

The Nordic Countries' System of Care for the Frail Elderly: An Icelandic Perspective

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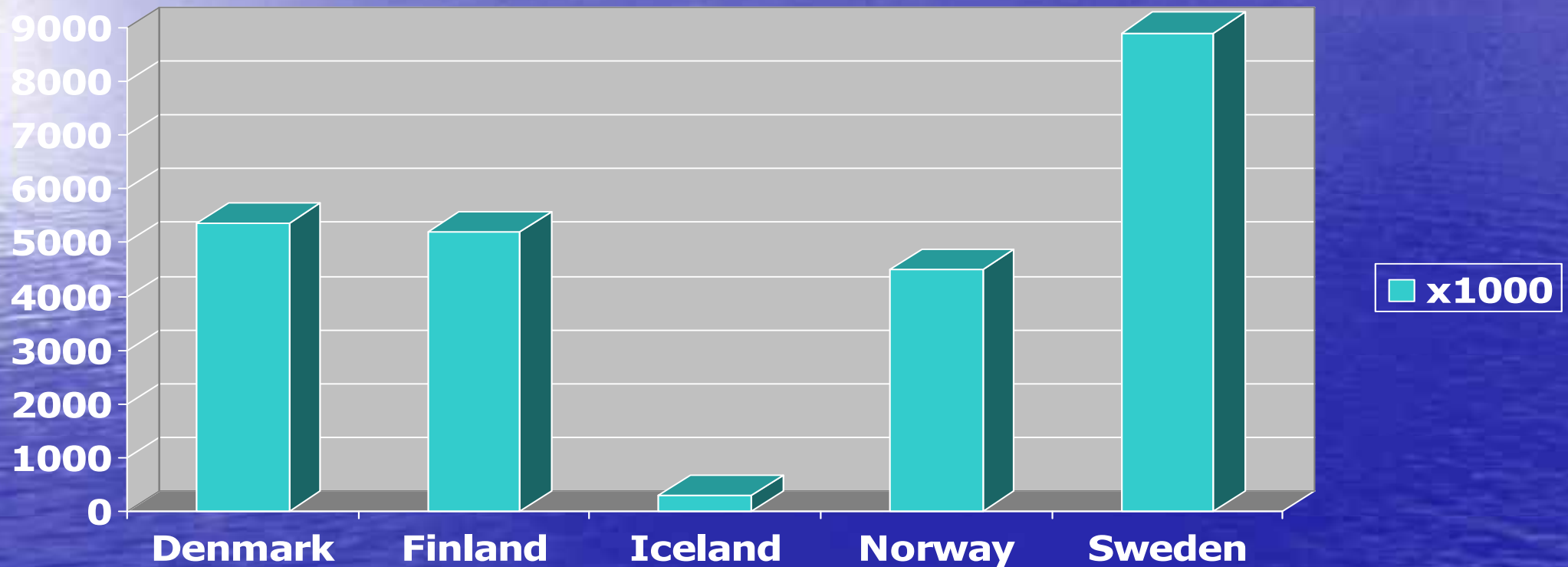
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- 1. Nordic Statistics**
- 2. Iceland as a prototype**
- 3. The case of Mary**



Population in Nordic countries 2001

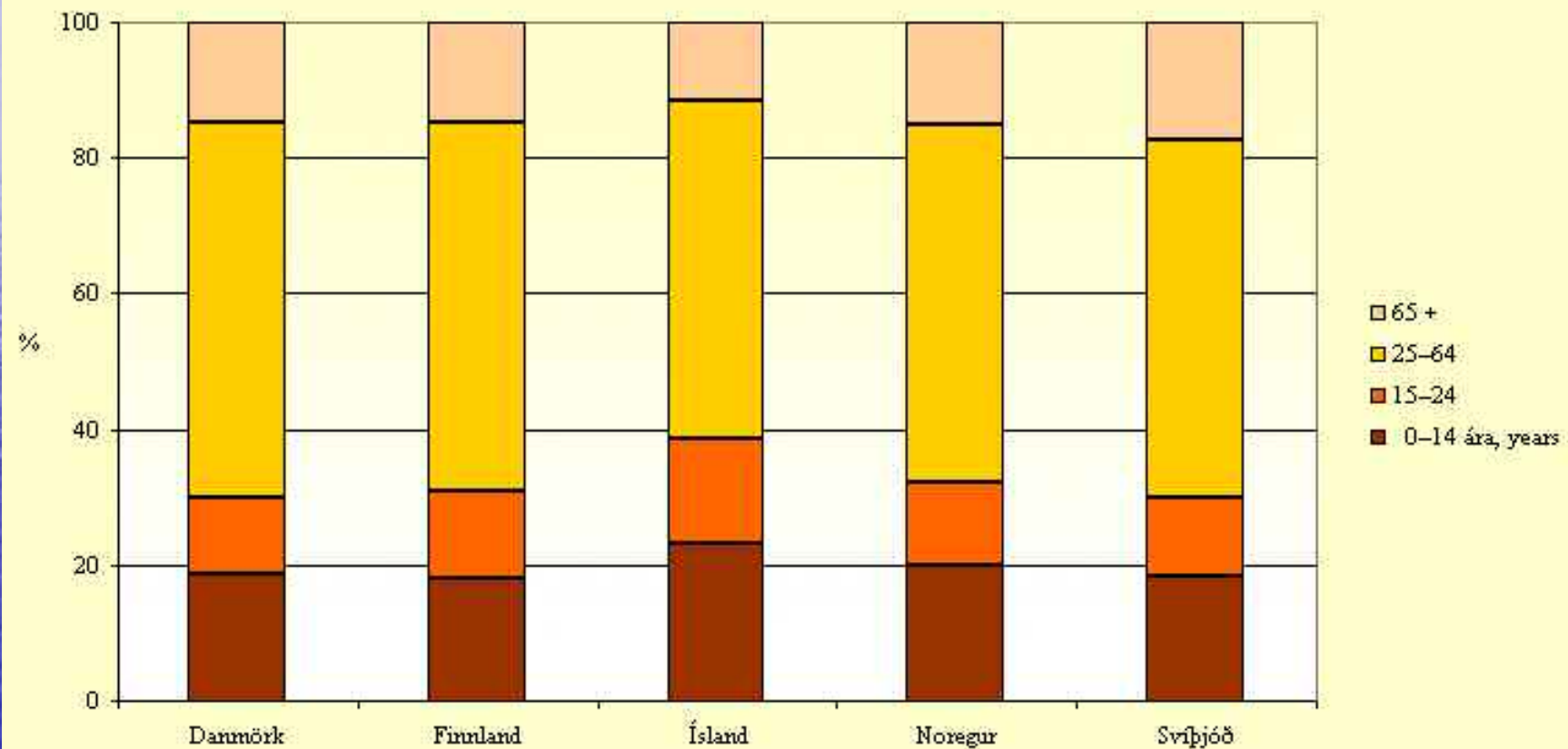


Iceland can serve as a prototype

Proportion of different age groups

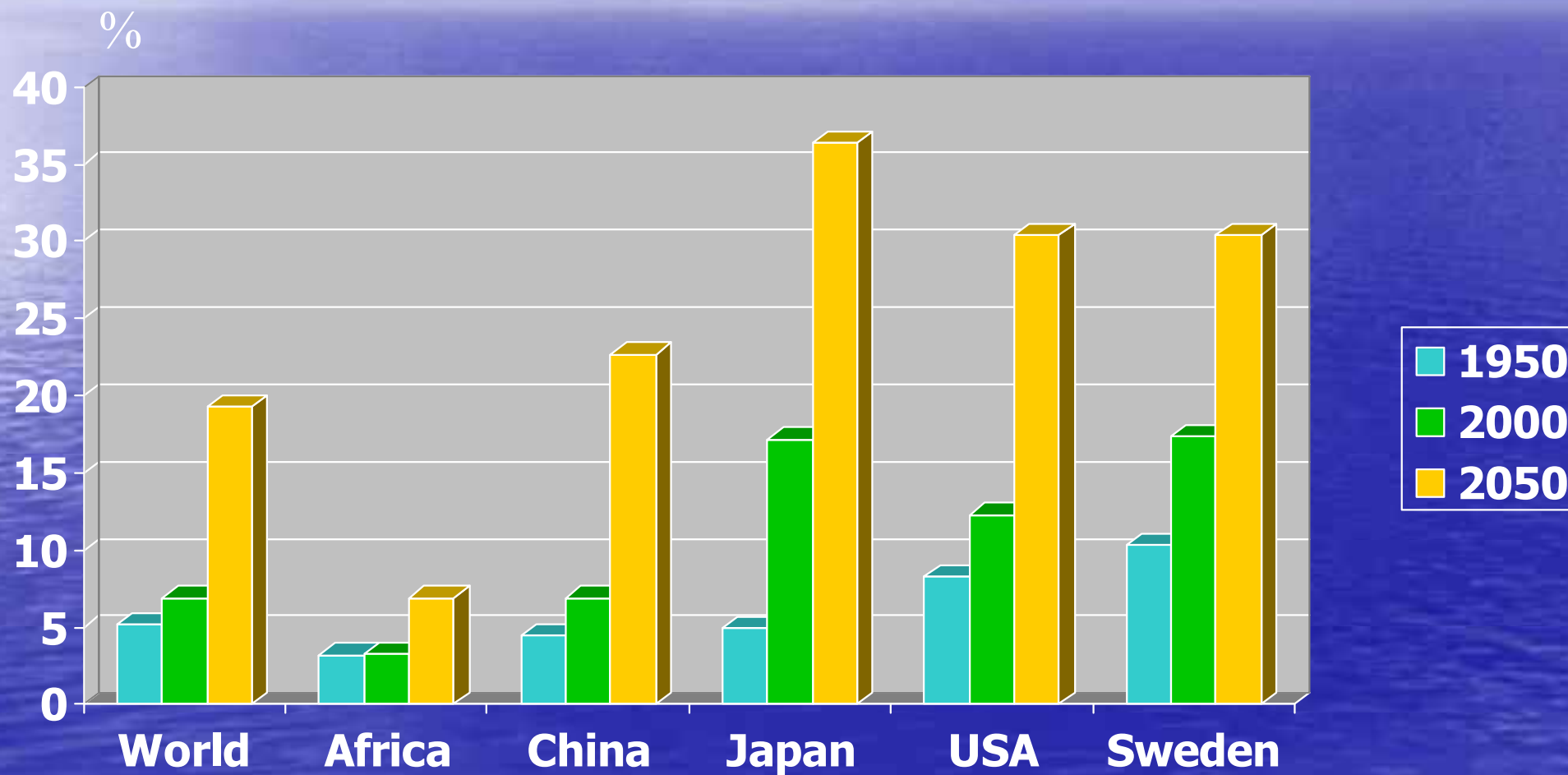
Mynd 2.2. Mannföldi á Norðurlöndum eftir aldri 2000, %

Figure 2.2. Population in the Nordic Countries by age 2000, %



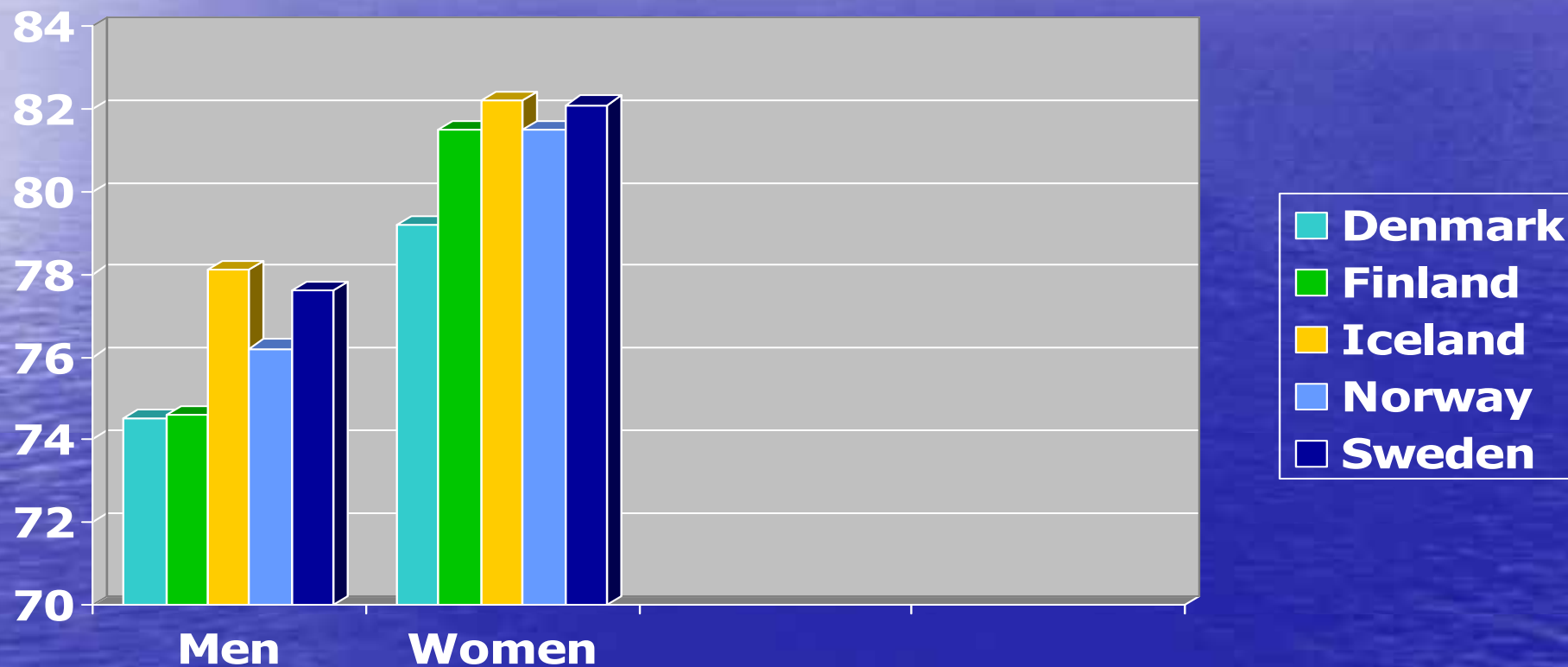
Dynamics of Population Aging in the Modern World Observed and Forecasted

Percentages of the Elderly (65+ years)



Source: United Nations 2001

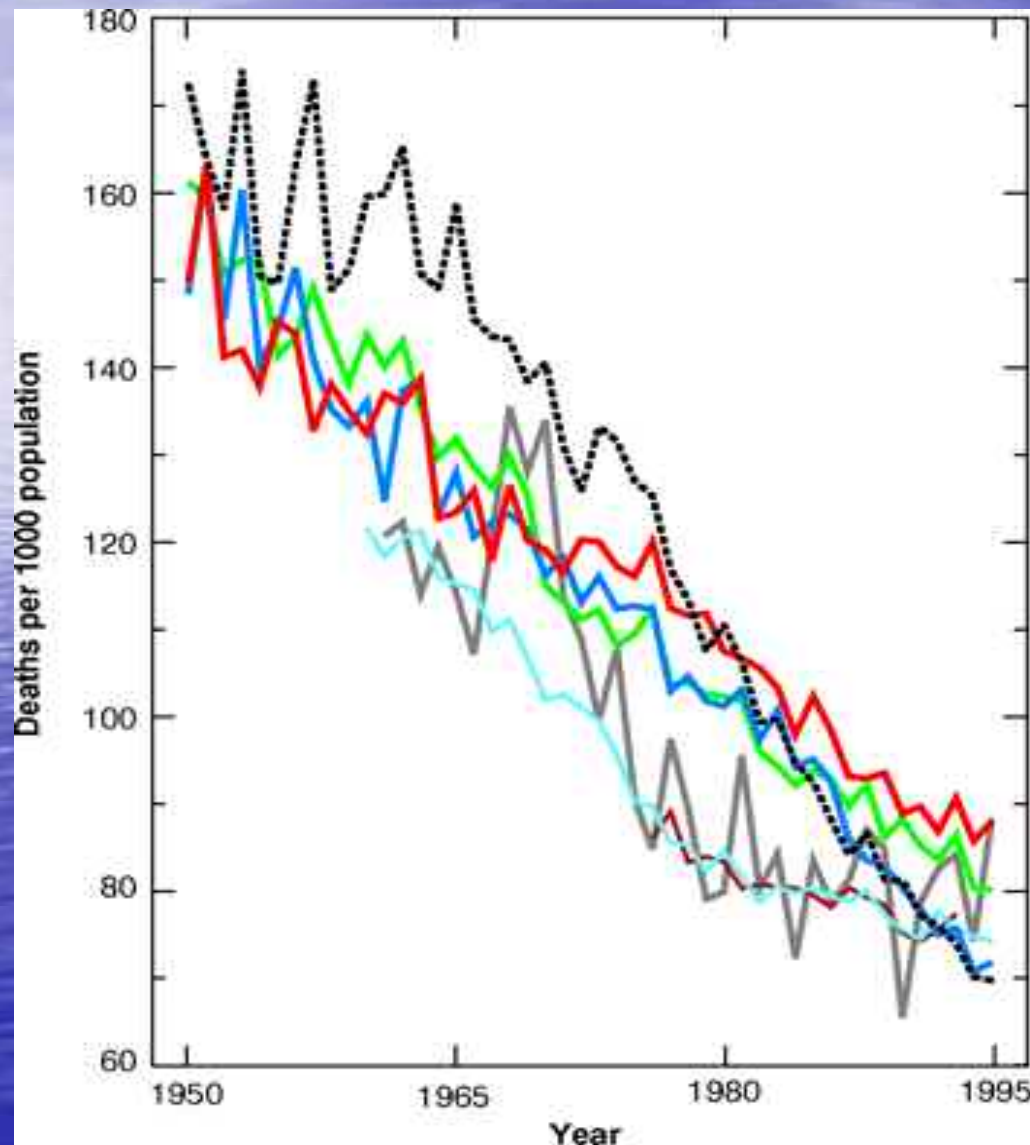
Average life expectancy at birth - 2001



Highest both sexes: Iceland

Lowes both sexes: Denmark – difference 3 years for women, 4 years for men

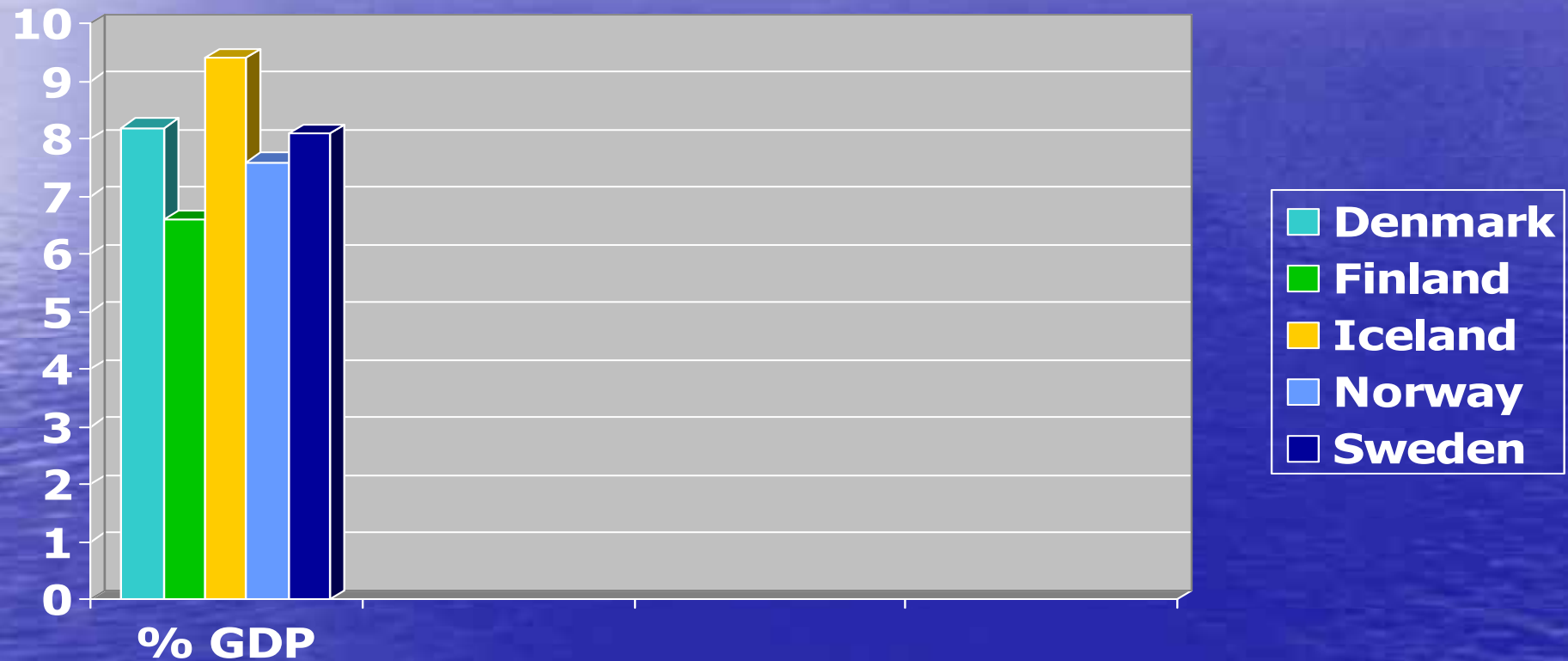
Death rate per 1000 women at ages 80-89 from 1950-1995



Japan: black
France: blue
Sweden: green
England: red
Iceland: gray
US: light blue

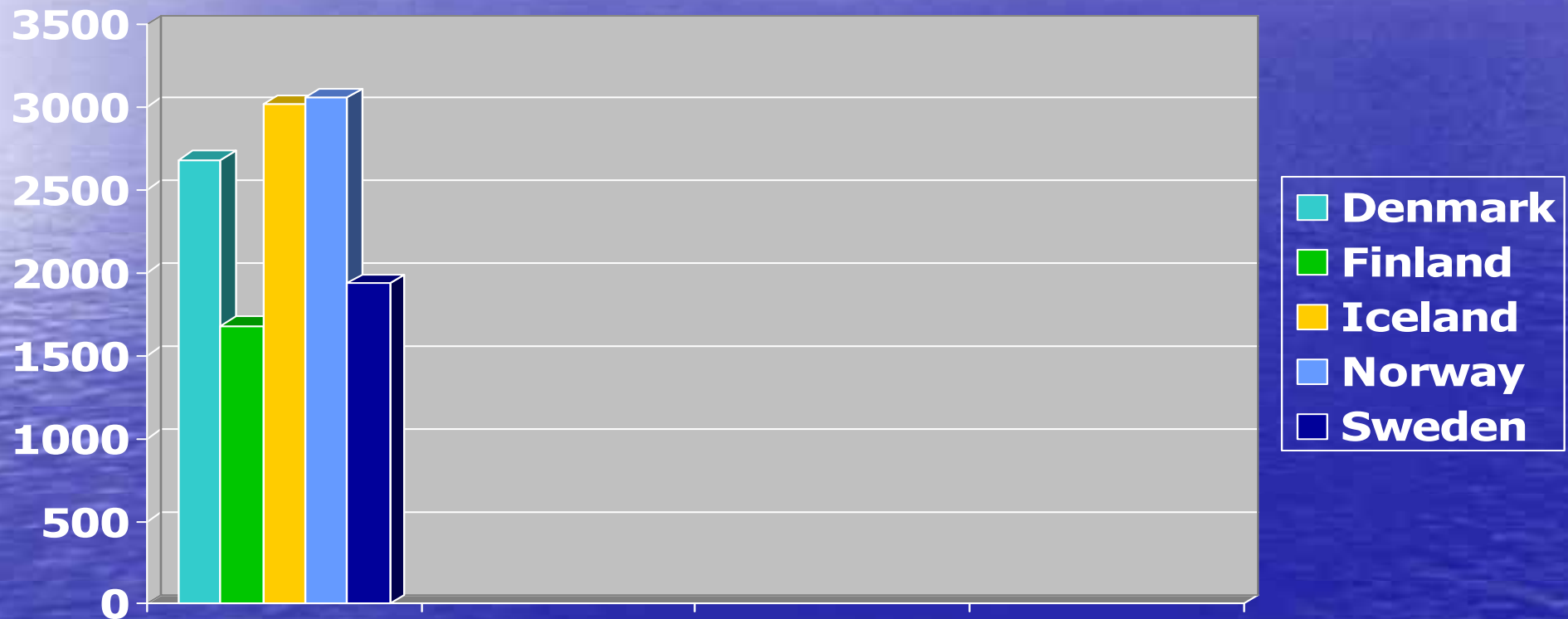
Vaupel JW et.al.
Science 1998

Health expenditure; % GDP - 2001



Highest: Iceland 9,4
Lowest: Finland 6,6

Health expenditure/capita in Euro's 2001

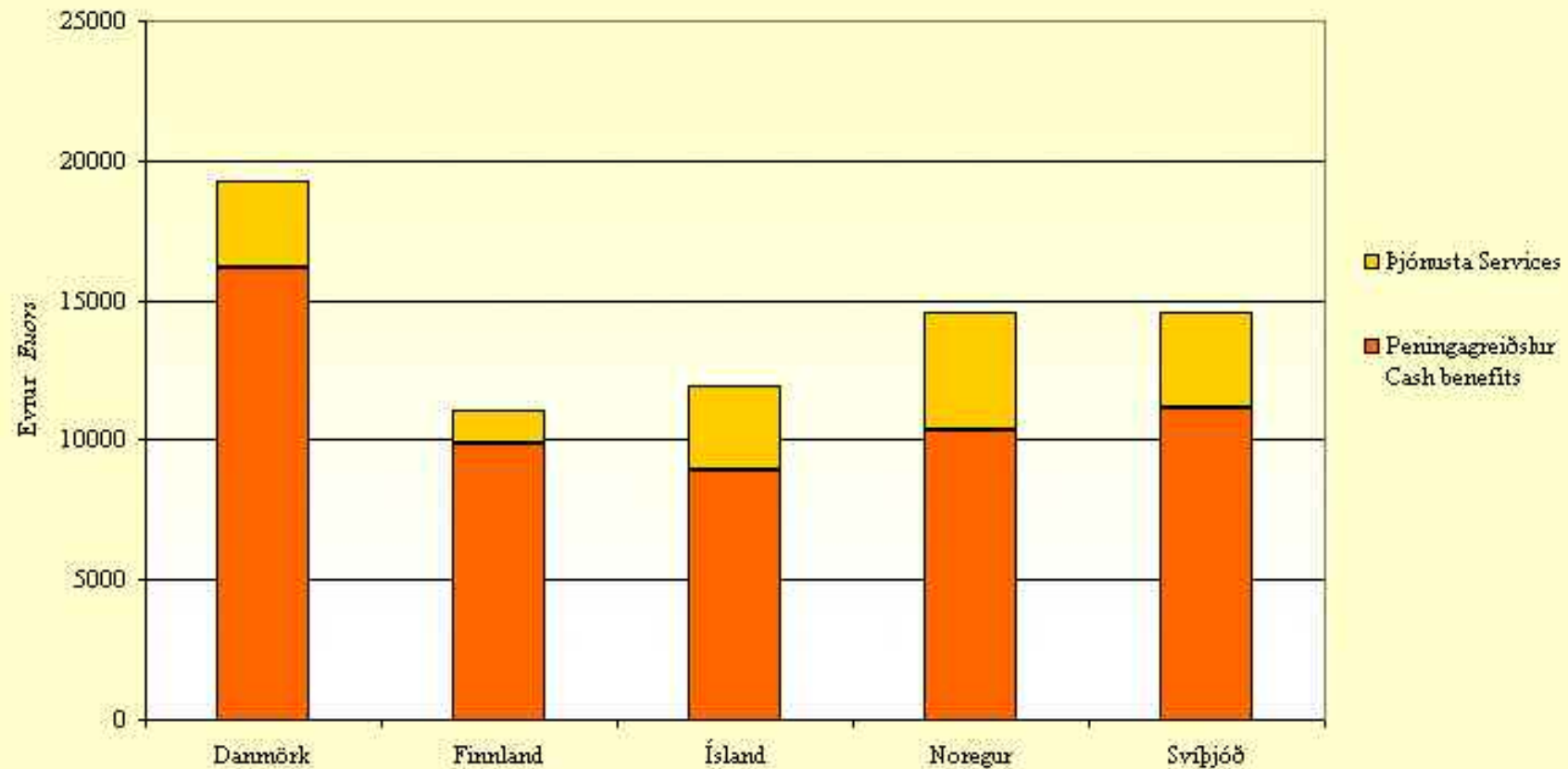


Highest: Iceland/Norway 3000
Lowest: Finland 1700

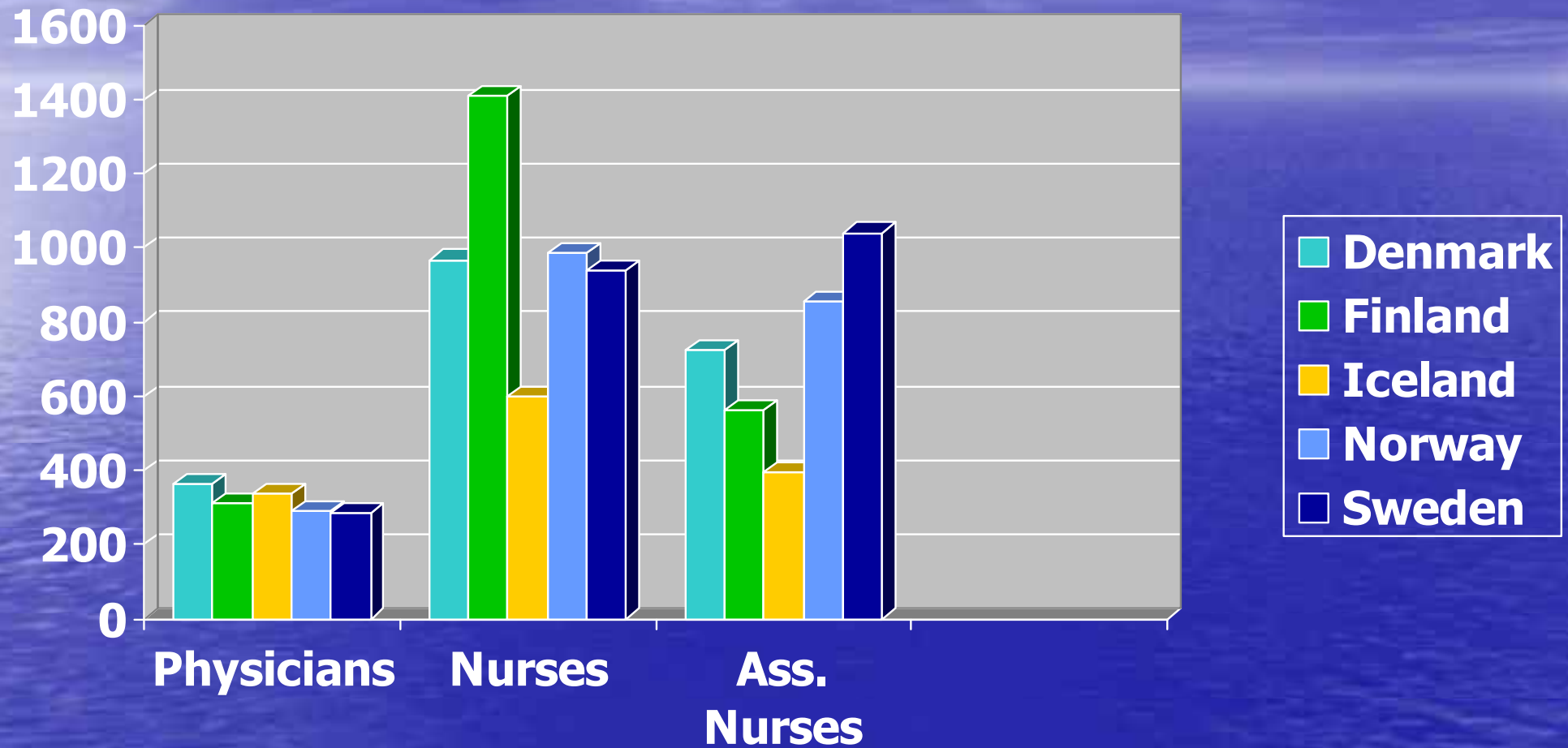
National expenditure for 65+, 2000

Mynd 7.1 Útgjöld vegna aldraðra á Norðurlöndum á íbúa 65 ára og eldri í jafnvirðisgildum 2000

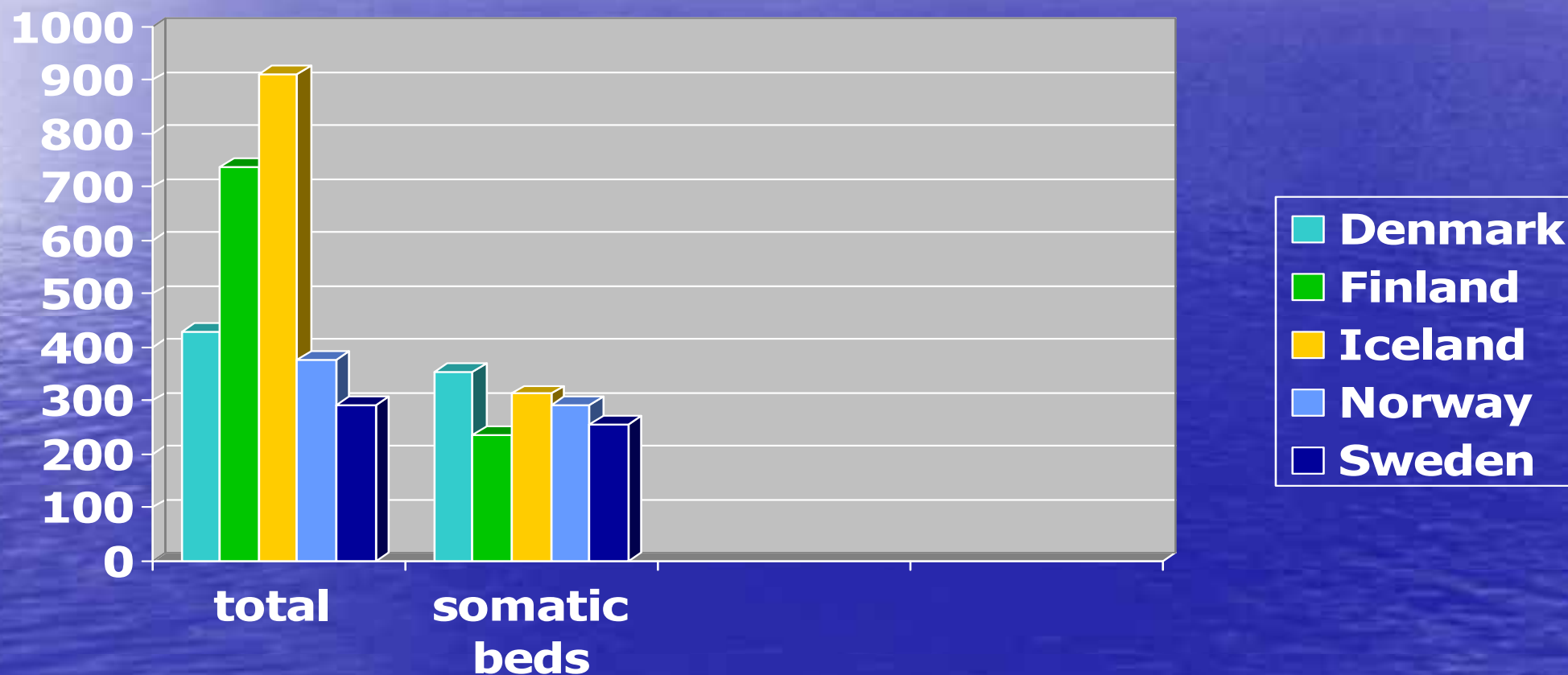
Figure 7.1 Expenditure to the elderly in the Nordic countries per capita 65 years and older in PPP's 2000



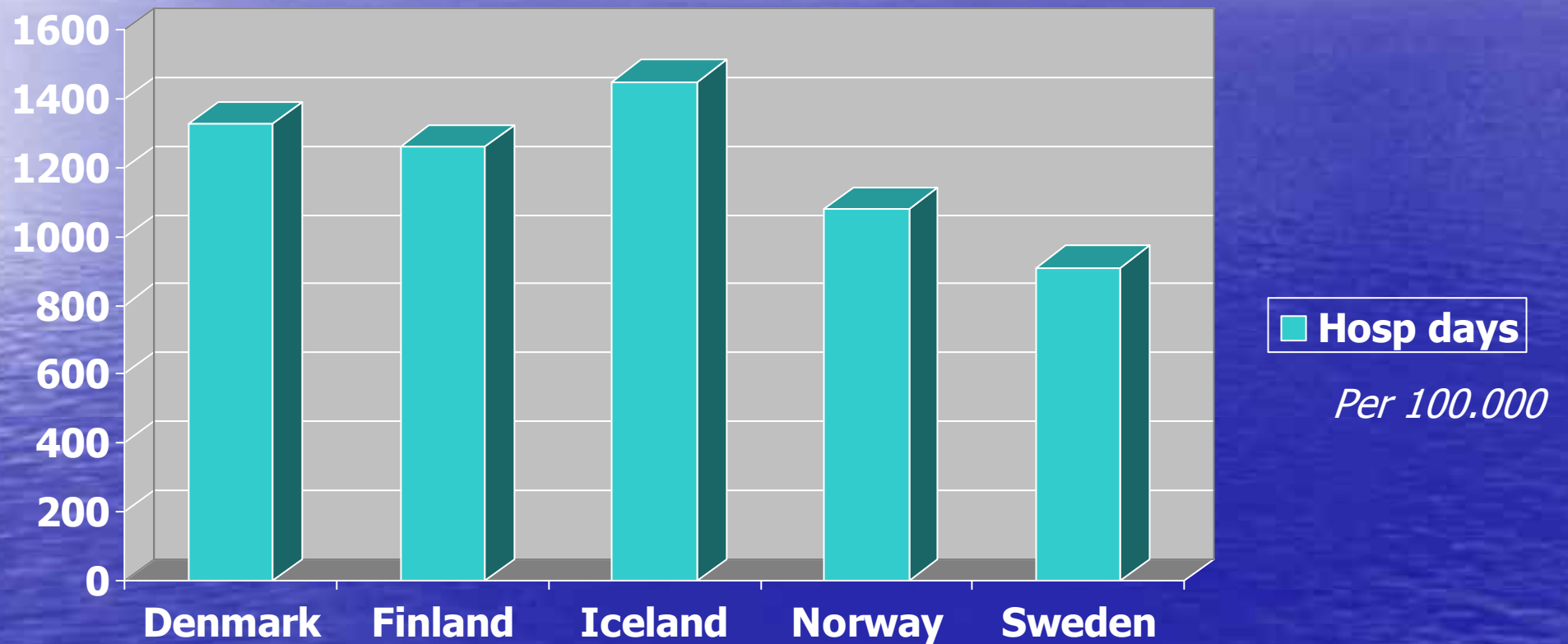
Staff/100.000 of population - 2001



Hospital beds/100 000 inhabitants - 2001



Hospital days in the Nordic countries -2001



Nordic Geriatric Professors Cooperate

- Meet once a year
- Work on common projects and publish together
 - Geriatric Assessment
 - Geriatric Rehabilitation
 - Prevention
 - Curriculum



The Icelandic Health Care System; A Nationalised System

- One insurance carrier, equal access
- Financed by taxes. Co-payment 25-30%
- Index family spends 2.8% out of pocket
- The elderly pay 1/3 compared to the young
- No co-payment for hospitalisation or rehabilitation
- 85-90 % satisfaction with the system

Disability and Long Term Care of Elderly in Iceland.

Past and Future Strategies

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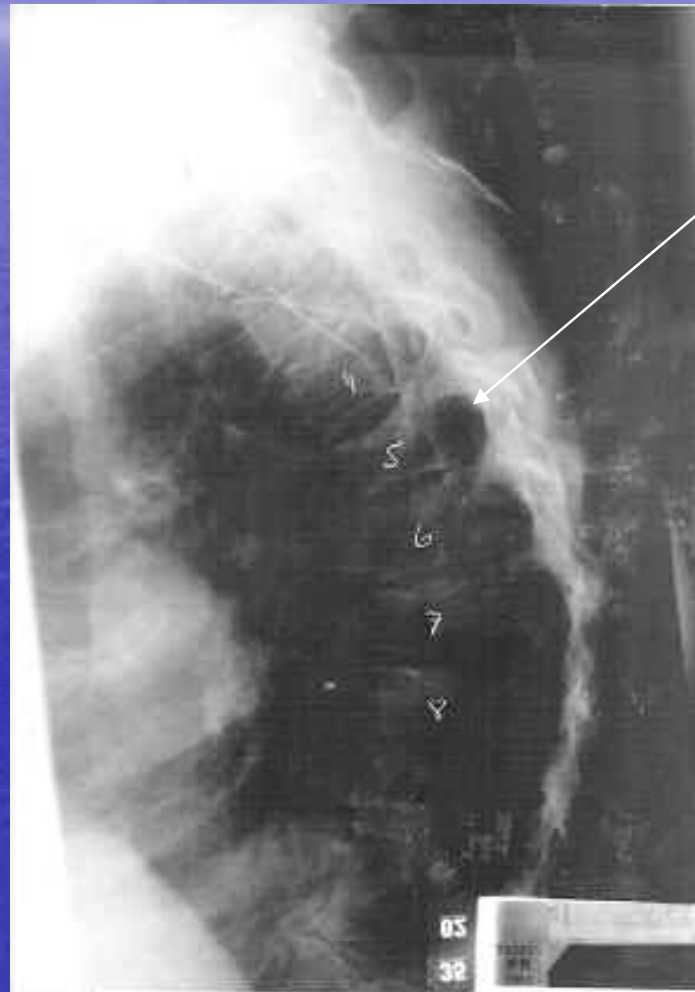
The Benefits of Healthy Aging

- Less disability, less Long Term Care, less cost, happier people.
- The last year of life is the most costly.
- The older the person is at death, the less costly is the last year of life, as palliation takes over from cure.
- Individuals and societies need to invest in good health and compression of morbidity and disability.

The goal: Compression of Morbidity and Disability.

- The prevalence of chronic disease doubles every five years after 70 years of age.
- But, by delaying a disease for 5 years, the number of elderly with the condition at the age of 85 is reduced by 50%.
- One medication may affect multiple organs; such as ACE inhibitors and Statins.
- Current knowledge is not optimally used; Hypertension, Atherosclerosis, Atrial Fibrillation, Osteoporosis

Sixty seven year old woman with serious osteoporosis.



Compression fracture of a vertebrae

Seventy seven year old male pt. with high BP and elevated cholesterol who lost a leg.



Clogged blood vessel
(artery) on thigh

Seventy three year old male pt. with high blood pressure, admitted for intracerebral bleeding.



Bleeding caused
aphasia.

Eighty five year old male patient with hypertension and dementia.

Lacuna



White Matter Change

Prevention - triple strategy - simultaneously.

- 1° Prevention: healthy food, exercising, immunizations, not to start smoking, prevention of accidents; Age 15 and for life.
- 2° Prevention: treat known risk factors: lower high BP, lower cholesterol, maintain bone mass; Age 40-50 and for life.
- 3° Prevention: treat disease, rehabilitate, geriatrics; Age 70+ and for life.

Some Important Icelandic Initiatives

- The Nursing Home Pre-admission Assessment.
- The Resident Assessment Instrument.
- Report on Prioritization in health care.
- The Policy of Icelandic Health Care to 2010.
- Clinical Guideline Development
- Icelandic Information Policy and Health Intranet.
- Policy on Quality Development.

Development of Clinical Guidelines

- Important issues, common, high risk, expensive, improved service to patients.
- Variability in practice.
- Possibility to do better.
- Cost-effective to tackle.
- Need to be financed.

Development of Clinical Guidelines -

2.

- Physicians have to be motivated.
- Many sets of guidelines exist, still important to work on them locally.
- Implementation, monitoring and modification over time crucial.
- Need to study the psychology of professional practice and health related behavior.
- Better define quality evidence and cost effectiveness

Report on Prioritization in Health Care, 1998.

- A: ethical factors.....
- B: Prioritization; including:
 - All new medical equipment and methods of treatment shall meet agreed standards of effectiveness and safety.
 - An interdisciplinary committee shall be established to examine the cost-effective use of all new technology and research results.
 - The ability of the health service in making best possible use of new technology and research shall be ensured. (3-5% of budget)

Report on Prioritization in Health Care, 1998, con't.

- B: Prioritization;
 - Health-care services shall meet agreed standards of quality.
- C: Management and Policy Formation, including;
 - Increased emphasis shall be placed on preventive medicine.
 - The health information system shall be standardized, and conditions created for linking it to other information systems and data bases.

Icelandic Health Policy to 2010.

Examples

- Reduce smoking among people 18-69 years of age from 27% in 1998 to 15% in 2010.
- Reduce cardiovascular deaths in the age group 25-74 years for men by 20% and women by 10%. M=131 and F=76/100.000 1991-1995.
- Reduce strokes by 25%. M=44.1 and F=30.4/100.000 1991-1995.

Icelandic Health Policy to 2010

Examples-2.

- Reduce number of hip and vertebral fractures by 25%.
- Over 50% of people 65 and older should have at least 20 healthy teeth in bite.
- Over 75% of people 80 and older should be able to live in their own homes. In 1997 73% lived at home.

Roadblocks to Healthy Aging

- Individuals are uninformed about what may improve likelihood of good health.
- Ageism by professionals and societies.
- Physician's limited motivation to follow guidelines and patients noncompliance with advice.
- Politicians/Physicians take short term view instead of long term view in financing/delivery of health care and do not see the forest for the trees.

The Elderly in Iceland

- Total population of 290.570 with 11.5% older than 65
- Life expectancy at birth 82.6 years for females and 78.4 years for men in 2001-2
- Life expectancy at age 65 was 20.7 years for females and 17.5 years for males in 2001-2 and at the age of 80, 9.2 years for women and 7.7 years for men.
- Infant mortality per 1000 live births 5.5
- 9.4% of the Gross Domestic Production is spent on health care in 2001
- Health care expenditure was 3015 Euros per inhabitant/yr in 2001

•The Elderly and Icelandic Law

- First set in 1982. Revised in 1989 and 1999
- The autonomy shall be respected
- Entitlement to services that are needed
- Needs met at a level that is relevant and economic
- Supported to live at home as long as possible
- Access to a nursing home when such a need arises

The Organisation of the Elderly Care

- Co-ordinated from the community health centre;
- Home nursing care and home help
- Meals on wheels
- Respite care, day care
- Access to geriatric assessment units
- Pre-admission assessment for a nursing home placement

More About the Icelandic System

- Good in theory, but less than perfect
- Imperfect co-ordination between nursing and home help – but now active plans to unite the service
- Part of the problem has been that social service is financed by the county council but home nursing service, community health, nursing home and hospital care by the state
- GP's do not make regular house calls to the elderly in home care

More About the Icelandic System

2

- Home health care less developed than nursing home care
- Maldistribution of nursing home beds – least number in Reykjavik
- Patients from hospitals are not prioritised to nursing homes
- The Ministry of Health is does not manage and synchronize the system

The University Hospital Reykjavik

Department of Geriatrics –

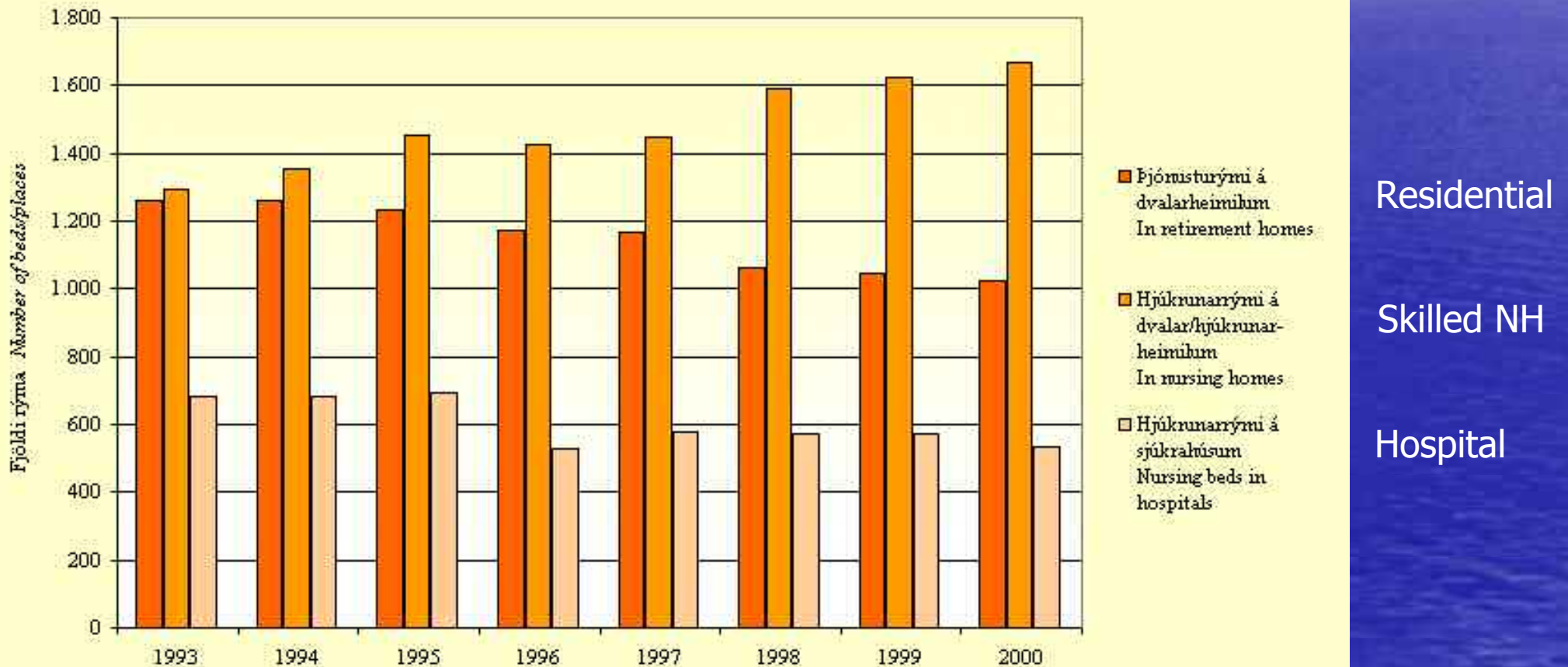
serving a population of 170.000

- Beds are 120 – 14 geriatricians trained in US, Britain and Sweden
- One acute care unit for the elderly and a consultation service
- Two dementia units
- One 7 day rehab unit, two 5 day rehab units
- Palliative care unit
- Day hospital
- Memory Clinic and Falls Clinic and General Clinic
- Problem: Bed blockers! ? If RUG 'S payment system will solve this issue

Beds for the elderly 1993-2000, Iceland

Mynd 7.6 Vistrými fyrir aldraða á stofnunum 1993-2000

Figure 7.6 Beds and places in retirement homes, nursing homes and -wards 1993-2000



About 1000 beds per 100.000 of population

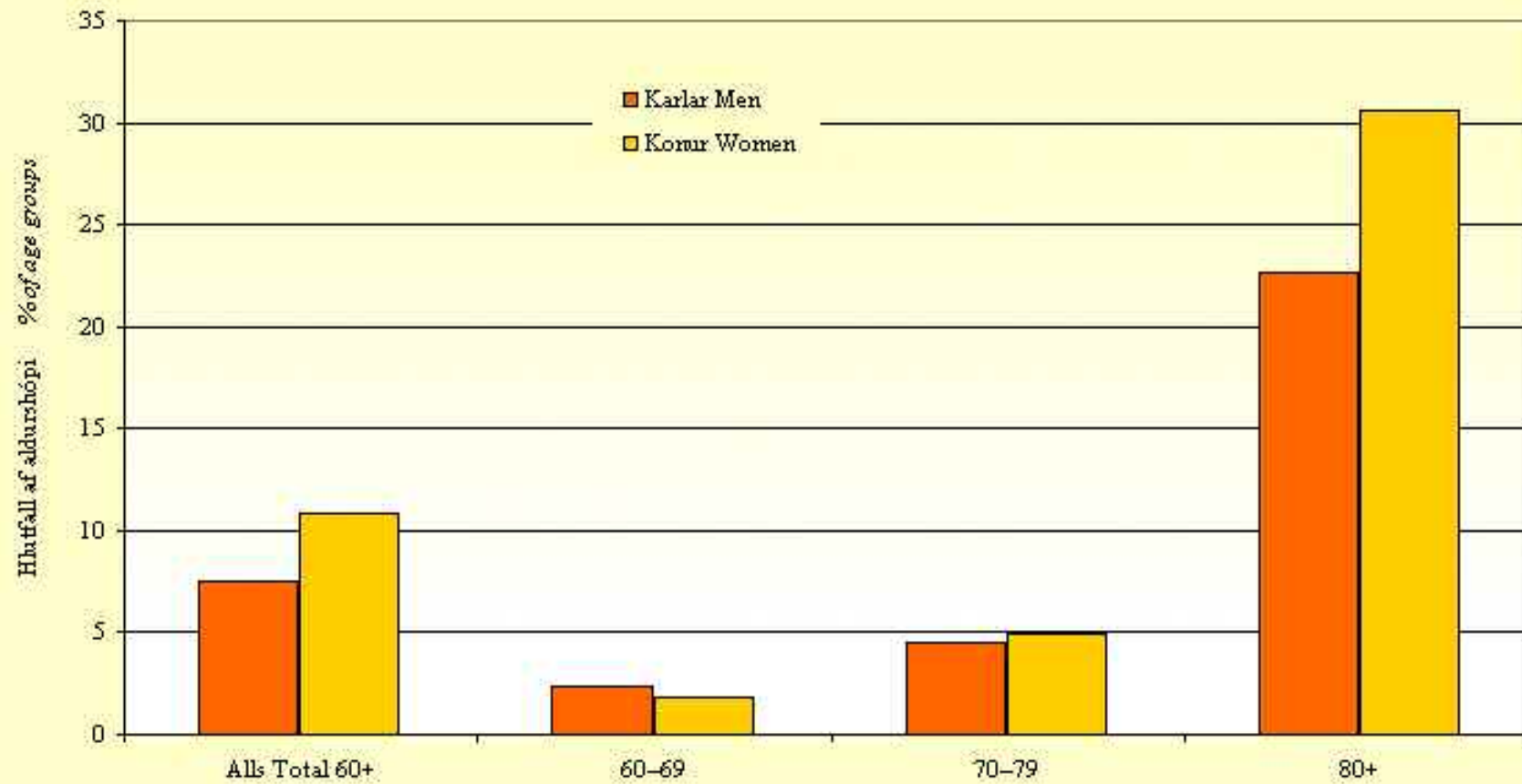
Icelandic Nursing Homes

- 9.3% of the elderly live in nursing/residential homes- 65% are NH beds
- Half of all NH beds are in Reykjavík, but greater part of the elderly population – thus still relative shortage there
- Pension fund income goes toward the cost, but not equity.
- Maximum fee of 2500\$/month
- The elderly keeps 250\$/month for personal expenditure

Occupants of Resid. and NH 2001-Iceland

Mynd 7.7 Vistmenn á stofnunum aldraðra eftir kyni og aldri 2000

Figure 7.7 Occupants of retirement homes and nursing homes/-wards by sex and age 2000



RH's
Males 80.5
Females +2

NH's
Males 82,7
Females +2

Females
2/3

The Nursing Home Pre-admission Assessment

- Mandatory according to Icelandic law, in effect from 1991
- Performed by a multidisciplinary geriatric team
- Standardised form - risk factors identified
- Two levels of care defined: skilled and unskilled
- National nursing home waiting list

The Nursing Home Preadmission Assessment

- Assessment in four domains;
- Social (IADL, Housing, Informal Support)
- Physical health (Illness, Medications)
- Mental health (Dementia, Abnormal Behavior, Anxiety-Depression)
- Functional (Mobility, Eating, Dressing and Grooming, Continence)

The Nursing Home Pre-admission Assessment

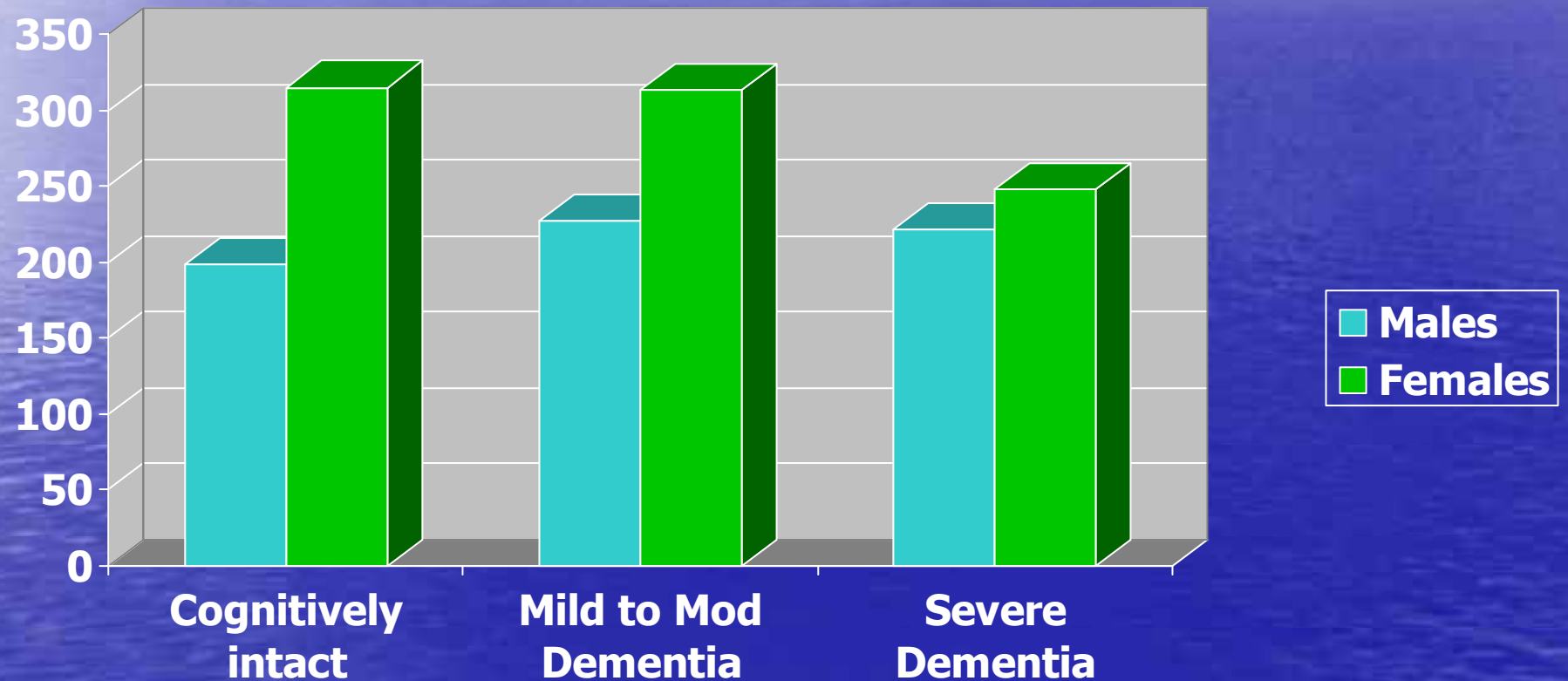
- each of the 12 subcategories is assessed on a scale of 0-10, maximum of 120 points
- each level is predefined
- number of points predict the level of NH care - unskilled and skilled.
- number of points correspond to the degree of urgency for each level of care
- number of points predict mortality

Factors Predicting a Skilled Nursing Home Placement

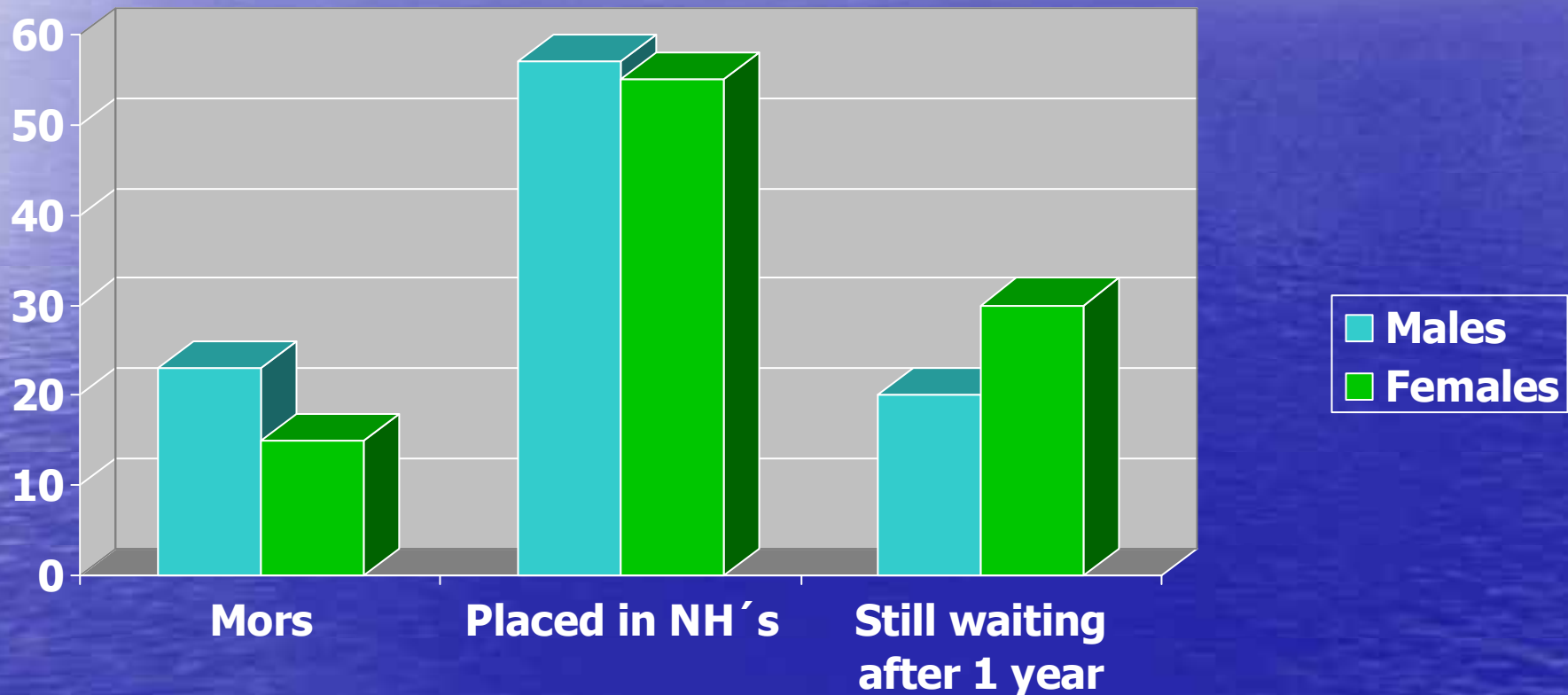
	OR	CI
● Physical health	6.96	(3.27-14.79)
● Medication use	3.05	(1.50-6.20)
● Dementia	5.91	(2.70-12.93)
● Mobility	4.54	(2.10-9.81)
● Eating	8.13	(3.92-16.86)
● Dressing	3.63	(1.89-6.99)
● Incontinence	2.63	(1.21-5.71)

$r^2=0.631$

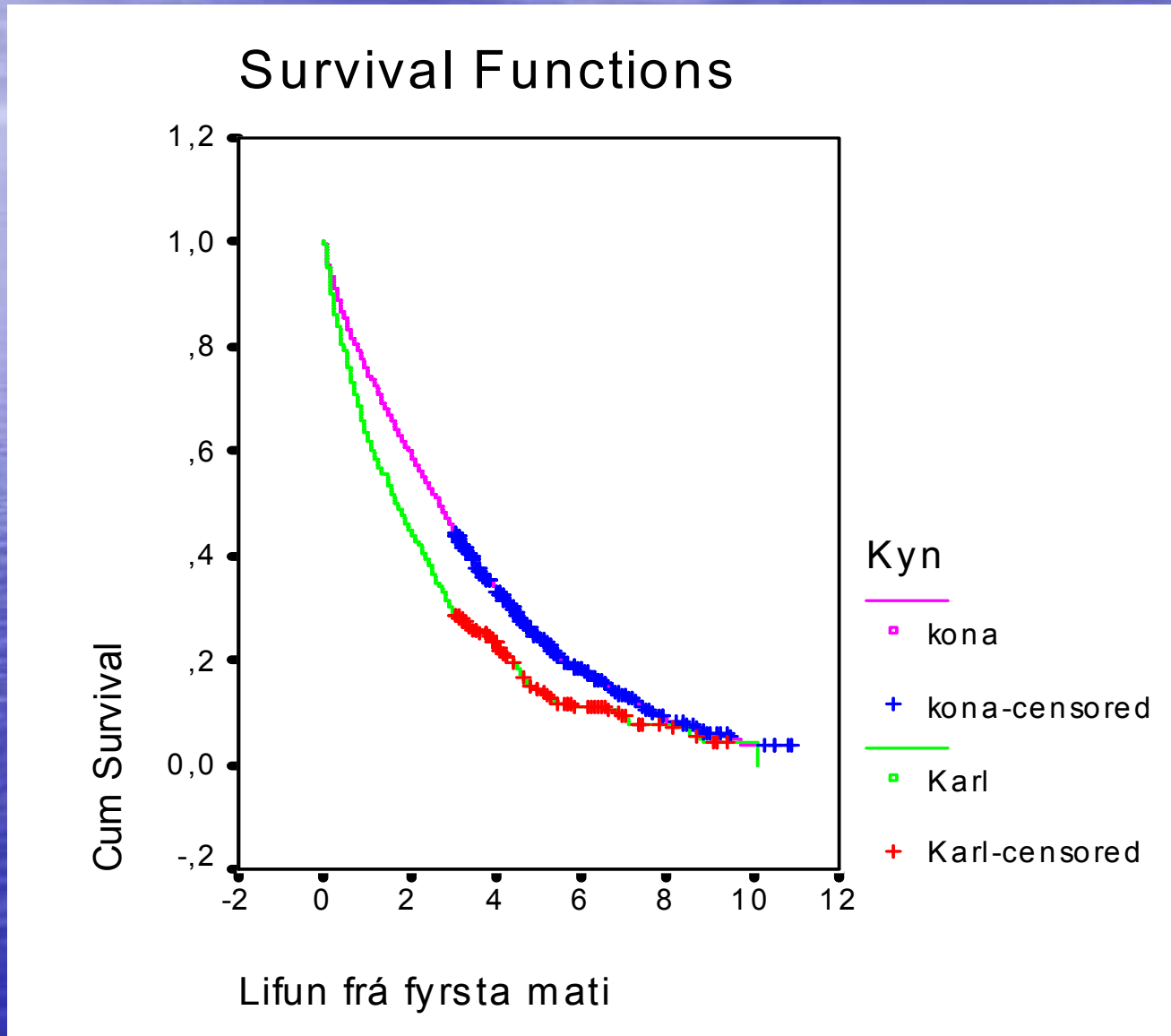
Waiting-time for a NH bed in Reykjavík



Outcome one year after PNHA in Reykjavík – 10 year observation



Survival after first PNHA

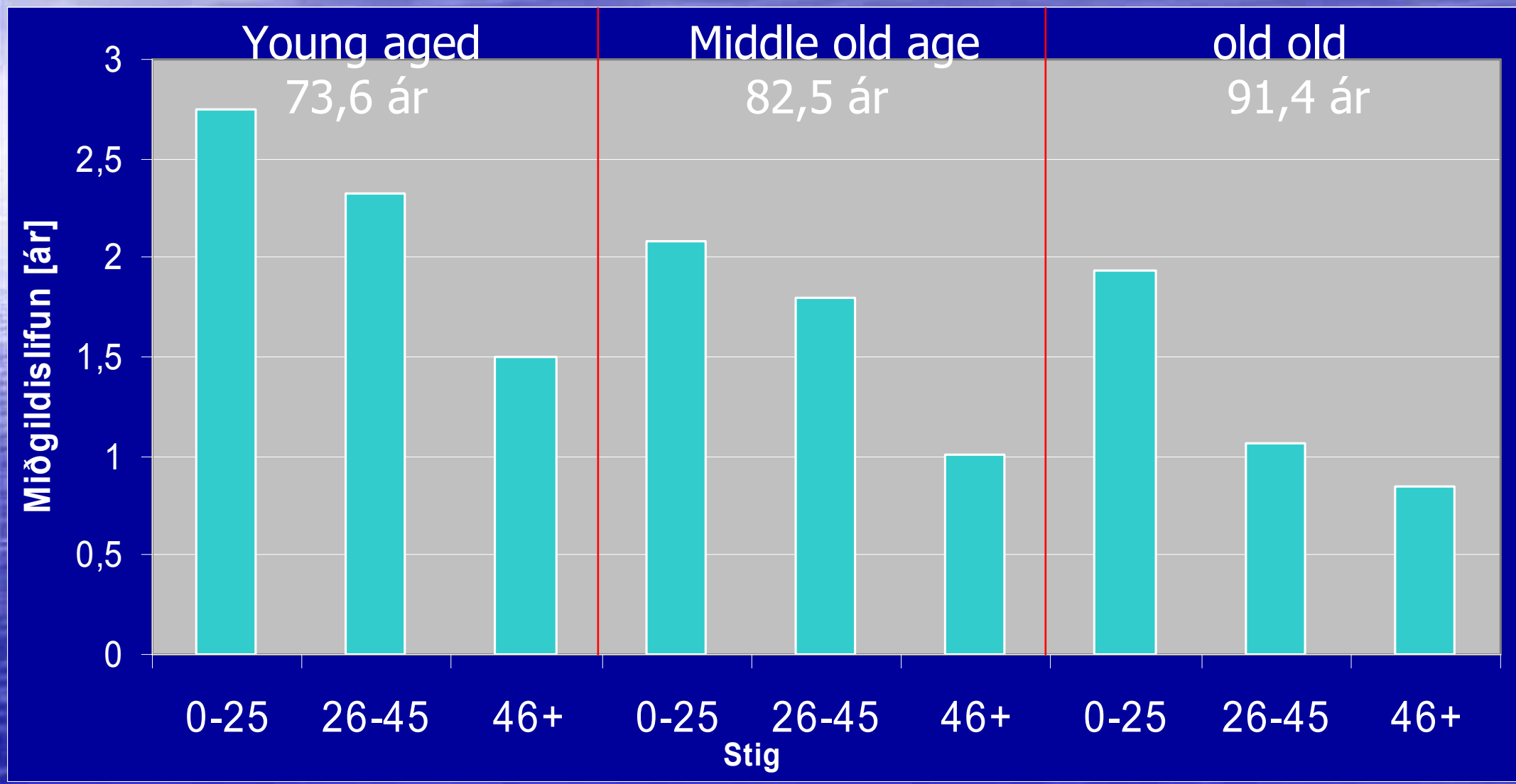


Factors that predict survival – after correction for age – 10 year observation

● Males	RR/point	CI	p-value
– Mobility	1,033	1,000 -1,068	0,050
– Ability to feed	1,059	1,011-1,109	0,015
– Control of urination	1,027	0,998 -1,057	0,066
– Physical health	1,012	0,986 -1,038	0,348
● Females			
– Mobility	1,046	1,019 - 1,074	0,001
– Ability to feed	1,025	0,993 -1,058	0,118
– Control of urination	1,007	0,983 - 1,031	0,574
– Physical health	1,018	0,998 - 1,038	0,072

Relationship between survival and age and number of points in PNHA for Males.

Points for social situation omitted.



Lessons from the PNHA

- Waiting time seems to be excessive after a certificate of need for NH placement has been issued, particularly in light of high mortality on the NH waiting list.
- It is of interest that the relationship between age and function and survival supports the PNHA and that it mirrors well underlying biological factors.
- Prioritization for admission to NH 's should take the relationship between age and points into account as it relates to survival.

Important Issues in the Care of the Elderly in Reykjavik

- Need for a hospital based home care – already agreed on professionally, but awaits financing.
- Attention to quality of care
- Financing of the system needs to be reassessed. The University hospital uses DRG's but that system unfit for geriatrics, rehabilitation and psychiatric care.

Assessment in Icelandic Geriatric Care

- The PNHA is one type of geriatric assessment
- There is one acute geriatric assessment unit (24 beds) and 120 postacute/dementia hospital beds
- The MDS-NH (RAI) system is now mandatory in all Nursing homes – financing based on MDS-RUGS
- The MDS-HC will be implemented in the newly combined home care service
- The road to successful high quality cost-effective care is through assessment.



The Use of RAI in Iceland

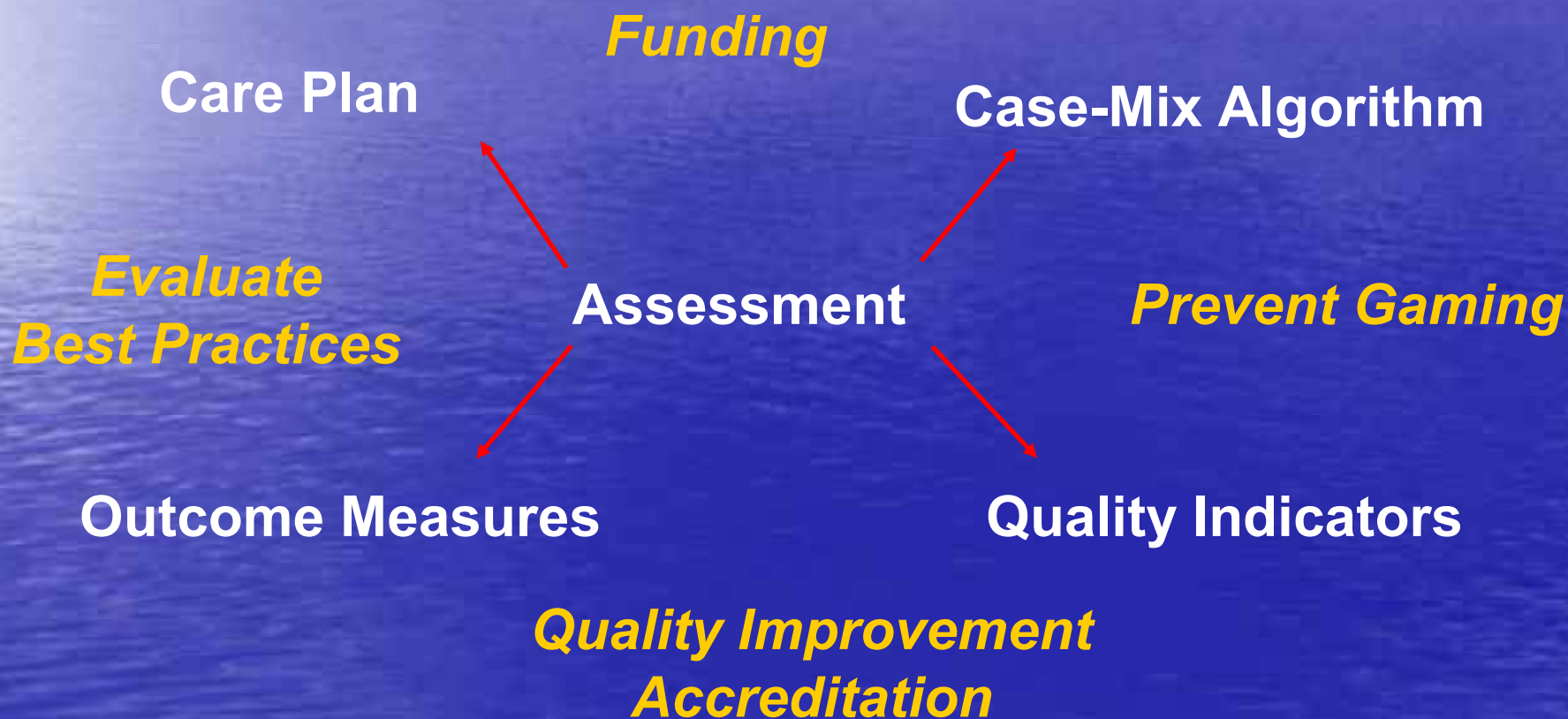
Started in 1994

Why we use it and some interesting
lessons we have learned

The RAI Family of Instruments

- Chronic care/nursing homes
 - RAI 2.0
- Home Care
 - RAI-HC2
- Mental Health
 - RAI-MH
- Acute Care
 - RAI-AC
- Post-Acute Care-Rehabilitation
 - RAI-PAC
- Palliative Care
 - RAI-PC

Applications of MDS Data



(Source: Hirdes et al., *Healthcare Management Forum*, in press)

Cross National Comparisons with MDS NH

RAI-NH used

Iceland 1994, Greater - Reykjavik
n=1255 from all 11 Nursing Homes.

Denmark 1992-93, Copenhagen,
n=3451 from 65 of 75 Nursing Homes.

U.S.A. 1993, 6 states
(Kan, Mai, S-Da, Neb, Miss, Wis),
n=273491 from all Nursing Homes.

Individuals with the least need for Nursing Home Placement.

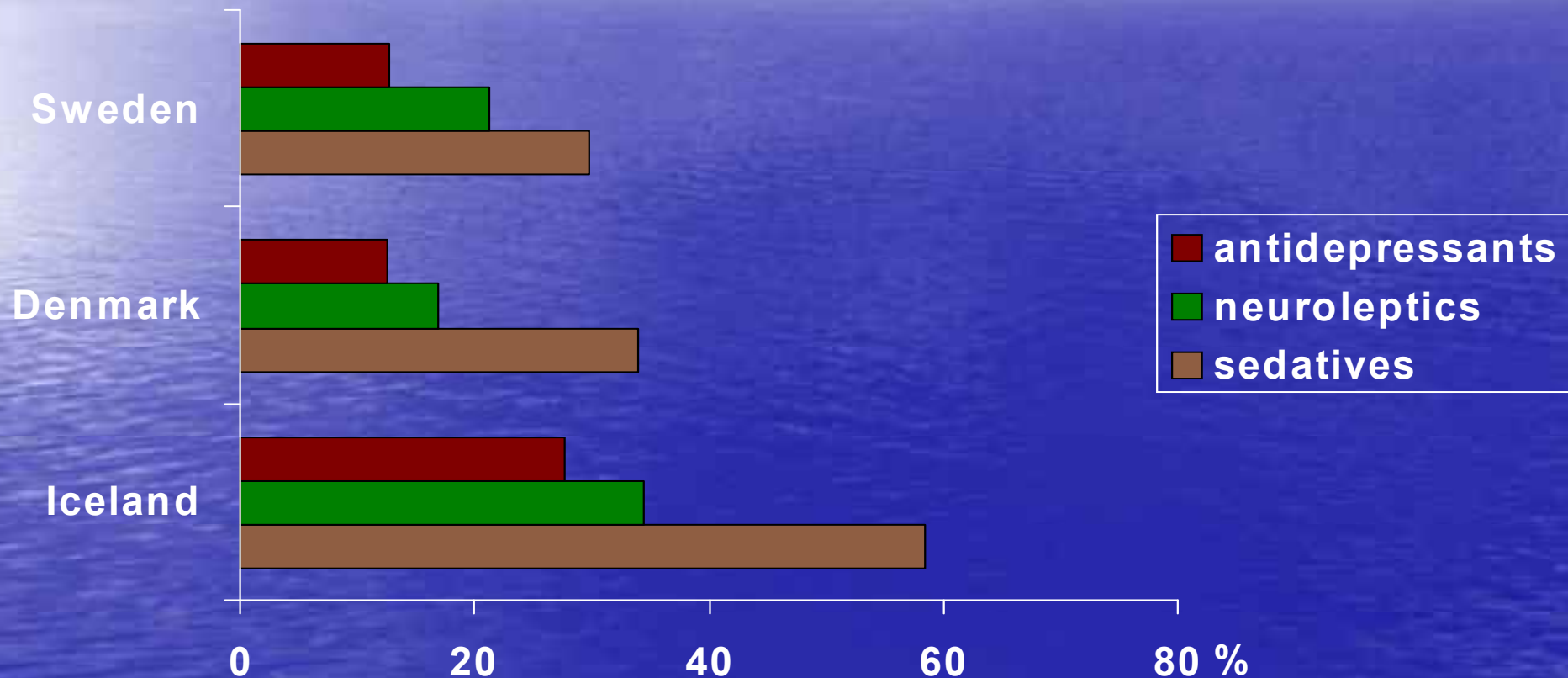
	Proportion in Nursing Homes		
	Denmark	Iceland	U.S.A.
Wide definition	43,2	51,6	30,0
Intermediate def.	23,5	34,6	14,4
Narrow def.	3,1	4,6	2,3

Quality Indicators

	Denmark	Iceland	US
	%	%	%
Pressure ulcers	7,6	8,9	9,7
Depression without RX	45,0	23,5	43,8
Antidepressants	44,3	74,2	29,5

Nord-RAI 1992-4

Nordic use of psychoactive medications in Nursing Homes





The EuropeanADHOC Study in Homecare

Lead by Prof. R. Bernabei, Italy

Nordic Characteristics

- About 70% live alone vs Italy 12%
- Depressive symptoms seem to be less prevalent: 0.5 vs 2.0 on a MDS Depression scale
- Loneliness similar to most European countries – 20-25%. Exception is Italy: 7.5%

	Mean ADL	Mean CPS	Total hours of care	Any Care giver burden (%)	Better off elsewhere (%)
Czech Republic	2.0	1.0	1.5	5.8	27.9
Germany	5.7	1.4	5.3	18.7	7.1
Finland	0.9	0.7	3.4	4.7	12.5
Iceland	0.6	0.6	2.8	4.7	18.0
Italy	12.5	1.8	3.9	20.8	3.4
Netherlands	0.7	1.0	3.6	7.0	17.1
Norway	1.9	0.6	3.1	8.3	8.0
UK	2.8	1.0	8.2	11.1	9.0
Total	3.8	1.1	3.9	11.1	12.5

Best ADL and Cognitive function is in the Nordic countries and the least caregiver burden

Regression – Carer burden

	ADL	CPS	Age	Live alone	Hours of care
Czech Republic	<0.01	0.31	0.18	0.07	<0.01
Germany	0.18	0.45	0.12	<0.01	0.89
Finland	<0.05	0.68	0.53	<0.01	0.71
Iceland	0.15	<0.01	0.11	<0.05	0.43
Italy	0.72	<0.01	0.30	0.53	0.18
Netherlands	<0.01	0.20	0.08	0.20	0.16
Norway	<0.01	0.74	0.07	0.07	0.23
UK	<0.01	0.09	0.92	0.09	0.13

Aim of the Nordic MDS-AC Study

- Identify co-morbidity, functional and cognitive limitations in elderly people admitted acutely to internal medicine services in five Nordic countries.
- Compare the MDS-AC tool with conventional patient records written by doctors and nurses.
- Eighty cases per country, 75+

Data collection and presentation

- Data was collected within 24 hours of admission and compared with doctors and nurses notes from within the first 48 hours of admission.
- The data is presented as agreement (A) and disagreement (D) between methods, and unknown (U) in the medical record when the data is only registerde by the MDS-AC.

Summary of MDS comparison with the Medical Record

- For the ADL impaired, the best documentation in the medical record is for locomotion and eating, where **13-15%** of the records are missing documentation.
- For the other ADL impairments the medical record misses between **28 and 50%** of the deficits.

Cross-Nordic comparison

<i>total % of undocumented records in the impaired or unimpaired groups.</i>	<i>Denmark</i>	<i>Finland</i>	<i>Iceland</i>	<i>Norway</i>	<i>Sweden</i>
<u><i>Manages medications</i></u> <i>Impaired n=150/284 (53%)</i> <i>Unimpaired n=94/133 (71%)</i>	8 46	52 94	71 67	48 74	88 82
<u><i>Short-term memory</i></u> <i>Impaired n=32/154 (21%)</i> <i>Unimpaired n=121/263 (46%)</i>	27 28	21 58	20 33	22 81	0 33

Summary of cross-Nordic comparison

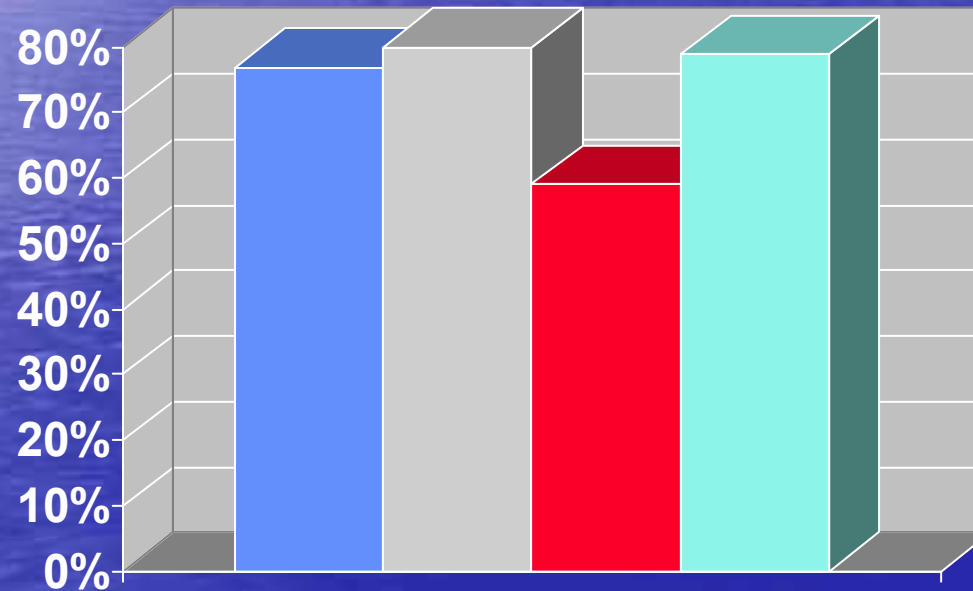
- There is considerable variability in documentation between the Nordic countries
- All countries can improve
- Some countries need to improve more than others!

Iceland compared with Finland

- Documentation by doctors and nurses

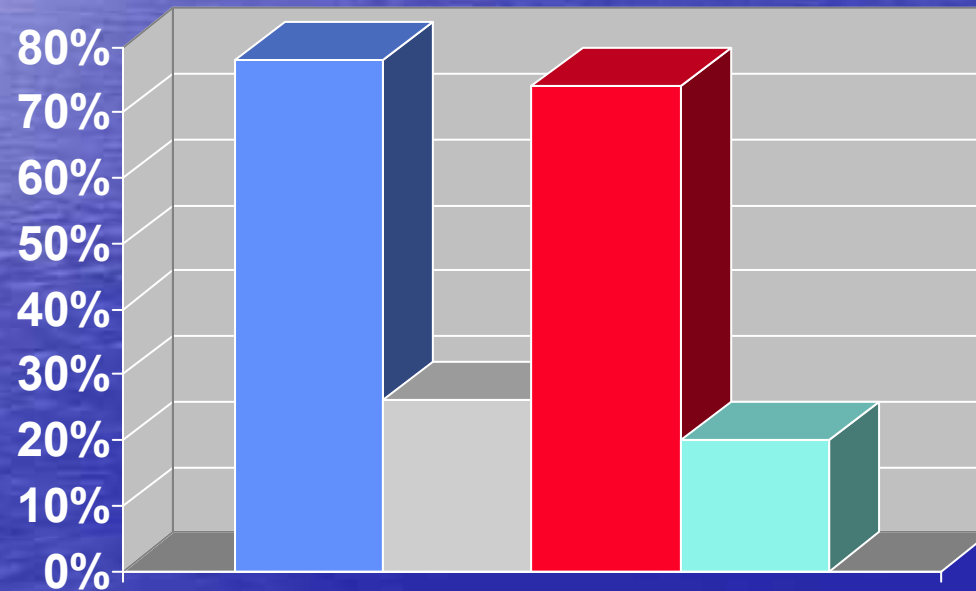
Difficulty taking medications Iceland vs Finland Undocumented

Percent



Patient indicates pain Iceland vs Finland Undocumented

Percent



- Doctors Finland
- Doctors Iceland
- Nurses Finland
- Nurses Iceland

Summary of Doctors and Nurses comparison in Iceland and Finland

- Nurses are better than doctors in documenting functional variables
- Still nurses could do better
- There is considerable difference and variability between Icelandic and Finish nurses' documentation

Resident Assessment Instrument

- Why is it valued in Iceland?
- Different reasons for different parties!
- RAI for the academician:
 - What issues are there in the NH setting? - the epidemiology
 - Variability of care vs. outcome
 - Comparisons between institutions
 - Cross national comparisons - by assessing the individual one can cut through different social systems.

RAI – instrument

- RAI for the institution
 - Systematic collection of information
 - Better documentation of problems (triggers)
 - Better care plans (RAP 's)
 - Case Mix on individual wards
 - Resources can be matched with Case Mix
- RAI for the individual
 - The resident gets attention during data collection that in itself can be therapeutic.
 - Focus on function and disability; the relevant issues for the elderly.

The RAI Instrument

- For the Ministry of Health
 - Quality Assurance
 - Resource Use
 - Series of new instruments in the making: for Home Care, for Acute Care, for Sub-acute Care
 - Development towards a seamless system of care for the elderly.
- For the Surgeon General
 - The prospect of improved quality of care
 - Continuing education for all staff involved

Future Care of the Elderly needs to;

- Invest in good health; the triple strategy. Part of current health care cost needs to be viewed as investment in healthy aging.
- Clinical guidelines; focus on the psychology of implementation and high yield conditions.
- Clear Prioritization and Health Policy.
- Integrated information systems with standardized data collection (NHPA) and multiple functions (RAI) for care, quality, funding and cross national comparisons.



Case history: Mrs. Mary, 85 year old

- Recently widowed, lives alone on third floor in a house without elevator
- Two daughters live 500 kilometers away
- She has DM, HTN, small venous ulcer r.leg (x2 week dressings)
- Primary care physician, several medications
- Depressed after husband's death and she eats less well and neglects the BP and DM control

Case history: Mrs. Mary, 85 year old

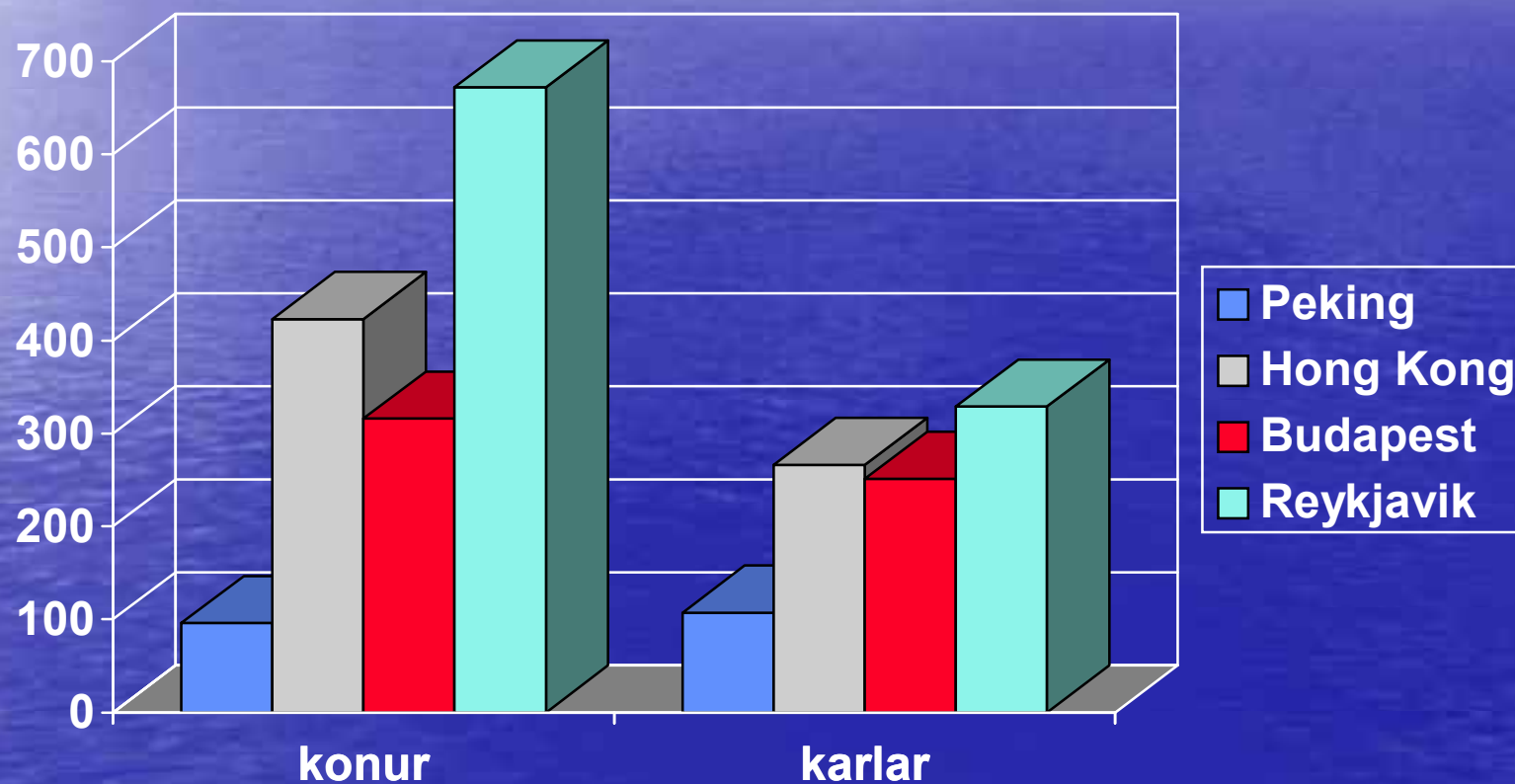
– con't

- Monday afternoon: a neighbour sees that hot water floods out of the apartment
 - What happens? Neighbour calls who? Are the daughters called and involved? What else?
- What happens if Mary is dx'd just as reactive depression and in need of medications and in need of help with doctors visits and food preparation
- What if she is dx'd with mild dementia

Case history: Mrs. Mary, 85 year old – con't

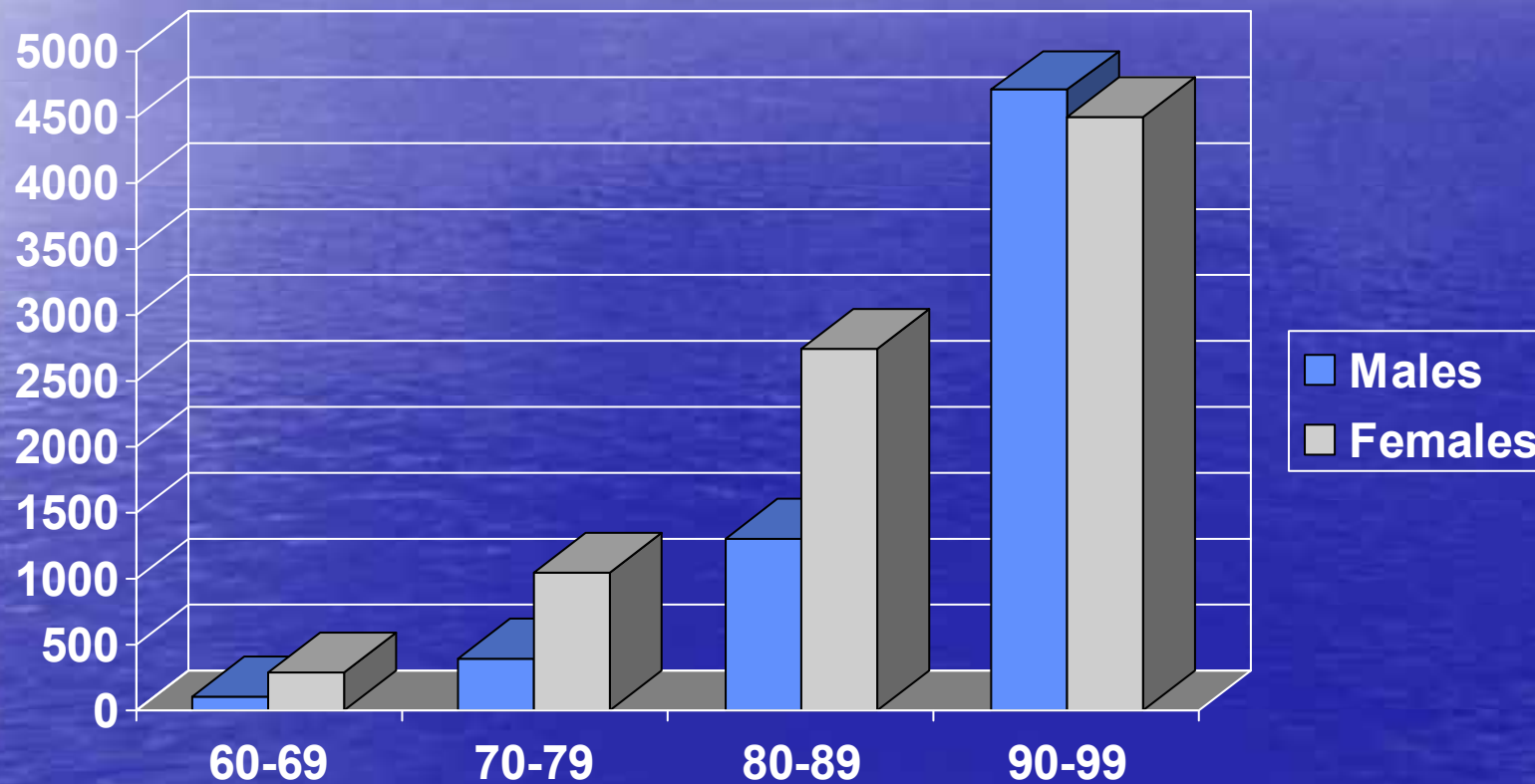
- What happens if she is found with a broken hip on the floor?
- What happens after the orthopedic service?
- Now she is walking again. What happens if she is only depressed? If she is demented?
- Is socioeconomic deprivation relevant to health and social care programming? Or Who pays?

Age Adjusted Incidence of Fractures of the Femure 50+/100.000

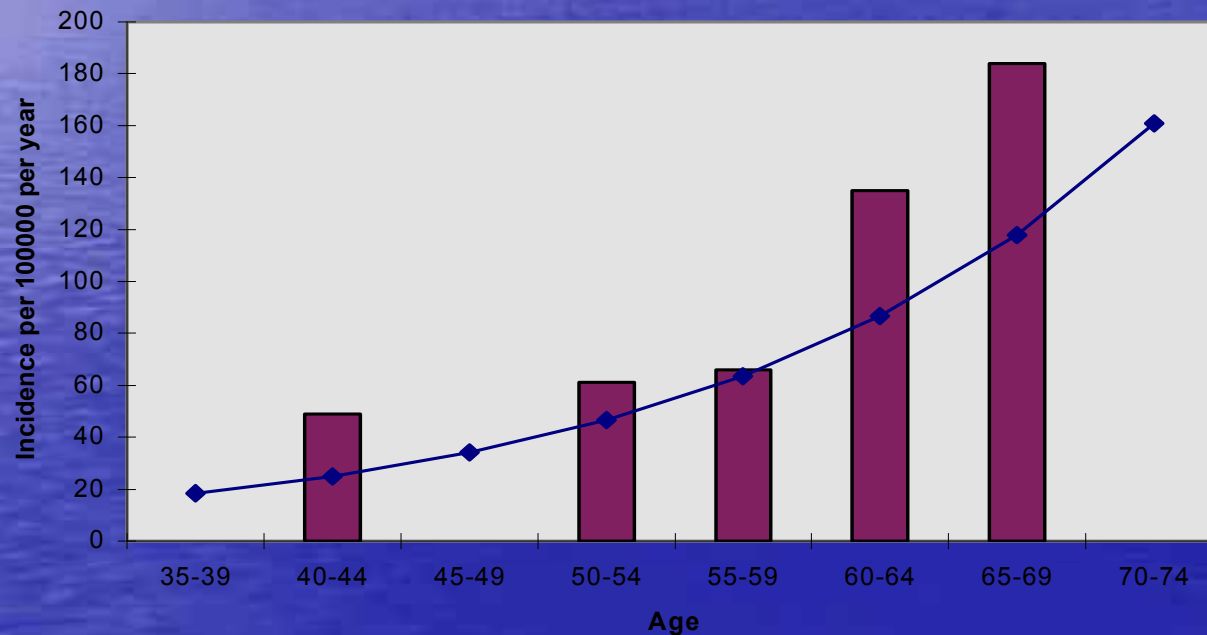


Incidence of Femur Fractures in Iceland

- Age and sex adjusted/100.000year

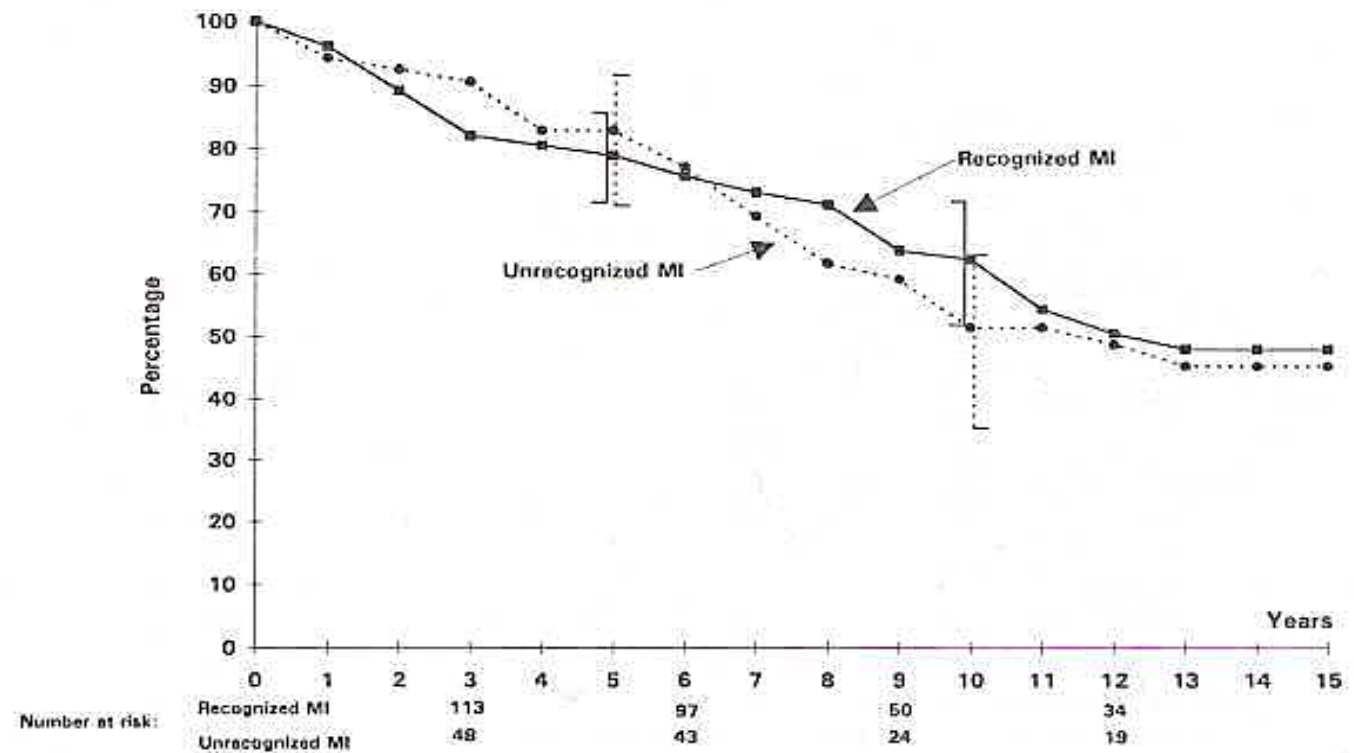


Incidence unrecognised myocardial infarction in women



Poisson Regression superimposed

Figure 3. Survival probability (with respect to coronary heart disease mortality) of participants in the first four stages of the study having had either recognized or unrecognized myocardial infarction. Also shown are the number of patients at risk after 3, 6, 9, and 12 years. 95% confidence intervals are shown for 5- and 10-year survival. MI = myocardial infarction.



MRI of the Heart

The Iceland MI study

- Cooperation with the National Heart, Lung and Blood Institute in the USA
- Purpose is to use MRI with contrast to define silent MI's.
- Gadolenium delayed hyperenhancement

Infarct Size: TTC vs MRI

