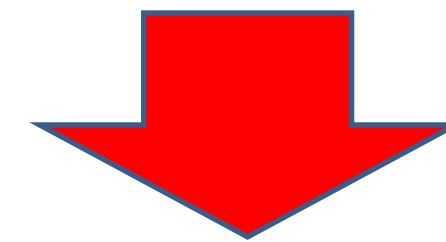
Active persons

Rehabilitation

Action of restoring someone to health or normal life through training and therapy after illness.

Ill persons

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The economic cost of not coding disease-related malnutrition: A study in cancer inpatients

All patient refined-diagnosis related group (APR-DRG)

Results: A total of 266 patients were evaluated. From them, 220 (82.7%) suffered from DRM according to the SGA. In 137 (62.3%) of these patients, diagnosis was coded, as opposed to 83 (37.7%) cases (33 subjects with moderate and 50 with severe DRM) in whom it was not coded. The sum of the APR-DRG weights after revising the diagnosis, it increased up to 384.3. The total cost reimbursement for the hospital before revising the diagnosis of malnutrition was 1,607,861.21€ and after revision it increased up to 1,799,199.69€, which means that 191,338.48€ were not reimbursed to the hospital due to the lack of coding of malnutrition. The cost reimbursement for each admission increased an average of 719.32€.

Conclusion: The prevalence of DRM in cancer inpatients is high. Nevertheless, the diagnosis is not coded in one third of patients, which results in important economic losses for the hospitals.

Ruiz-García I et al. Clin Nutr. 2022 Jan;41(1):186-191.

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TAKE HOME MESSAGES-1

The prevalence of malnutrition across settings remains high and is associated with a substantial cost burden

HEOR studies build considerable evidence to show that nutrition care effectively improves health of at-risk or malnourished patients and at reasonable cost.

The European
Nutrition for Health Alliance

SINPE
Società Italiana di Nutrizione Artificiale e Metabolismo

Malnutrition from awareness towards control

TAKE HOME MESSAGES-2

Policies should be implemented to address the:

➢ Reduction in direct costs associated with worse outcomes related to its presence

➢ Reduction in indirect costs associated with outcome but also for caring a subject/patient which clearly needs higher intensity of care

➢ Invest in screening procedure (identification of the subject/patient who could benefit from an intervention)

➢ Enable the early referral

➢ Implement value-based interventions (patient-tailored)

➢ Invest in spreading value-based care procedures

Setting-specific

Malnutrition from awareness towards control

THANK YOU!!!