Green Health City

Nucleus for a Centre of High-Performance Medicine

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Background

• Increasing number of elderly people

• Decreasing number of younger people

• Medicine: Less acute diseases and

• More people suffering from chronic diseases

• Medical progress increases health costs
Demographic Dilemma

Declining Birth rates + Increased Life expectancy

„Aging at the bottom“

Dramatic aging of the global population

➔ „Double Aging“

„Aging at the top“
### Causes of death worldwide 2004 - 2030

<table>
<thead>
<tr>
<th>2004 Disease or injury</th>
<th>Deaths (%)</th>
<th>Rank</th>
<th>2030 Disease or injury</th>
<th>Deaths (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ichaemic heart disease</td>
<td>12.2</td>
<td>1</td>
<td>Ischaemic heart disease</td>
<td>14.2</td>
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<tr>
<td>Cerebrovascular disease</td>
<td>9.7</td>
<td>2</td>
<td>Cerebrovascular disease</td>
<td>12.1</td>
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<tr>
<td>Lower respiratory infections</td>
<td>7.0</td>
<td>3</td>
<td>Chronic obstructive pulmonary disease</td>
<td>8.6</td>
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<tr>
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<td>4</td>
<td>Lower respiratory infections</td>
<td>3.8</td>
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<tr>
<td>Diarrhoeal diseases</td>
<td>3.6</td>
<td>5</td>
<td>Road traffic accidents</td>
<td>3.6</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>3.4</td>
<td>6</td>
<td>Trachea, bronchus, lung cancers</td>
<td>3.4</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>2.5</td>
<td>7</td>
<td>Diabetes mellitus</td>
<td>3.3</td>
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<tr>
<td>Trachea, bronchus, lung cancers</td>
<td>2.3</td>
<td>8</td>
<td>Hypertensive heart disease</td>
<td>2.1</td>
</tr>
<tr>
<td>Road traffic accidents</td>
<td>2.2</td>
<td>9</td>
<td>Stomach cancer</td>
<td>1.9</td>
</tr>
<tr>
<td>Prematurity and low birth weight</td>
<td>2.0</td>
<td>10</td>
<td>HIV/AIDS</td>
<td>1.8</td>
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<tr>
<td>Neonatal infections and other*</td>
<td>1.9</td>
<td>11</td>
<td>Nephritis and nephrosis</td>
<td>1.6</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>1.9</td>
<td>12</td>
<td>Self-inflicted injuries</td>
<td>1.5</td>
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<tr>
<td>Malaria</td>
<td>1.7</td>
<td>13</td>
<td>Liver cancer</td>
<td>1.4</td>
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<tr>
<td>Hypertensive heart disease</td>
<td>1.7</td>
<td>14</td>
<td>Colorectal cancers</td>
<td>1.4</td>
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<tr>
<td>Birth asphyxia and birth trauma</td>
<td>1.5</td>
<td>15</td>
<td>Oesophageal cancer</td>
<td>1.3</td>
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<tr>
<td>Self-inflicted injuries</td>
<td>1.4</td>
<td>16</td>
<td>Violence</td>
<td>1.2</td>
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<tr>
<td>Stomach cancer</td>
<td>1.4</td>
<td>17</td>
<td>Alzheimer and other dementias</td>
<td>1.2</td>
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<tr>
<td>Cirrhosis of the liver</td>
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<td>18</td>
<td>Cirrhosis of the liver</td>
<td>1.2</td>
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<tr>
<td>Nephritis and nephrosis</td>
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<td>19</td>
<td>Breast cancer</td>
<td>1.1</td>
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<tr>
<td>Colon and rectum cancers</td>
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<td>20</td>
<td>Tuberculosis</td>
<td>1.0</td>
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<tr>
<td>Violence</td>
<td>1.0</td>
<td>22</td>
<td>Prematurity and low birth weight</td>
<td>1.0</td>
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<tr>
<td>Breast cancer</td>
<td>0.9</td>
<td>23</td>
<td>Diarrhoeal diseases</td>
<td>0.9</td>
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<tr>
<td>Oesophageal cancer</td>
<td>0.9</td>
<td>24</td>
<td>Birth asphyxia and birth trauma</td>
<td>0.7</td>
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<tr>
<td>Alzheimer and other dementias</td>
<td>0.8</td>
<td>25</td>
<td>Malaria</td>
<td>0.4</td>
</tr>
</tbody>
</table>

* Excludes HIV/AIDS.
Aims

Minimize morbidity in

- Cardiovascular Diseases
- Cancer, Lung and Gastrointestinal Cancer
- Diseases of the Locomotor system
- Dementia

⇒ Quality of Life
• The aging of the population will raise fundamental new challenges for healthcare systems.
• The combination of increasing longevity and cost-intensive progress in medical treatments calls for a careful allocation of resources.

Resulting implications for future healthcare (megatrends)

Prevention
Developing new strategies for disease prevention with the help of modern technology.

Individualisation
Identifying the most suitable intervention for each patient. (high efficiency with reduced costs)
Prevention Strategies

Primary Prevention
Staying healthy

Secondary Prevention
Diagnosis/ Treatment

Tertiary Prevention
Preservation, ADL, Qual. of life

Health → Disease → harm of viscera → functional constraint → Impairment of daily routine

Source: Verbrugge und Jette 1994
MENTAL:
MMSE < 20

SOCIAL:
LOSS OF INDEPENDENCE

FUNCTIONAL:
LOSS OF MOBILITY
BARTHEL-INDEX < 70

MEDICAL:
> 3 DIAGNOSES
> 3 PHARMACEUTICAL DRUGS
Reception Area

Geriatric Ward

Checkup

Kardio./Pulmo.
Endo./Sono.
X-Ray/CT
MRI
Card. Catheter
SPECT/PET
Green Health City

Patient flow
Patients transferred from other hospitals

Patients, locals

Nationwide Patients

VIP

Reception (Case-Management)
Seniors’ Residence

Geriatrics/ Acute hospital

Check-Up (ambulatory)

Reception (Case-Management)

Patients transferred from other hospitals

Patients from Lecheng

Nationwide Patients
Patients transferred from other hospitals

Patients from Lecheng

Nationwide Patients

Seniors’ Residence

Oncology/ Stem cells

Geriatrics/ Acute hospital

Check-Up (ambulatory)

Reception (Case-Management)

VIP

Nationwide Patients

Patients transferred from other hospitals

Patients from Lecheng
Seniors’ Residence

Oncology/ Stem cells

Geriatrics/ Acute hospital

Check-Up (ambulatory)

Hotel + Wellness

Reception (Case-Management)

Patients transferred from other hospitals

Patients from Lecheng

Nationwide Patients

Nationwide Patients

Green Health City
Aims

Minimize Morbidity in

• Cardiovascular Diseases
• Cancer, Lung and Gastrointestinal Cancer
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• Dementia

⇒ Quality of Life
1) Reduction in general adaptability
2) Increase in interindividual variability
3) Age – Time
Extra-individual factors (interventions)

Main process

- **Morbidity**
  - Impairment
  - Internal diagnosis, dementia, depression

- **Functional losses**
  - Disability
  - Mobility, balance, coordination, hearing, visual acuity, cognitive function

- **Need for assistance**
  - Handicap
  - Difficulty managing ADLs and IADLs

i.e. pharmacotherapy
- Positive interventions (compensation)
- Negative interventions (over-/under-)

**Cardiovascular risk factors**
- Hyperlipoproteinemia

**Biological risk factors**
- Sex

**Intra-individual factors (ressources)**
- Socioeconomic status