



Managing Healthcare Costs with Digital Health

Pang Sze Yunn

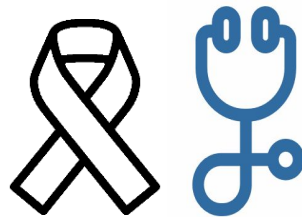
2017

Health Trends in Asia



1.1B people

50+ years of age by 2025



10.6M people

(50% of global burden)

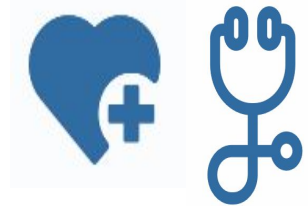
Estimated to have cancer by 2030



200M people

(50% of global burden)

Diabetes



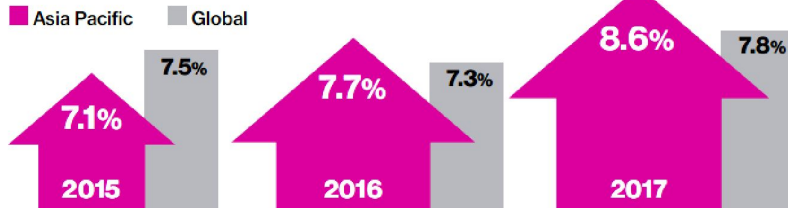
60% of global cases

Heart diseases

Rising Cost of Healthcare in Asia



Medical cost* in Asia Pacific continues to ratchet upward



*Gross cost trend

Five out of 10 health insurers expect trend to be higher or significantly higher over the next three years.

What's driving the cost increase?

The bulk of medical expense increase is expected to come from:



Hospital/Inpatient services
cited by 92% of insurers



Basic medical/Outpatient services
cited by 58% of insurers

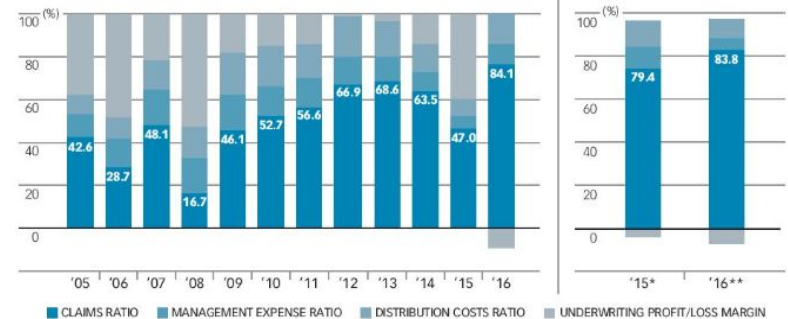
2017 Global Medical Trends Survey Asia Pacific Highlights from a Survey of Medical Insurers. 2017 Willis Towers Watson

THE BUSINESS TIMES

Six IP insurers stung by underwriting losses as claims surge

Industry's combined ratios

IP insurers face rising claims



Note: 2008 ratios were distorted by a large reinsurance item in income's filings, 2015 ratios were distorted by a large reinsurance item in AIA's filings and 2016 ratios include AXA, which started sales in May

*2015 ratios excluding AIA **2016 ratios excluding AIA and AXA

Source: Monetary Authority of Singapore, compiled by BT

Business Times, 6 September 2017

Four profound trends are shaping the future of health technology



- **Aging populations and the rise of chronic illnesses**



- **Global resource constraints**



- **Increasing consumer engagement**



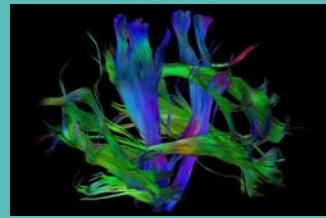
- **Digitization**



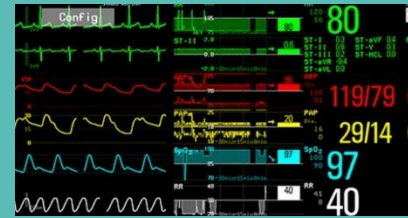
Digital is driving exponential growth of health data



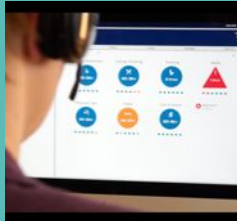
Personal health tracking



Medical imaging



Patient monitoring



Home monitoring



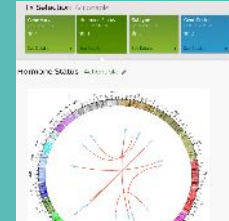
Medication adherence



Pathology



Quantification



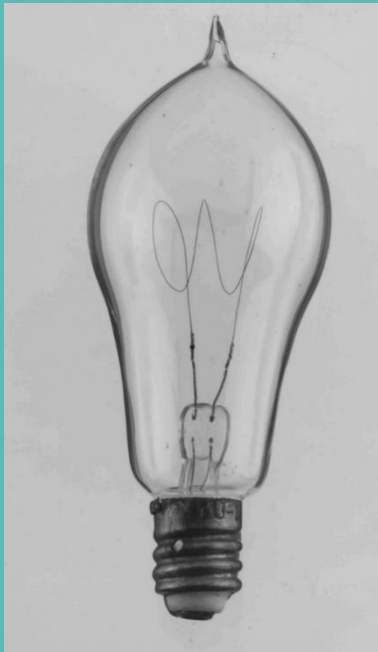
Genomics



Analytics

... deeper, denser and wider (longitudinal) data have potential to redefine how & when we intervene in people's health efficiently and effectively.

125 years of innovation



1900



2017



1930



2017



275 million

patients tracked with our patient monitors last year

4

Million sleep therapy patients supported

23 petabytes

of imaging study data managed for healthcare providers

145

Billion images managed

7 million

seniors supported with our wearable Lifeline service

9.7

Million IoT devices connected to the internet via HealthSuite Cloud

35 million patients

Supported with population health management

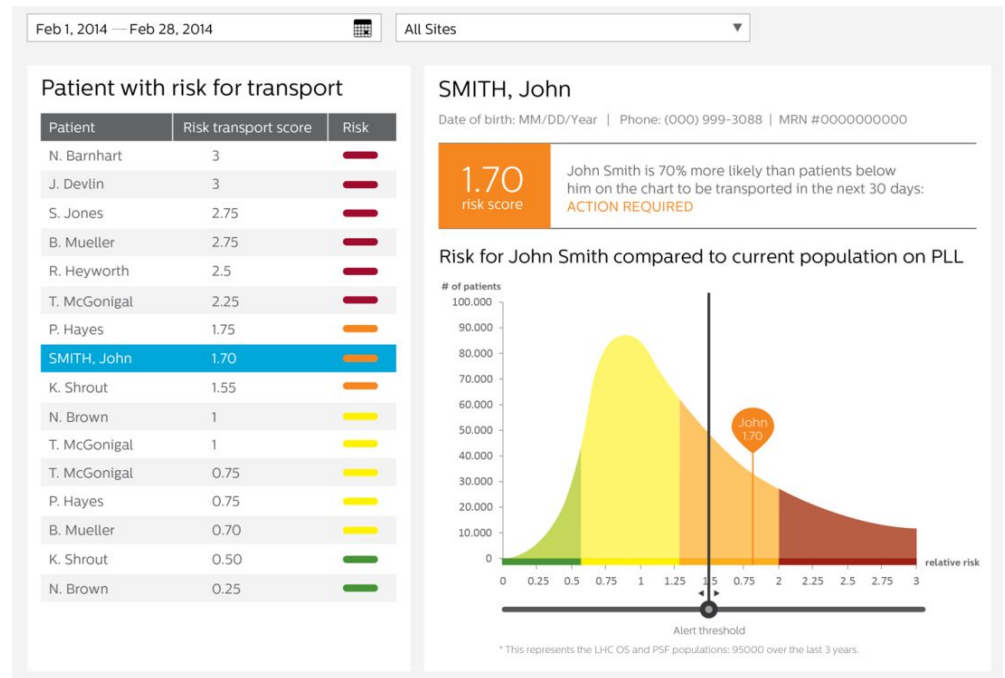
Moving from Falls Detection to Falls Prediction

- Philips GoSafe
- #1 Medical Alert Service in North America
- Only medical alert service that is FDA approved
- Experience with over 7.5 million subscribers



CareSage is a data analytics and population health program which predicts the emergency transport need of a customer **30 days before** the need arises based on GoSafe PERs data.

This results in less costly and more effective care which leads to improvements in the quality of life for the elderly.



Joint Study between Philips and Partners Healthcare

PARTNERS HEALTHCARE FOUNDED BY BRIGHAM AND WOMEN'S HOSPITAL AND MASSACHUSETTS GENERAL HOSPITAL

Predictive Analytics and Cost Implications for the Chronically Ill and Elderly: A Retrospective Analysis

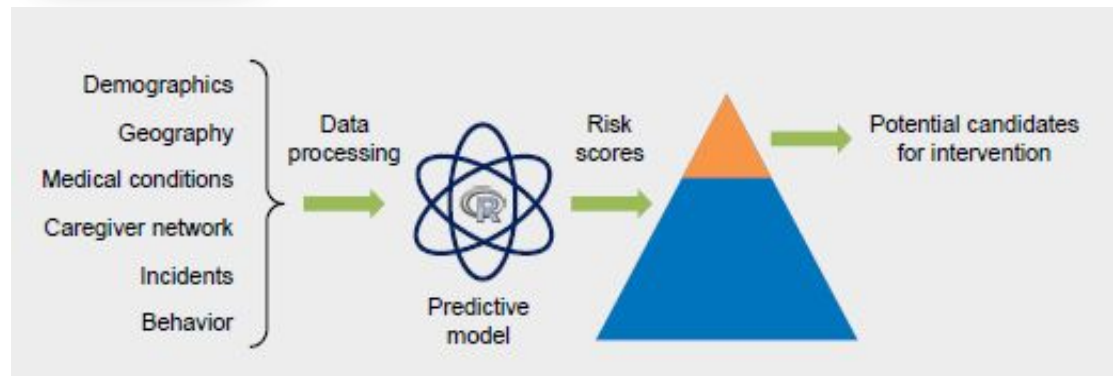
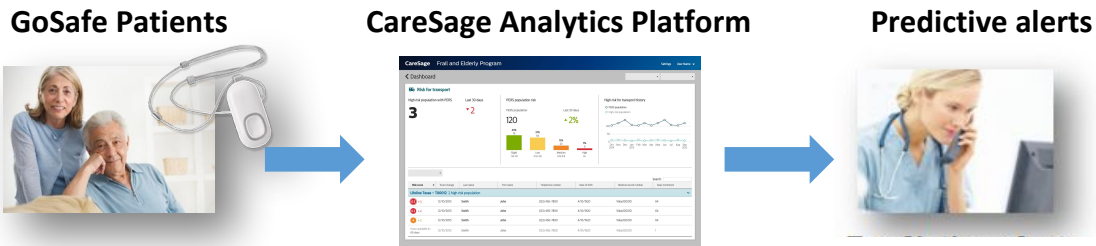
Objectives

1. Validate the CareSage algorithm to predict ER transports
2. Evaluate hospital utilization and readmissions.
3. Analyze healthcare expenditure

Patient Sample
3,335 patients identified from Partners Healthcare at Home and Philips GoSafe

“We are partnering with Philips to better utilize data to drive improved care delivery resulting in better outcomes and experiences for our patient population.”

Kamal Jethwani, M.D. MPH Partners Healthcare



Cost savings calculation

High risk group	FY 15 – 2318 active Lifeline patients
CareSage predictive model threshold	Top 25% of predicted high risk patients
# of high risk patients	580
# of emergency hospital transports	560
# of emergency admissions to Partners	210
# of emergency admissions to other HCOs	350 (leakage*)
Avg. cost per emergency admission	\$14,000
Total admission cost Partners	\$2.9 million
Admission cost due to leakage	\$4.8 million
Total admission cost	\$7.7 million
Intervention cost per patient	\$1,500
Total intervention cost	\$0.9 million
Impact of intervention 40%	224 admission avoided
Avoided admission costs	\$3.1 million
Net savings	\$2.2 million

*Leakage = Transports to other HCOs

UMass Memorial study proves staggering outcomes

Largest and latest independent study of Philips-powered ICU programs – Dec 2013

Study size

120,000 critical care patients

56 Intensive Care Units

32 Hospitals

19 Health Systems

5 year period

Outcomes

26% more likely to survive the ICU

20% faster discharged from the ICU

16% more likely to survive hospitalization

15% faster discharged from the hospital



CHEST JOURNAL

Official Publication of the American College of Chest Physicians

A Multi-center Study of ICU Telemedicine Reengineering of Adult Critical Care

Craig M. Lilly, MD,^{a,b,c,d} John M. McLaughlin, PhD, MSPH,^e Huifang Zhao,^{c,d}
Stephen P. Baker, MScPH, (abd),^{d,f,g,h} Shawn Cody, RN, MSN, MBA,ⁱ and
Richard S. Irwin, MD^{a,g} for the UMass Memorial Critical Care Operations Group*

PHILIPS



Redefine acute care workflow & teaming

Using **algorithms** to extract timely meaning from noisy data and redefine care-team interactions, interventions.

Early detection of deterioration or improvement through reliable, proven computer models.



Banner Health achieves 27% savings in costs of care

Philips partnered with Banner Health to reduce readmission rates. We identified the top 5% of most expensive patients, analyzed workflows to uncover ways to improve care coordination, and designed tools and patient engagement programs to deliver continuous, comprehensive and proactive services to this population.

Enabling offerings:

- Population management software platform enabled with analytics
- Intelligent monitoring with 24/7 continual surveillance
- Web-enabled remote consults with 2-way video
- Mobile care tools and event management systems



Banner Health

“The successful results of our at-home telehealth pilot with Philips have been dramatic.”

Hargobind Khurana, MD, Senior Medical Director

Results

27% reduction

in costs of care – a savings of \$788 per patient per month*

32% reduction

in acute & long term care costs*

45% reduction

in hospitalizations*



*Datta, S., Khurana, MD, H. (2015). Impact of an intensive ambulatory program on patient satisfaction and clinical outcomes in Banner Health. Unpublished internal study.



Self-care for patients with chronic conditions drives **26% reduction in average unplanned admissions risk**

Clinical Commissioning Group engaged Philips to conduct a three-year study on the impact of supported self-care for patients with chronic conditions using our telehealth products and services. Each patient was evaluated against three control group patients with identical characteristics. Each month 5 million data points were evaluated with population-wide risk stratification.

Enabling offerings:

- Home tele-monitoring equipment
- Remote case management, monitoring, education and coaching



Liverpool
Clinical Commissioning Group

Results **26% reduction**
• TV or tablet user interface
• A centralized telehealth team
average risk for ER admissions in next 12 months*

66 years
average age

4.5 months
average time on telehealth service

43%
Diabetes

1,808 patients
in study cohort

66%
Heart failure

66%
COPD

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*NHS Liverpool Clinical Commissioning Group. Evidence for Supported Self Care at Scale Short Report. March 2016.

Changi General Hospital Heart Failure Telemonitoring Project

Singapore's First Long-Term Telehealth project





Changi General Hospital achieves **savings in cost of care and reduction in length of stay in hospital** per re-admission episode

Philips partnered with CGH to better support patients with heart failure through telehealth-enabled chronic disease management program. We worked with the clinical, operational and administrative to transform existing care models and developed workflows and processes to provide tele-monitoring, tele-care and tele-education for patients with heart failure.

Enabling offerings:

- Population management software platform enabled with analytics
- Remote monitoring solution for case management, monitoring, education and coaching with accompanying monitoring devices
- Platform to engage, motivate and educate patients through *curve* quizzes and patient education videos using tablet interface



58 years

average age

150 patients

in study cohort

6 months

average time on telehealth service

Results to be released at end September

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So What?



*“Innovation has two
“NO”s in it,
... spelled forwards
and backwards.”*





Thank You
pang.sze.yunn@philips.com