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Health analytics in the Life Insurance Sector

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Health sector problems

1. Not investing in developing new drugs due to low expected return on investment/R&D
2. Some rare diseases have very high cost of treatment
3. Increasingly, constrained healthcare budgets across the developed world are not able to support the use of all available drugs
4. Sometimes drugs are not as effective in the 'real world' as clinical trials have shown.

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Health sector Enablers

1. Increase in data being captured
2. Trusted safe havens for storing and (crucially) combining data
3. Significant increase in computing power/technology to analyse and interpret the data

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Analytics is already helping to solve some of these problems...

1. Different economic model for sharing of risk and value for new drugs
2. Personalised medicine

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Pharma sector overview

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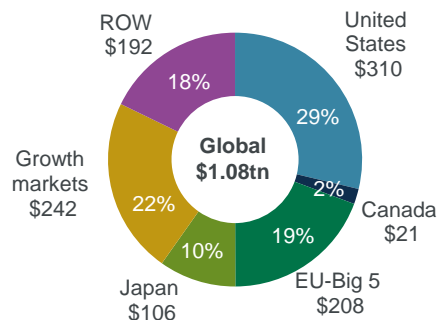
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Pharma Megatrends...the market imperative for change

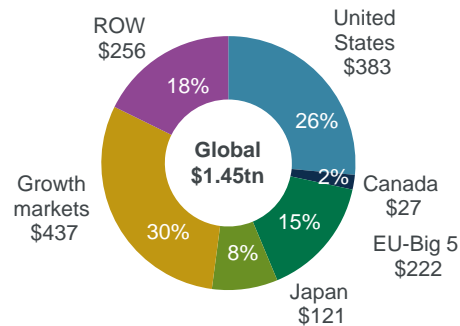
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The markets - new challenges and opportunities

Global pharmaceutical market 2014
(\$ billion)



Global pharmaceutical market 2020
(\$ billion)



Source: Business Monitor International

Notes: (1). All sales are expressed in US dollars at constant exchange rates; (2). The growth markets include China, Brazil, Russia, India, Mexico, Turkey, Poland, Venezuela, Argentina, Indonesia, South Africa, Thailand, Romania, Egypt, Ukraine, Pakistan and Vietnam. (3) EU-5 refers to France, Germany, Italy, Spain and United Kingdom

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Mature markets – the challenge

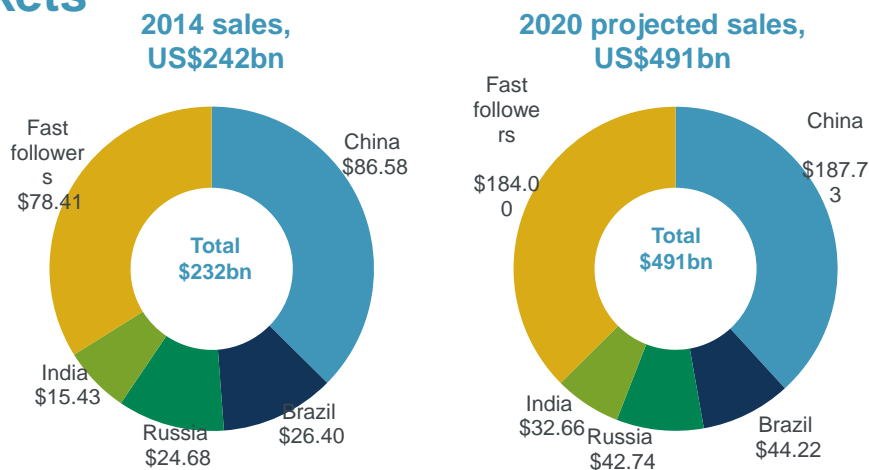
- The **mature markets** have been **evolving** economically, demographically and structurally
- Pharma's **approach 'get more, pay more'** even though the markets are running out of money **won't work** for long
- Healthcare **payers demand more** value for the same money or the same value for less money
- To reach 2020 **offer more value** without charging more or remove costs from healthcare system to justify higher prices
- It takes at least a decade to develop a new drug and only six months to change a clinical pathway. A lot of companies may have to **prune their portfolios** quickly.

*Prove
that
you're
adding
value!!*

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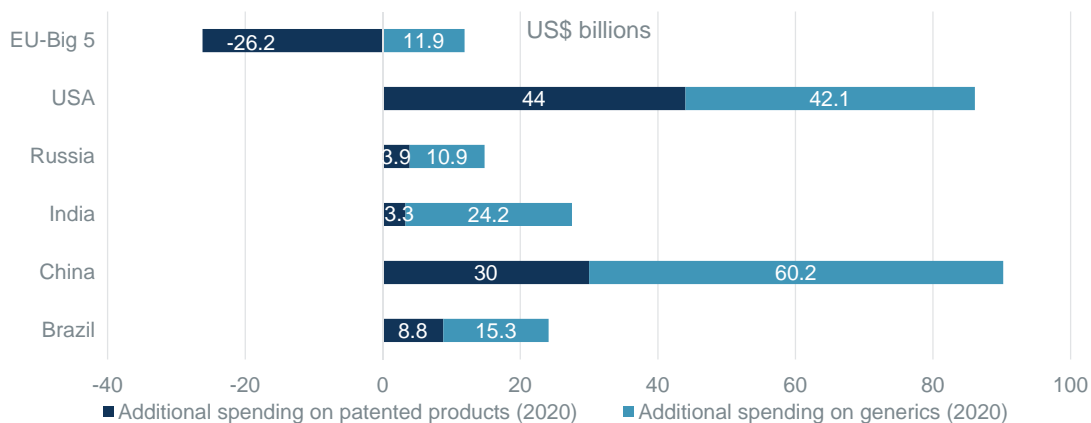
Rising demand for medicines in the growth markets



Source: Business Monitor International

Notes: (1) All sales are expressed in US dollars at constant exchange rates; (2) The fast followers include Argentina, Egypt, Indonesia, Mexico, Pakistan, Poland, Romania, South Africa, Thailand, Turkey, Ukraine, Venezuela and Vietnam.

Generic medicines will dominate, an estimated \$63.8bn expected from patented products



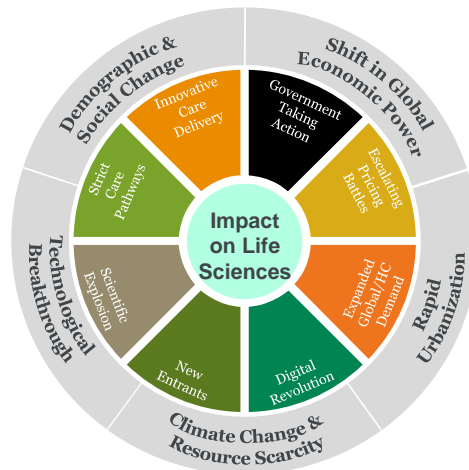
Source: Business Monitor International

Note: All growth is expressed in nominal US dollars (including inflation and projected exchange rate changes).

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Emerging health market trends & disruptors are re-shaping the Pharma/Life Science industry



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New Commercial models

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New funding and commercial models will be key





*Funding high cost but clinically effective treatments
e.g., HCV*

*Funding high risk/high reward science for large unmet
needs, e.g Alzheimer's Disease*

*Delinking revenue from volume for certain TA's, e.g.,
antibiotics*

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New “pull” mechanisms for innovative medicines are happening now

Outcomes based payments	Pharma Co provide beyond the pill services and are paid if outcomes are achieved e.g. patient adheres to treatment	
Pay-per-cure	Pharma Co rebates or credits payer where there is lack of efficacy	
Microloan / patient assistance schemes	Micro loans in emerging markets – untested for drugs Free starter packs for low income patients	
Budget cap	The pharmaceutical company supplies the drug up to a pre-agreed budget cap, any additional payments are refunded	
“Contract for Differences” insurance	Governments incentivise R&D by committing to pay an agreed fee for a drug, regardless of its commercial success - untested	
Securitisation	Pharma bundles drug royalties together as a security, reducing portfolio risk Pharma securitises cash flows in order to offer a mortgage for expensive drugs to payers – untested in pharma	

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Sources: FT.com; Fiercepharma; PR Newswire; PwC analysis 14

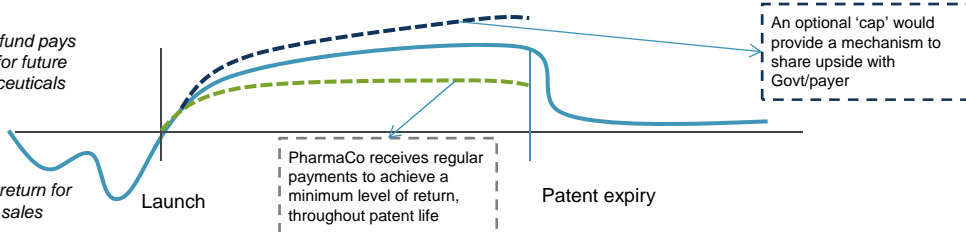
More innovative approaches require longer-term commitment from Govt/payers using a robust data set

"Contract for Differences" insurance

Governments incentivise R&D by committing to pay an agreed fee for a drug, regardless of its commercial success - untested

A royalty interest - a fund pays an up-front lump sum for future royalties on a Pharmaceuticals product, Or

A revenue interest an upfront payment in return for a percentage of future sales



Securitisation

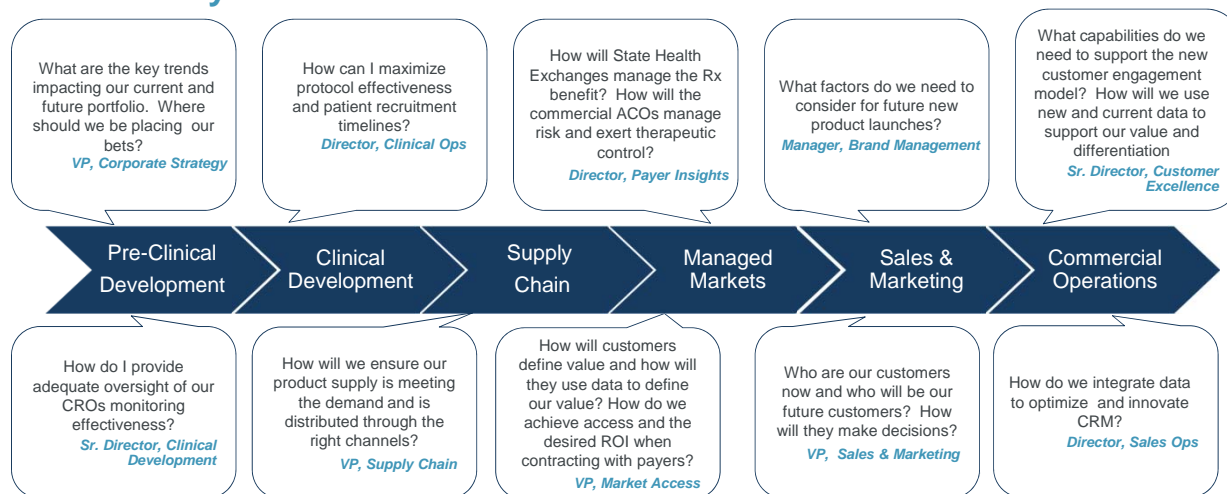
Pharma bundles drug royalties together as a security, reducing portfolio risk. Pharma securitises cash flows in order to offer a mortgage for expensive drugs to payers – untested in pharma

HUMIRA ROYALTY PHARMA

In 2006, Royalty Pharma purchased Cambridge Antibody Technology's (CaT) passive royalty interest in Humira. This occurred as part of AstraZeneca's \$1.3bn purchase of the remaining 81% of CaT it did not already own. Since the non-core passive asset was not as useful as upfront capital for AstraZeneca, it sold the royalty interest to Royalty Pharma for \$700 million. Following this transaction, Royalty Pharma were to receive royalty revenue formerly payable to CAT based on all future sales of HUMIRA

19 November 2015 Sources: New financing methods in the biopharma industry: a study of Royalty Pharma. Inc., Andrew W. Loa and Sourya V. Naraharisettib, 2014; PwC analysis 15

As healthcare delivery, drug development and access to information continues to evolve, analytics WILL play a greater role in the way Pharma makes decisions across the value chain



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Opportunities for the insurance sector

1. Innovation in provision of health cover through increased use of data/technology
2. More flexible/short term insurance products (monthly term assurance through iPhone?)
3. Use of genetic profiling as well as financial profiling techniques to aid financial planning at retirement (not for all!)
4. Insurance for dread diseases to cover high cost drugs not available through national healthcare system
5. Use of analytics to reduce visibility and cost of underwriting
6. Capitalising on natural diversification risk between Pharma and reinsurance sectors.

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Challenges for the insurance sector

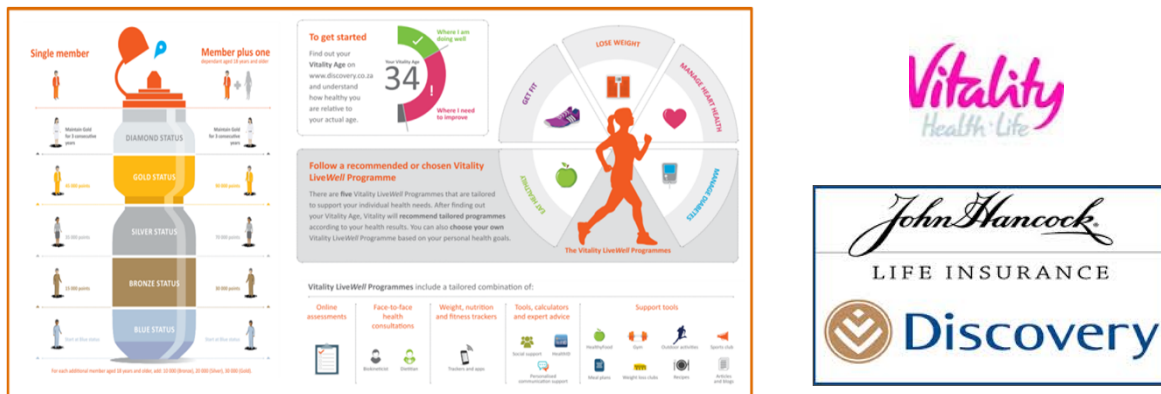
1. How to deal with genetic testing?
 - New companies set up for people who have not taken a genetic test?
 - Insurance products for people who have taken a genetic test and had a positive result –already happening through use of analytics...
 - Pricing of annuities and life/health insurance in future

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Technological Disruption

Discovery has established a new business model using technology, information and analytics to deliver personalized underwriting and change customer behavior



Source: <http://www.thevitalitygroup.com/>; <http://www.thevitalitygroup.com/john-hancock-enters-exclusive-partnership-with-vitality/>

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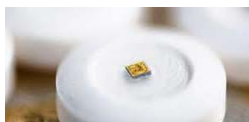
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Sensors that are implantable, printable, and ingestible will monitor and dispense medication to sick and healthy consumers

Digitization of Healthcare will impact us profoundly

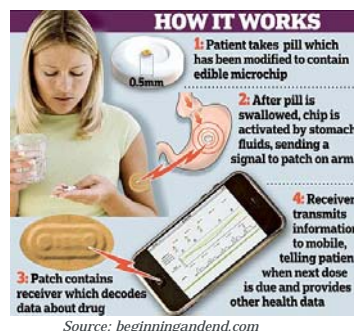


Source: The Wall Street Journal
Flexible Electronic Chips



Source: Medgadget LLC

Chips on a Pill



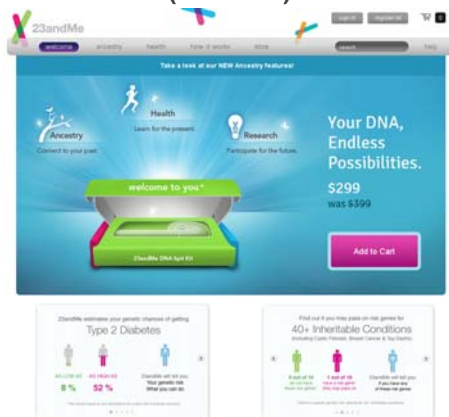
Tattoos for Glucometers

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Social networking coupled with 'democratisation' of medical data is leading to better drug discovery personalized medicine

Genetic Risk Indicators & Social Networking (23andMe)



Source: 23andMe

Sharing of Health Data for Drug Discovery & Interaction (PatientsLikeMe)



Source: PatientsLikeMe

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Questions

Comments

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