Health and retirement: a Public Health perspective

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The waves of demand and supply

Demographic and epidemiological transition

Health Systems

Technological innovation

Professional differentiation

Populations needs and demand
The changing health systems landscape is preparing for the “perfect storm”

A "perfect storm" is an expression that describes an event where a rare combination of circumstances will aggravate a situation drastically.

The term is also used to describe an actual phenomenon that happens to occur in such a confluence, resulting in an event of unusual magnitude.
Chronic diseases

Source: Projections of global health outcomes from 2005 to 2060 using the International Futures integrated forecasting model. WHO bulletin 2011.
Figure 1: Number of chronic disorders by age-group
Figure 2: Prevalence of multimorbidity by age and socioeconomic status
On socioeconomic status scale, 1=most affluent and 10=most deprived.
Life expectancy at birth in the Italian regions

Switzerland 81.3
Japan 80.5
Australia 80

Serbia 75
Romania 75
Bulgaria 74
Doctors’ views: greatest innovations of the second healthcare revolution

- MRI and CT scanning
- ACE inhibitors
- Balloon angioplasty
- Statins
- Mammography
- Coronary artery bypass graft surgery
- Proton pump inhibitors and H2 blockers
- SSRIs and recent non-SSRI antidepressants
- Cataract extraction and lens implants
- Hip and knee replacement
- Ultrasonography
- Gastrointestinal endoscopy
- Inhaled steroids for asthma
- Laparoscopic surgery
- Non steroidal anti-inflammatory drugs
- Cardiac enzymes

Source: Fuchs, VR et al, Physicians’ views of the relative importance of thirty medical innovations, Health Affairs, 2001
Nanomachines swim through veins and arteries cleaning out cholesterol and plaque deposits.
Nanotechnology can explore the process of thoughts and perception at the molecular level.
Neural implants can counteract Parkinson’s disease and tremors from multiple sclerosis.
Shirts with sensors can monitor heartbeat and other vital signs directly to a doctor.
Generation of new approaches in psychology, in the design of new drugs and in the treatment of pain.
It has been estimated that the commonest chronic conditions are costing the EU countries more than 1 trillion Euros per year, which is expected to increase to 6 trillion Euros by the middle of the century.

In UK the cost of chronic conditions such as stroke, heart diseases, diabetes, cancer and dementia pile up to over 50% of total healthcare expenditure.

Chronic conditions and economic burden

- Stroke: 4%
- CVD: 16%
- Cancer: 9.4%
- Diabetes: 9%
- Dementia: 17%

No country can afford this

1 trillion = 1.000.000.000.000.000.000.000.000
A

Hazard ratio for disease progression or death, 0.50 (95% CI, 0.37–0.68)
P<0.001

Progression-free Survival [%]

Month

No. at Risk

Pembrolizumab

Chemotherapy

154

151

104

99

89

70

44

18

22

9

4

2

1

1

1

Pembrolizumab

Chemotherapy

B

Subgroup

No. of Events/No. of Patients

Hazard Ratio for Disease Progression or Death (95% CI)

Overall

189/305

0.50 (0.37–0.68)

Age

<65 yr

91/141

0.61 (0.40–0.92)

≥65 yr

98/164

0.45 (0.29–0.70)

Sex

Male

116/187

0.39 (0.26–0.58)

Female

73/118

0.75 (0.46–1.21)

Region of enrollment

East Asia

21/40

0.35 (0.14–0.91)

Non–East Asia

168/265

0.52 (0.38–0.72)

ECOG performance-status score

0

59/107

0.45 (0.26–0.77)

1

129/197

0.51 (0.35–0.73)

Histologic type

Squamous

37/56

0.35 (0.17–0.71)

Nonsquamous

152/249

0.55 (0.39–0.76)

Smoking status

Current

44/65

0.68 (0.36–1.31)

Former

133/216

0.47 (0.33–0.67)

Never

12/24

0.90 (0.11–7.59)

Brain metastases at baseline

Yes

17/28

0.55 (0.20–1.56)

No

172/277

0.50 (0.36–0.78)

Platinum-based chemotherapy regimen

Included pemetrexed

120/199

0.63 (0.44–0.91)

Did not include pemetrexed

69/106

0.29 (0.17–0.50)
### Regimen Cost (80 kg patient)

<table>
<thead>
<tr>
<th>Regimen</th>
<th>Cost of Nivolumab</th>
<th>Cost of Ipilimumab</th>
<th>Cost of Regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nivo+ Ipi for 11.5 m</td>
<td>$144,408</td>
<td>$151,158</td>
<td>$295,566</td>
</tr>
<tr>
<td>Nivo for 6.9 m</td>
<td>$103,220</td>
<td>$0</td>
<td>$103,220</td>
</tr>
<tr>
<td>Ipilimumab for 2.9 m</td>
<td>$0</td>
<td>$158,252</td>
<td>$158,252</td>
</tr>
</tbody>
</table>

Who is going to pay?
What can we do?
Theory and practice
The perfect healthcare system…

• Does not exist in any one country in the world

• Depends on cultural values and expectations – what is ‘perfect’ in one country may not be so in another

• Is less easy to describe than the long list of challenges and short-comings
That said, if we could start from scratch, with an empty sheet of paper, the perfect system might look like:

- Values of universal healthcare, as in Italy and the UK
- Health promotion, as in Nordic countries
- Funding levels of Switzerland
- Patient choice, as in France and Germany
- Excellent, innovative primary care, as in Israel
- Fabulous mental health and approach to well-being, as in Australia
- Patient and community empowerment, copied from Nigeria and Kenya
- Brilliant approach to care for the ageing population, as in Japan
- State-of-the art communication, information flows and technology, as found in Singapore
- R&D of the US
- Innovative thinking of India

(with special thanks to Jennifer Simpson and Mark Brittnell)
But, the reality of healthcare means that we do not have:

- The luxury of blank sheets of paper or plentiful resources
- ‘Down time’ to stop doing what we do, think about it and start doing something different
- Freedom from political drive/interference
Necessity is the mother of invention?

• Yet we no longer have the luxury of sitting back and doing nothing; even the most efficient of countries are struggling to cope with an ageing population

• The challenge is not simply financial; it is clinical, managerial, ethical and moral
Only Evidence-based decision making can fix it

Figure. Domains that influence evidence-based decision making. Source: Satterfield JM et al (2).
Health Systems already evolved. There is a need for another wind of change

<table>
<thead>
<tr>
<th>20th CENTURY HEALTHCARE</th>
<th>21st CENTURY HEALTHCARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor centred</td>
<td>Patient centred</td>
</tr>
<tr>
<td>Patient as passive complier</td>
<td>Patient as co-producer</td>
</tr>
<tr>
<td>Hospital</td>
<td>System</td>
</tr>
<tr>
<td>Bureaucracy</td>
<td>Network</td>
</tr>
<tr>
<td>Driven by finance</td>
<td>Driven by knowledge</td>
</tr>
<tr>
<td>High carbon</td>
<td>Low carbon</td>
</tr>
<tr>
<td>Focussed on effectiveness</td>
<td>Focussed on value and waste</td>
</tr>
<tr>
<td>Challenges met by growth</td>
<td>Challenges met by transformation</td>
</tr>
</tbody>
</table>

Gray M., Ricciardi W., Better value health care, 2014
<table>
<thead>
<tr>
<th></th>
<th>Nano</th>
<th>Micro</th>
<th>Meso</th>
<th>Macro</th>
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<tbody>
<tr>
<td>Pro-active or pre-care</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RE-active care</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic care</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community/population</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>oriented care</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>PHC in Health System</td>
<td></td>
<td></td>
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Courtesy by Jan de Maiseneer
Changes in ‘pro-active or pre-care’

- **Nano:** - health literacy
  - empowerment
- **Micro:** - healthy families – relationships
  - healthy empowerment
- **Meso:** - healthy community / city
  - social cohesion
- **Macro:** - healthy environment: air, water
  - healthy economy: income inequality

Courtesy by Jan de Maiseneer
Characteristics of PHC / patient encounters

- Commitment - Connectedness
- Clinical Competence
- Cultural Competence
- Context
- Comprehensiveness
- Complexity
- Coordination
- Continuation

Compassion ↔ Computer
“Problem-oriented versus goal-oriented care”

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<tr>
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<th>Goal-oriented</th>
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<td>Definition of Health</td>
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Definition of Health:
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“Problem-oriented versus goal-oriented care”

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<th>Measures of success</th>
<th>Problem-oriented</th>
<th>Goal-oriented</th>
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<tbody>
<tr>
<td>Accuracy of diagnosis, appropriateness of treatment, eradication of disease, prevention of death</td>
<td>Achievement of individual goals</td>
<td></td>
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</table>
“Problem-oriented versus goal-oriented care”

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<th>Evaluator of success</th>
<th>Problem-oriented</th>
<th>Goal-oriented</th>
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</thead>
<tbody>
<tr>
<td>Physician</td>
<td>Physician</td>
<td>Patient</td>
</tr>
</tbody>
</table>
What makes health services ineffective and inefficient

- Delay in treatment
- Same treatment for all
- Undue variability in health conditions
- Waiting for patients to arrive in our silo structures
- Uncertainty on what really works
- Frequent medical errors (not notified)
- Irrational workflow
- Patients ignore doctor’s instructions
What really matters for patients is

• Functional status

• Social participation
“Treat the patient”

“Treat-to-target”
“disease management”

“patient management”
What makes health services ineffective and inefficient

Delay in treatment
Same treatment for all
Undue variability in health conditions
Waiting for patients to arrive in our silo structures

Proactiveness
Personalization
Support to decisions
Integrated Cure

Uncertainty on what really works
Frequent medical errors (not notified)
Irrational workflow
Patients ignore doctor’s instructions

Real world assessment
Safety (monitoring)
Integrated cure
Involvement
This man is in his 80s and he is in prison — a cage of structure and certainty that he is hesitant to ever leave.

“I don’t know what kind of life I should lead after I get out. I’ll be worried about my health and financial situation once I leave,” the inmate told AFP on condition of anonymity from Tokyo’s Fuchu Prison, where he is serving time for attempted theft.
Resolution WHA62.12 “Primary Health Care, including health systems strengthening”

The World Health Assembly, urges member states: … (6) to encourage that vertical programmes, including disease-specific programmes, are developed, integrated and implemented in the context of integrated primary health care.
Where am I?

You must be a researcher...

Yeah, but how did you know?

Because you gave me a very accurate but totally irrelevant answer

You must be a politician...

Yeah, but how did you know?

Because you don’t know where you are, you don’t know where you are going and you are blaming me for all this mess.
Thanks for your attention