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<th>AEMH 09-043</th>
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<tr>
<td>Title:</td>
<td>PricewaterhouseCoopers HealthCast</td>
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<tr>
<td>Author :</td>
<td>PwC</td>
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<td>Purpose :</td>
<td>Collaboration request</td>
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<td>30 April 2009</td>
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HealthCast 4 Highlights: Future Drivers & Emerging Trends
PRELIMINARY DRAFT FINDINGS

May 2009

*connectedthinking
PRELIMINARY DRAFT FINDINGS

Agenda: HealthCast 4 – Preliminary Highlights

- HealthCast background
- Key concepts of HC4
- Goals and Recommendations
**PRELIMINARY DRAFT FINDINGS**

The HealthCast series is a premier global health thought leadership publication

*PwC has invested in a long term global research effort to look at the healthcare industry’s future*

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<tbody>
<tr>
<td>1999</td>
<td>2002</td>
<td>2005</td>
<td>2009</td>
<td>In progress</td>
</tr>
<tr>
<td><strong>Global research</strong> -</td>
<td><strong>Global research</strong> -</td>
<td><strong>Global research</strong> -</td>
<td><strong>Global research</strong> -</td>
<td>In progress</td>
</tr>
<tr>
<td>• 50 Thought Leaders</td>
<td>• 60 Thought Leaders</td>
<td>• 120+ Thought Leaders</td>
<td>• 150+ Thought Leaders</td>
<td>In progress</td>
</tr>
<tr>
<td>• 390 Health Executives</td>
<td>• 650 Health Executives</td>
<td>• 580 Health Executives</td>
<td>• 600 Health Executives</td>
<td>In progress</td>
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</tbody>
</table>

PricewaterhouseCoopers’ Health Research Institute

April 2009
HealthCast 4: The Individual – In HC2020 we stated that the current system is no longer sustainable. We now also believe its ability to improve health will lose effectiveness unless it is reoriented around the individual.

1. The traditional health system is losing effectiveness
   Despite unprecedented levels of global health spending, the incidence of chronic disease is progressing.

2. A new health ecosystem is emerging
   New entrants are expanding the boundaries, eroding old system pathways, and accelerating the dissemination of medical knowledge.

3. Rise of the individual
   Individuals will design their own health ecosystems.
The traditional health system is losing effectiveness

• **Health status is declining** – in certain geographies and populations health indicators are declining. This includes high resource use countries such as the United States where average life expectancy has declined for specific populations as well as developing economies trying to reach WHO Millennium Development Goals.

• **More challenges on the horizon** – the increasing epidemic of obesity is resulting in greater incidence of diabetes and heart disease. Growth in ageing populations will further strain health systems.

• **Traditional resource allocations are not efficient** – WHO data indicates that higher per capita health expenditures do not always result in improved life expectancy and health indicators.
Tenuous connection between resource use and outcomes


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April 2009
Chronic conditions are the challenge.

Comparison of health expenditure to diabetes prevalence in the USA.
A new health ecosystem is emerging while connectors are now desegregating the whole system. The focus is shifting from the traditional acute care model to the promise of prevention and wellness through personal health communities.
The individual is the missing link in the new health ecosystem.

There is great demand for more personalized care, treatment and medicine resulting from scientific advancement.

The individual now has the capability to be the information hub of the health ecosystem through connector technologies.

Health organizations will reorient themselves based on a framework of consumer segmentation.

Individuals are the key to influencing groups (and vice versa) through the use of personal health communities.

HealthCast 4 – Global health leader survey

Q10) Which of the following stakeholders has the greatest influence on health status?

- Individuals: 41%
- Government: 38%
- Care provider: 14%
- Employer: 6%
- Don’t know: 1%

PricewaterhouseCoopers’ Health Research Institute

April 2009
Our report has developed 4 concepts around the individual

1. The individual is now enabled to be the health information hub through connector technologies

2. Personalized care, and new targeted treatments and medicines will determine how resources are prioritized

3. Health organizations will reorient themselves based on a framework of consumer segmentation

4. Individuals participate more in self-care, relying on new types of "connectors" through personal health communities.

PricewaterhouseCoopers’ Health Research Institute

April 2009
Our report has developed 4 concepts around the individual

1. The individual is now enabled to be the health information hub through connector technologies
PRELIMINARY DRAFT FINDINGS

Access is creating a shift in information asymmetry

"In our public health system (universal and free), one of the technologies that has changed the current role of players in the health sector has been the access to information and communication technology through the widespread use of the Internet" (HealthCast 4 Interview with President of a Spanish Pharmaceutical Company)

Consumer Survey

Where do you currently go to find information to make decisions about your personal health?

![Bar chart showing top five healthcare information resources used for personal health decisions]

- My doctor/at my doctor’s office: 80%
- Health websites sponsored by health organizations, the government or private companies: 50%
- Through my friends or family: 40%
- The hospital: 30%
- Magazines or newspapers: 20%

*All countries reported that the doctor or doctor’s office was their main information resource used for decision making, with the exception of China, who reported that the hospital was their number one resource.

Source: PricewaterhouseCoopers Health Research Institute Consumer Survey

PricewaterhouseCoopers’ Health Research Institute

April 2009
In your opinion, what is the most effective strategy to engage individuals in their own health?

Source: HealthCast 4 Global Health Leader Survey

<table>
<thead>
<tr>
<th>Most effective strategy</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education (44%)</td>
<td>• Because knowledge is power</td>
</tr>
<tr>
<td></td>
<td>• People are not sufficiently informed at present</td>
</tr>
<tr>
<td>Knowledge (25%)</td>
<td>• Knowledge of what to do and when to do it</td>
</tr>
<tr>
<td></td>
<td>• People need to own their individual health</td>
</tr>
<tr>
<td>Communications (18%)</td>
<td>• It is what works and is well recognised</td>
</tr>
<tr>
<td></td>
<td>• Talking can resolve this problem</td>
</tr>
<tr>
<td>Patient responsibility (11%)</td>
<td>• To have them feel responsible for the cost</td>
</tr>
<tr>
<td>Government responsibility (9%)</td>
<td>• There needs to be a fiduciary relationship between patient and doctor</td>
</tr>
<tr>
<td>Financial incentives / consequences (5%)</td>
<td>• Provides a motivation to change</td>
</tr>
</tbody>
</table>
PRELIMINARY DRAFT FINDINGS

In the next five years, which of the following changes, if any, are most likely to affect your health system? (multiple response question)

Source: HealthCast 4 Global Health Leader Survey

- Merging of information technology & healthcare: 88%
- Increased use of virtual health communities: 60%
- Relaxation of country restrictions on foreign medical graduates: 47%
- More travel/tourism among patients: 46%
- More health insurance coverage for travel/tourism: 45%
- Relaxation of scope of practice laws that will enable clinicians to provide more primary care: 63%
- Personalised medicine: 51%

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April 2009
Our report has developed 4 concepts around the individual

2 Personalized care, and new targeted treatments and medicines will determine how resources are prioritized
The “-omics” revolution — on the continuum toward personalised medicine

Genomics, proteomics, and metabolomics discovery is happening right now and is getting closer to the individual than ever before. The next phase, though, is to better understand and use this information to prevent disease in individuals. With respect to the role of the individual, how is this information disseminated? How is it accessed? How is it managed?

- Genomic analysis becoming affordable to the public
- Improvements in faster and inexpensive DNA sequencing
- Human genome sequencing becomes affordable
- Improved correlation between genetic markers and preventable diseases
- Genomic research helps elucidate pathophysiological basis for certain diseases with identification of potential drug targets
- Nanomedicine begins to deliver novel delivery systems for targeted drug therapy in vivo
- New drug discovery and development based on genetic markers commences

PricewaterhouseCoopers’ Health Research Institute

April 2009
Developing the public-private partnership model

"Most of the Medical Research Institutes say there has never been so much promise than on the back of the Human Genome project, e.g. biomarkers and targeted products; which potentially will be the biggest cost saver to the industry," notes an executive with an Australian private equity firm, in a Health Cast 4 interview.

Since the Human Genome project, the costs for genome sequencing have gone down considerably and it is expected that they will continue to go down.

**Partnership Example:**

**Scripps Genomic Health Initiative**
- Collaboration between Scripps Translational Science Institute, Navigenics, Affymetrix, and Microsoft.
- The Scripps Initiative will look at behaviors people take after learning more about their genetic susceptibility to disease.
- It will assess risk for over 20 health conditions, including celiac disease, Crohn's disease, Type 2 diabetes, and several types of cancer.
Our report has developed 4 concepts around the individual

3 Health organizations will reorient themselves based on a framework of consumer segmentation
Health organizations will reorient themselves based on a framework of consumer segmentation

*Based on our global consumer survey and other research, we believe consumers can be categorized into the following interest areas:*

- **Effectiveness** - individuals in this segment value getting their health issue taken care of, a short wait time, and a coordinated team of clinicians.
- **Brand** - individuals in this segment value patient satisfaction ratings, education on overall wellness, and clinicians that are recognized as best in the field.
- **Convenience** - individuals in this segment value a short wait time, a short travel distance, and a coordinated team of clinicians.
- **Price** - individuals in this category value not having to worry about financial considerations and understanding out of pocket costs.
- **Knowledge** - individuals in this category value the knowledge of medical professionals and getting the best brand name prescriptions.
Moving from acute care to wellness
Expanding and changing of roles → enhance value

Pharmacies also have a role to play in this changing ecosystem, in collaboration with primary care. Visits to the pharmacy by patients are numerous, as our consumer survey demonstrated.

Source: PricewaterhouseCoopers Health Research Institute Consumer Survey
PRELIMINARY DRAFT FINDINGS

How influential, if at all, are the following stakeholders on an individual’s health behaviour?

Source: HealthCast 4 Global Health Leader Survey

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Neither / Nor (%)</th>
<th>Don’t know (%)</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-workers</td>
<td>34</td>
<td>0</td>
<td>3.26</td>
</tr>
<tr>
<td>Doctors</td>
<td>12</td>
<td>0</td>
<td>4.15</td>
</tr>
<tr>
<td>Nurses</td>
<td>27</td>
<td>0</td>
<td>3.59</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>35</td>
<td>0</td>
<td>3.14</td>
</tr>
<tr>
<td>Family</td>
<td>17</td>
<td>1</td>
<td>4.11</td>
</tr>
<tr>
<td>Friends</td>
<td>26</td>
<td>0</td>
<td>3.62</td>
</tr>
<tr>
<td>Media</td>
<td>28</td>
<td>0</td>
<td>3.48</td>
</tr>
</tbody>
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PRELIMINARY DRAFT FINDINGS

How do you rate the impact of the following group’s on the health status of the population?

<table>
<thead>
<tr>
<th>Group</th>
<th>Not at all positive</th>
<th>Not very positive</th>
<th>Positive</th>
<th>Very positive</th>
<th>Neither / nor (%)</th>
<th>Don’t know (%)</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education / school systems</td>
<td>-4</td>
<td>-12</td>
<td>29</td>
<td>30</td>
<td>25</td>
<td>0</td>
<td>3.67</td>
</tr>
<tr>
<td>Grocery store / supermarkets</td>
<td>-28</td>
<td>-36</td>
<td>8</td>
<td>8</td>
<td>27</td>
<td>0</td>
<td>2.18</td>
</tr>
<tr>
<td>The internet</td>
<td>-4</td>
<td>-15</td>
<td>39</td>
<td>11</td>
<td>31</td>
<td>0</td>
<td>3.39</td>
</tr>
<tr>
<td>Government</td>
<td>-2</td>
<td>-15</td>
<td>37</td>
<td>15</td>
<td>30</td>
<td>1</td>
<td>3.48</td>
</tr>
<tr>
<td>Primary / community care services</td>
<td>-15</td>
<td>45</td>
<td>25</td>
<td>28</td>
<td>21</td>
<td>0</td>
<td>3.95</td>
</tr>
<tr>
<td>Hospitals</td>
<td>-13</td>
<td>-19</td>
<td>33</td>
<td>18</td>
<td>25</td>
<td>0</td>
<td>3.66</td>
</tr>
<tr>
<td>Health insurance companies</td>
<td>-8</td>
<td>-25</td>
<td>25</td>
<td>8</td>
<td>32</td>
<td>1</td>
<td>2.99</td>
</tr>
<tr>
<td>Pharmaceutical companies</td>
<td>-11</td>
<td>-25</td>
<td>25</td>
<td>5</td>
<td>33</td>
<td>0</td>
<td>2.87</td>
</tr>
<tr>
<td>Media</td>
<td>-6</td>
<td>-19</td>
<td>33</td>
<td>18</td>
<td>25</td>
<td>0</td>
<td>3.38</td>
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</table>

Source: HealthCast 4 Global Health Leader Survey

PricewaterhouseCoopers’ Health Research Institute

April 2009
Which of the following ways, if any, is your healthcare system adapting to deliver more personalised patient care?

Source: HealthCast 4 Global Health Leader Survey

- Using customer service and hospitality approaches: 47%
- Increasing number of co-located healthcare services: 60%
- Coordinating care across practice settings: 66%
- Investing in targeted drug therapies and genomics: 48%
- Increasing usage in technology: 84%
- Increasing access to care in the home: 53%
- Increasing emphasis on primary health care services: 78%
- Providing more health information / education: 71%
- None of the above: 0%
- Other: 12%

PricewaterhouseCoopers’ Health Research Institute April 2009
Individuals participate more in self-care, relying on new types of "connectors" through personal health communities.
Individuals increasingly are foregoing care because of cost.

- A recent Wolters Kluwer Health study found from looking at U.S. commercial plan claims for 2008 that "prescription abandonment increased by 34 percent nationally compared to 2006—jumping from an average of 5.15 percent in 2006 to 6.8 percent in 2008."

- It also found that “abandonment increased as the amount of the co-pay increased, especially for new prescriptions.”


Source: PricewaterhouseCoopers’ Health Research Institute Consumer Survey

Consumer Survey
What prevents you from picking up/filling your medical prescriptions (drugs)?

- Costs too much: 42%
- Other (please specify): 24%
- No method of transportation: 19%
- Forgot: 23%
- Other: 2%

Source: PricewaterhouseCoopers’ Health Research Institute Consumer Survey
Please rate the following activities based on how easy or difficult they are for you to do:

Source: PricewaterhouseCoopers’ Health Research Institute Consumer Survey
Which of the following are barriers to individuals managing their own health? (Multiple response question)

Source: HealthCast 4 Global Health Leader Survey

- Inappropriate access to health knowledge & tools: 79%
- Inappropriate access to financial resources: 75%
- Inappropriate access to health resources: 72%
- Individuals' lack of power and autonomy: 59%
- Individuals' lack of will power: 74%
- Misunderstanding of health info & choices: 78%
In order to make your health system more efficient, would you say that the following need to increase or decrease?

Source: HealthCast 4 Global Health Leader Survey

- Supply of primary care physicians
  - Decrease some: 35
  - Increase some: 41

- Supply of specialist physicians
  - Decrease some: 35
  - Increase some: 26

- Supply of hospital beds
  - Decrease some: 28
  - Increase some: 32

- Supply of nurses
  - Decrease some: 36
  - Increase some: 46

- More distributed locations for service delivery
  - Decrease some: 34
  - Increase some: 25

- Knowledge distribution of treatment and technologies
  - Decrease some: 40
  - Increase some: 30

- Knowledge distribution to patients of treatments and methodologies
  - Decrease some: 41
  - Increase some: 38
In order to make your health system more efficient, would you say that the following need to increase or decrease?

Source: HealthCast 4 Global Health Leader Survey

- Advertising of healthcare products to consumers: Decrease some (15), Increase some (12), Increase a lot (14)
- Government regulation: Decrease a lot (19), Decrease some (13), Increase a lot (19)
- Electronic medical records accessible to patients: Decrease some (31), Increase a lot (41)
- Electronic medical records accessible to practitioners: Decrease some (28), Increase a lot (58)
- Emergency care services: Decrease some (34), Increase some (35)
- Specialty pharmaceutical prescriptions: Decrease some (29), Increase some (10)
- Telephonic services for patients: Decrease some (36), Increase some (24)

PricewaterhouseCoopers’ Health Research Institute

April 2009
PRELIMINARY DRAFT FINDINGS

Our report has developed 3 goals and 12 recommendations

1. Individuals have access to a host of support tools to make them the information hub for their own health

Recommendation: Empower your population
Outcome: An informed population that is health literate and confident enough to both drive decision-making and self-manage their own health

Recommendation: Identify enablers
Outcome: Individuals have a host of enablers to support better health and health decision making

Recommendation: Transfer ownership of health information from doctors to individuals
Outcome: Well-connected and interoperable health information technology systems that support electronic health records

Recommendation: Build individual accountability into health transactions
Outcome: An engaged, compliant population, where individuals are able to close the feedback loop
Our report has developed 3 goals and 12 recommendations

2. Personalised care is mainstreamed across health economies

Recommendation: Use new entrants, disruptors and other new innovations to bring personalised care to the masses
Outcome: Personalised care accessible and affordable to both developed and emerging economies

Recommendation: Build partnerships between industries to offer integrated healthcare solutions for individuals
Outcome: A fully networked health ecosystem based on partnership, transparency and transferrable learning

Recommendation: Provide strong central leadership to support the personalised care agenda
Outcome: Personalised care becomes a cornerstone of health policy
Our report has developed 3 goals and 12 recommendations

Recommendation: Conduct a health needs assessment
Outcome: A comprehensive understanding of different consumer segments, including their health needs, desires, and barriers to care

Recommendation: Build your knowledge base to enable informed decision-making across the care continuum
Outcome: A currency for demonstrating value and value for money

Recommendation: Incentivise prevention
Outcome: Aligned incentives between key stakeholders to ensure that everyone is working towards the same goal

Recommendation: Move chronic disease out of the hospital and into the home
Outcome: Strengthened primary care workforce and infrastructure that can support the increasing burden of chronic disease in the community

Recommendation: Leverage the employer
Outcome: Workplace wellness to become the expectation, not the exception
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PricewaterhouseCoopers’ Health Research Institute

April 2009
Which of the following services should be included in a ‘basic package’ of healthcare that government should provide?

- Immunizations: 19%
- Health education: 9%
- Prevention management: 22%
- Low cost (minor) surgical procedures: 2%
- Medium priced (moderate) surgical procedures: 2%
- Expensive (major) surgical procedures: 8%
- Dental care: 3%
- Cancer treatment: 10%
- Emergency services: 17%
- Some form of infertility diagnosis and treatment: 0%
- Other: 3%
- Don’t know / N/A: 5%

Source: HealthCast 4 Global Health Leader Survey

PricewaterhouseCoopers’ Health Research Institute

April 2009