Transformations in Healthcare – A view on 2020

International Forum for Health Tourism, Romania

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FROST & SULLIVAN

Agenda

Transformations in Healthcare – A Macro to Micro View

Mega Trends in Healthcare – A Global View

Healthcare Providers – Hospitals, Clinics, Community, Physicians
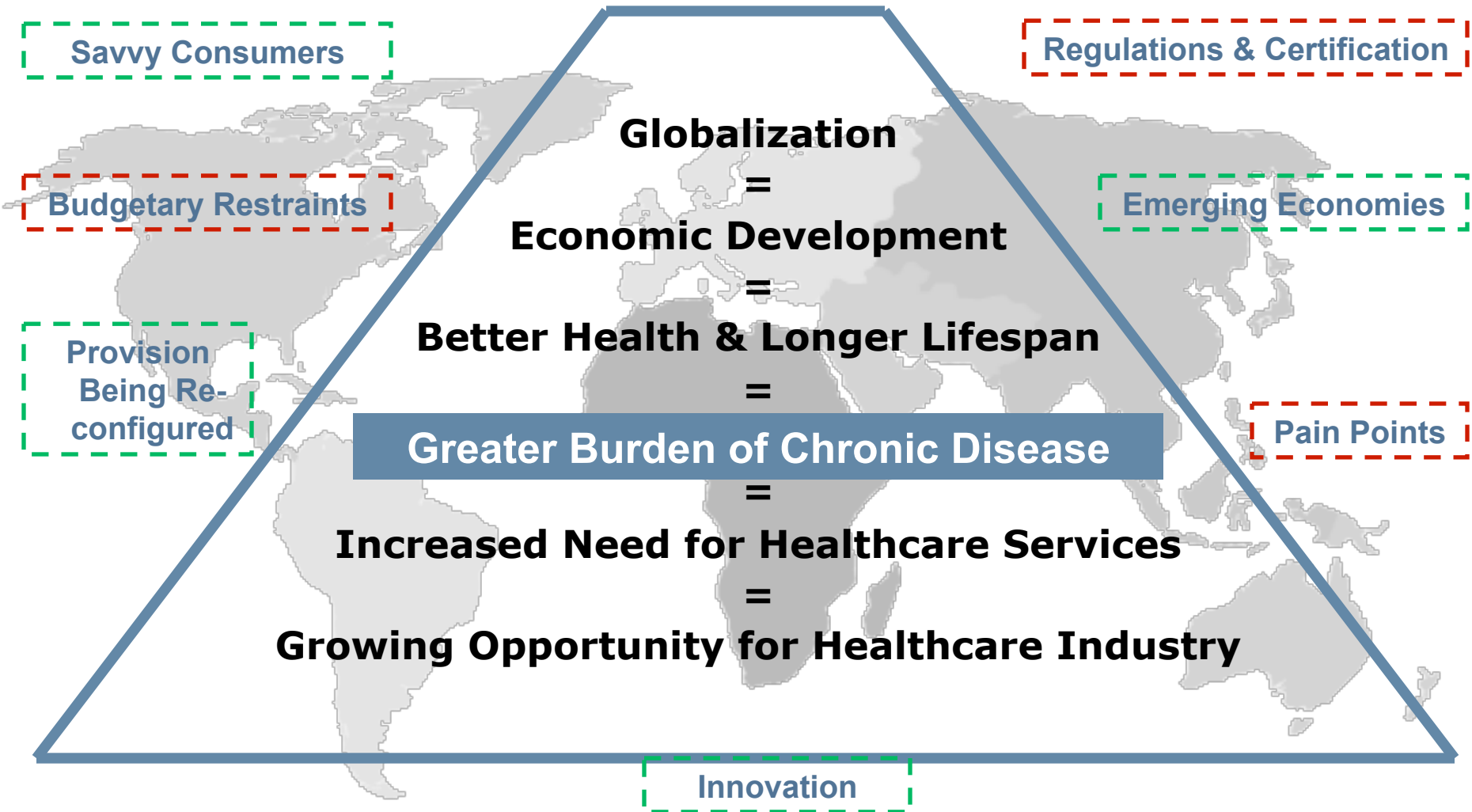
Consumers – Profile, Funding, Choices

Technology – Spectrum, Innovation, Avatars

Medical Tourism – Leveraging Opportunities

Summary of the Future

Q&A

Healthcare Outlook for the Long-Term

Globalization

=

Economic Development

=

Better Health & Longer Lifespan

=

Greater Burden of Chronic Disease

=

Increased Need for Healthcare Services

=

Growing Opportunity for Healthcare Industry

Savvy Consumers

Regulations & Certification

Budgetary Restraints

Emerging Economies

Provision Being Re-configured

Pain Points

Innovation

Focus

Transformations in Healthcare – A Macro to Micro View

Mega Trends in Healthcare – A Global View

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Consumers – Profile, Funding, Choices

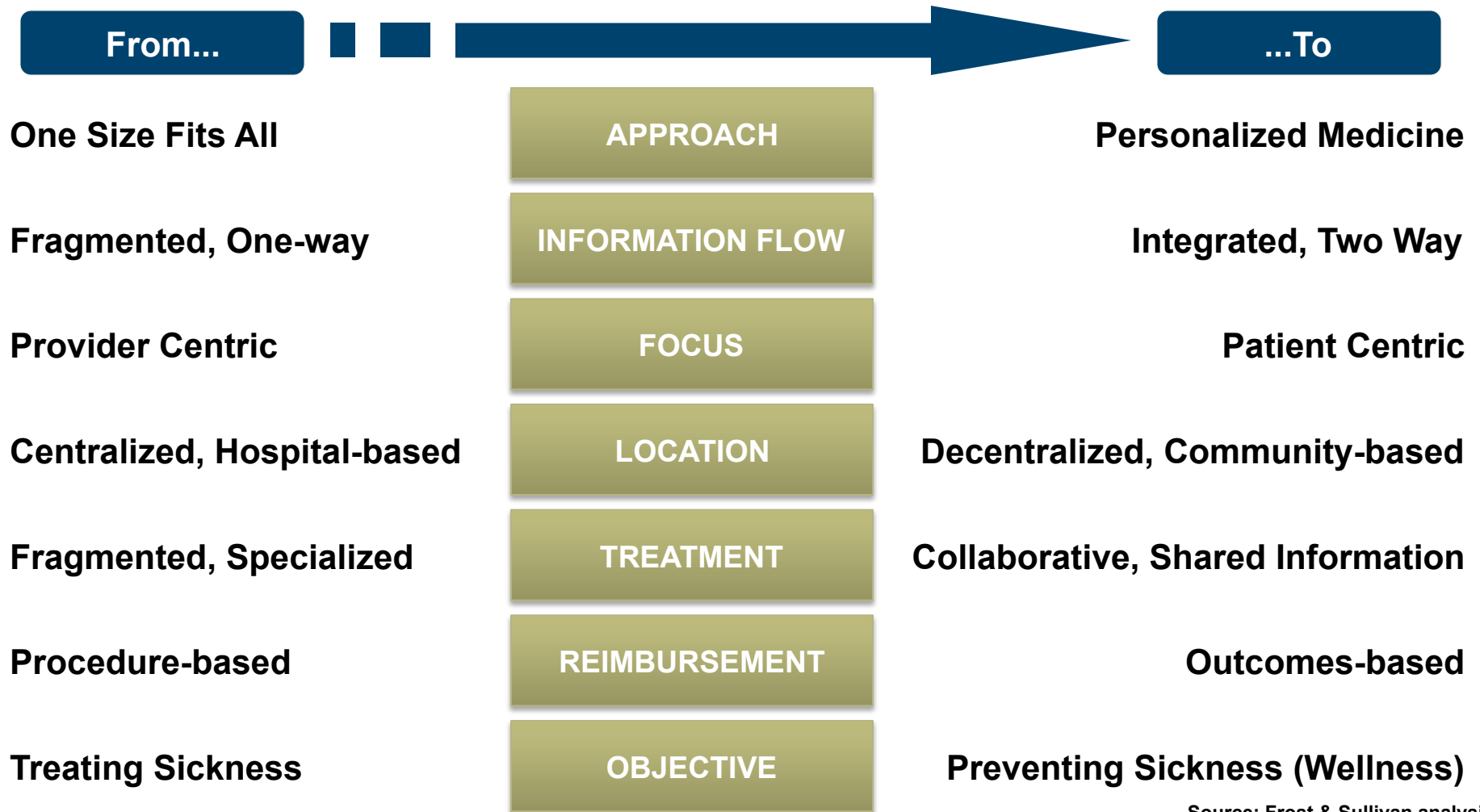**Technology – Spectrum, Innovation, Avatars**

Medical Tourism – Leveraging Opportunities
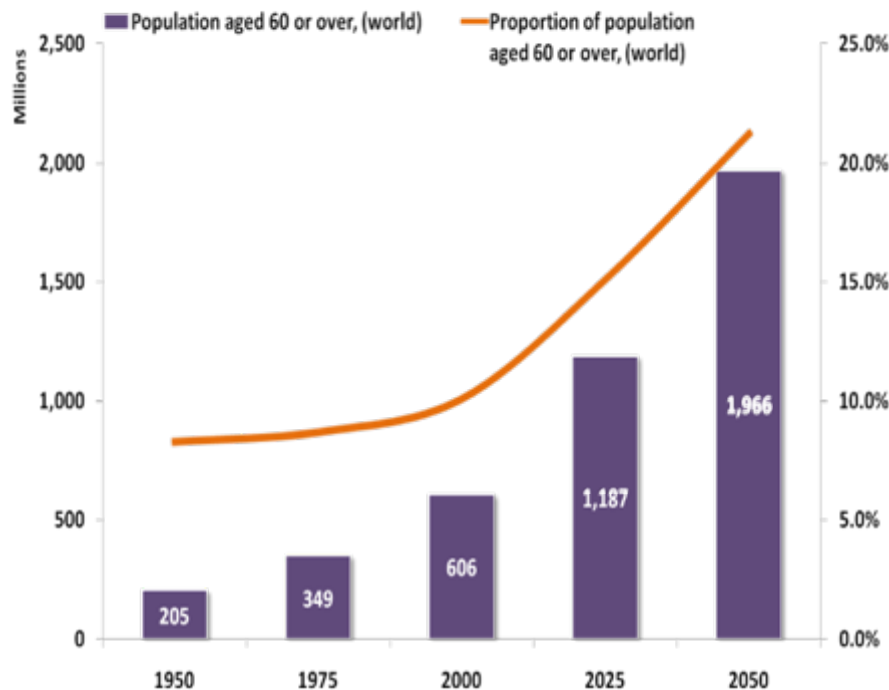
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Megatrends Impacting the Entire Spectrum of Care

**A modern health care system is on the horizon, demanding a paradigm shift**

From...		...To
One Size Fits All	**APPROACH**	Personalized Medicine
Fragmented, One-way	**INFORMATION FLOW**	Integrated, Two Way
Provider Centric	**FOCUS**	Patient Centric
Centralized, Hospital-based	**LOCATION**	Decentralized, Community-based
Fragmented, Specialized	**TREATMENT**	Collaborative, Shared Information
Procedure-based	**REIMBURSEMENT**	Outcomes-based
Treating Sickness	**OBJECTIVE**	Preventing Sickness (Wellness)

Source: Frost & Sullivan analysis.

# The Consumer Profile is Changing

- In 2000, 10% (606 million) of the global population was aged 60+. By 2050 this will be more than 21% (2 billion.)

- 75% of those aged 60+ have one chronic condition - 50% have two or more chronic conditions

- On the positive side, this group is predicted to influence innovation, choice and spend on healthcare resources and assets

Source : WHO
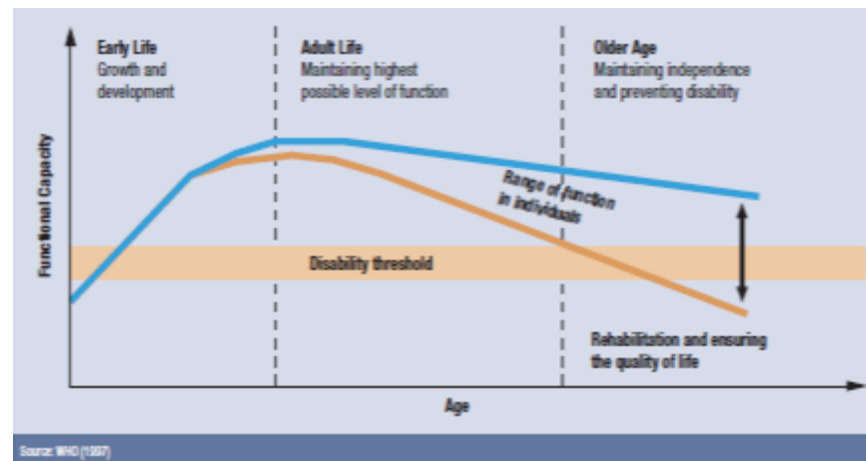
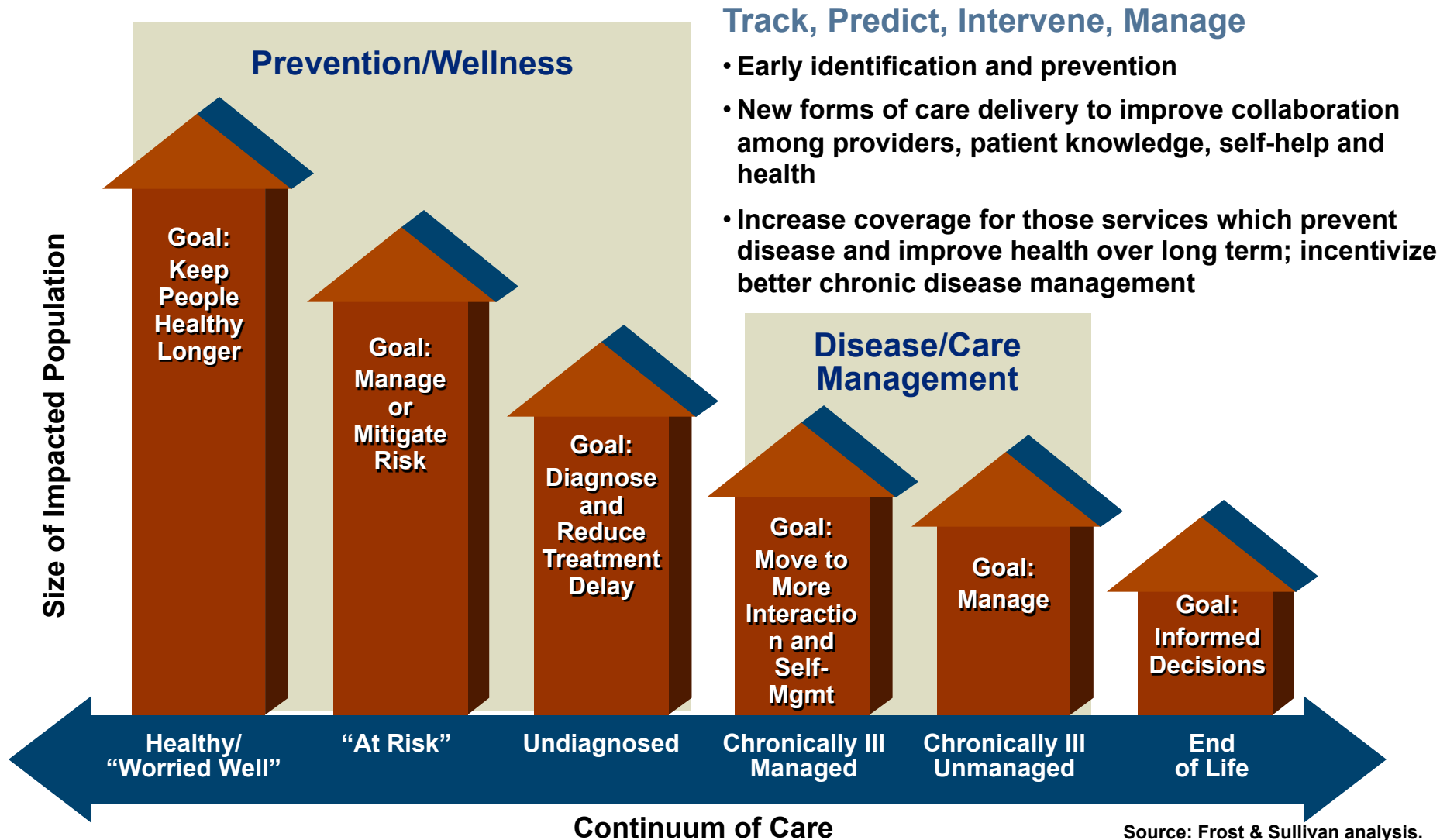# Effect of External Mega Trends : Urbanization vs. Chronic Diseases
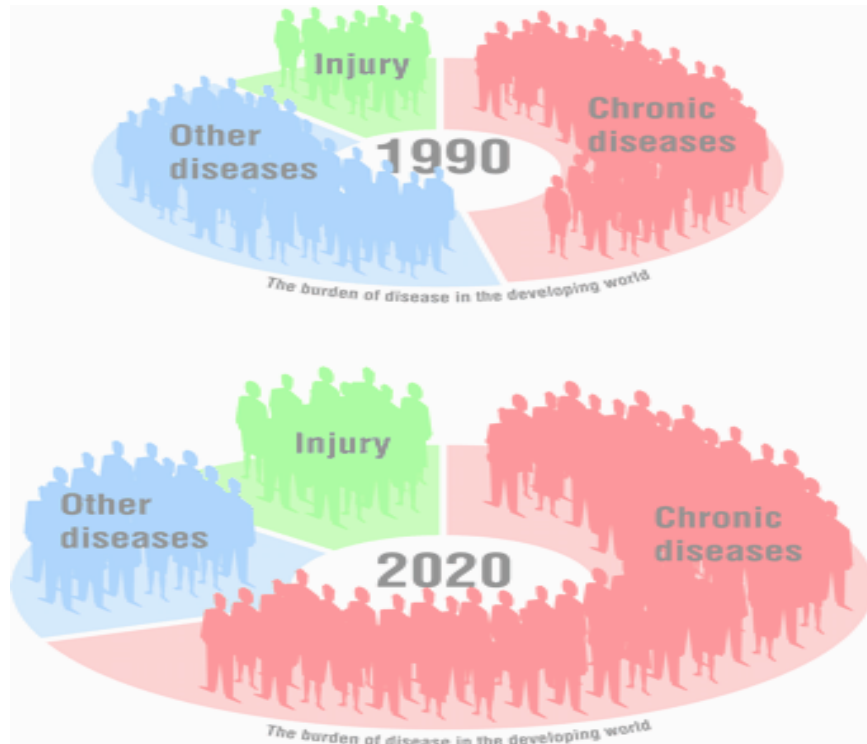
Source : WHO

- Increased urbanization has gone hand in hand with the increase in both the incidence and prevalence of non-communicable diseases (cardiovascular diseases, cancers, diabetes and chronic respiratory diseases)

- Changes in diets and physical inactivity contribute to this higher rate of "lifestyle diseases" among urban populations

Implications:

- This will continue to influence the way healthcare dollars are spent – shift left
- New healthcare service opportunities are predicted to emerge
- The healthcare ecosystem will continue to expand – new entrants, expanding value chain
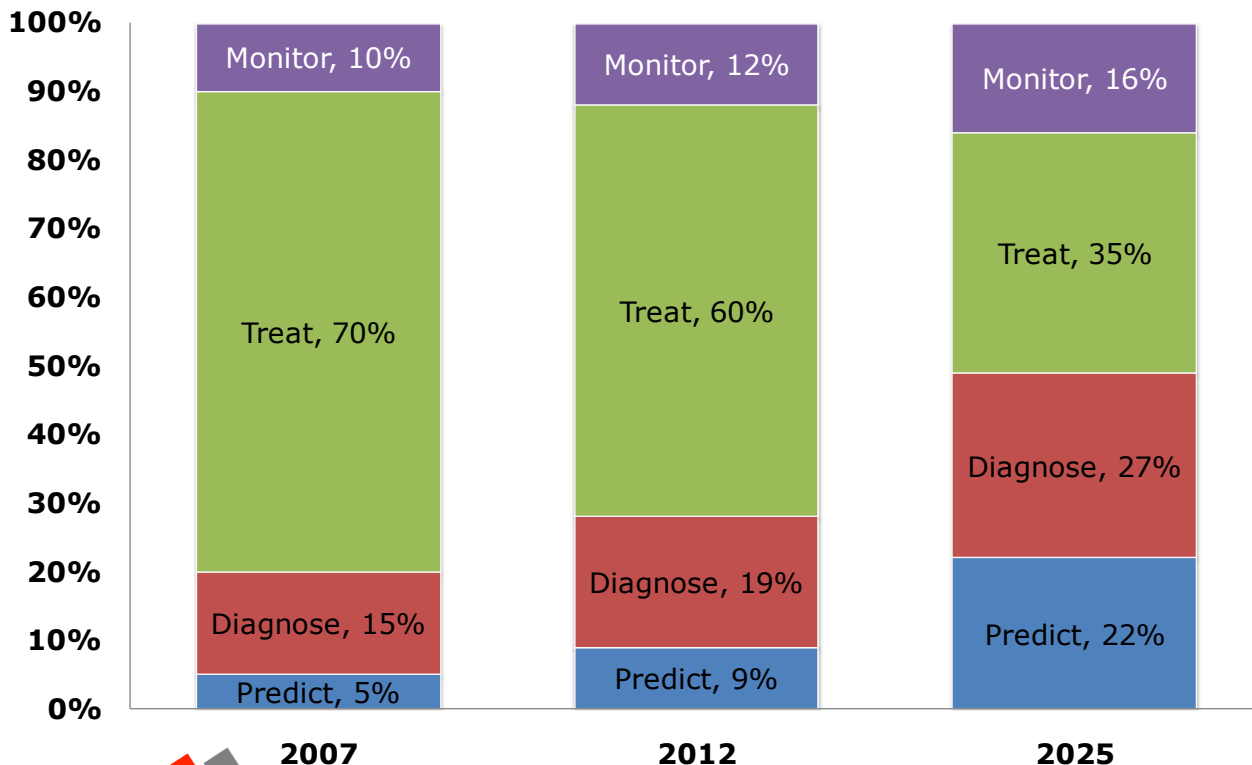- New business models - telehealth

Shifting Emphasis From Acute Care to Prevention

Prevention/Wellness

Track, Predict, Intervene, Manage

- **Early identification and prevention**
- **New forms of care delivery to improve collaboration among providers, patient knowledge, self-help and health**
- **Increase coverage for those services which prevent disease and improve health over long term; incentivize better chronic disease management**

Disease/Care Management

Size of Impacted Population

Goal: Keep People Healthy Longer

Goal: Manage or Mitigate Risk

Goal: Diagnose and Reduce Treatment Delay

Goal: Move to More Interaction and Self-Mgmt

Goal: Manage

Goal: Informed Decisions

| Healthy/ "Worried Well" | "At Risk" | Undiagnosed | Chronically Ill Managed | Chronically Ill Unmanaged | End of Life |

Continuum of Care

Source: Frost & Sullivan analysis.

The Economics of Early Health

Global Healthcare Spend

Stacked bar chart showing Global Healthcare Spend for 2007, 2012, and 2025:

2007:
- Monitor, 10%
- Treat, 70%
- Diagnose, 15%
- Predict, 5%

2012:
- Monitor, 12%
- Treat, 60%
- Diagnose, 19%
- Predict, 9%

2025:
- Monitor, 16%
- Treat, 35%
- Diagnose, 27%
- Predict, 22%

Screening and Localizing diseases is the most efficacious and cost effective approach to improving quality of life

The most advantageous way to combat many diseases, such as diabetes or cancer is to predict susceptibility, characterize and begin preventive treatment before the onset of the disease

Better health through earlier diagnosis

Increasing Lifespan

Global Healthcare Spend → Profile → Screen → Localize → Qualify → Intervene → Feedback
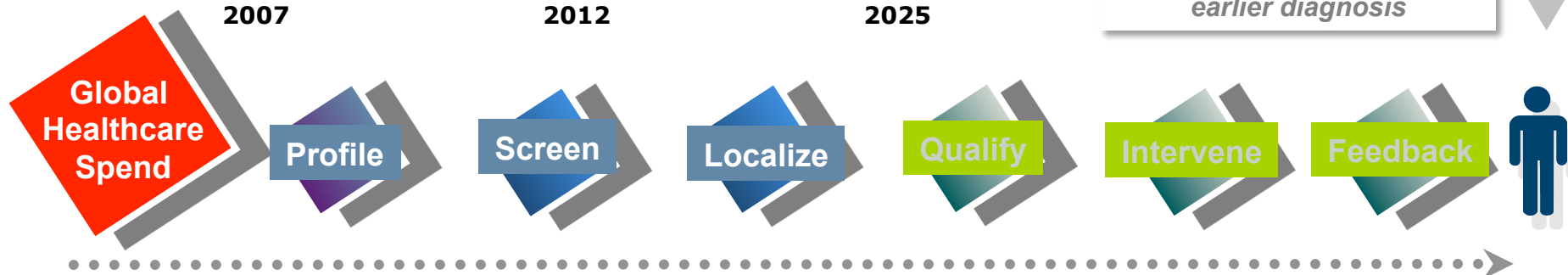
The Motivation for Change Differs Across Stakeholders

Suppliers – Changing the value proposition

✓ **Help me and my family become and remain healthy**

✓ **The overall experience matters**

✓ **Peace of mind – anytime, anywhere**
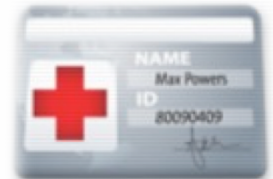
✓ **Avoid paying for unnecessary services**

✓ **Control waste & abuse**

PATIENTS	PAYORS
PROVIDERS	**POLITICIANS**

✓ **Get paid for outcomes not services rendered**

✓ **Facilitate innovative care models**

✓ **Stay in office while balancing the budget**

✓ **Make health care affordable and conveniently accessible**

Focus

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Forces of Transformation Faced by Care Providers

The Care Sector Across Europe – Fundamental Restructuring

Status Today	→	Changing Focus	→	Implications

Budgets		New Policy		Budgets
Infrastructure		Service Shift		Infrastructure
Service Lines		Service Lines		Threats
Challenges				Opportunities
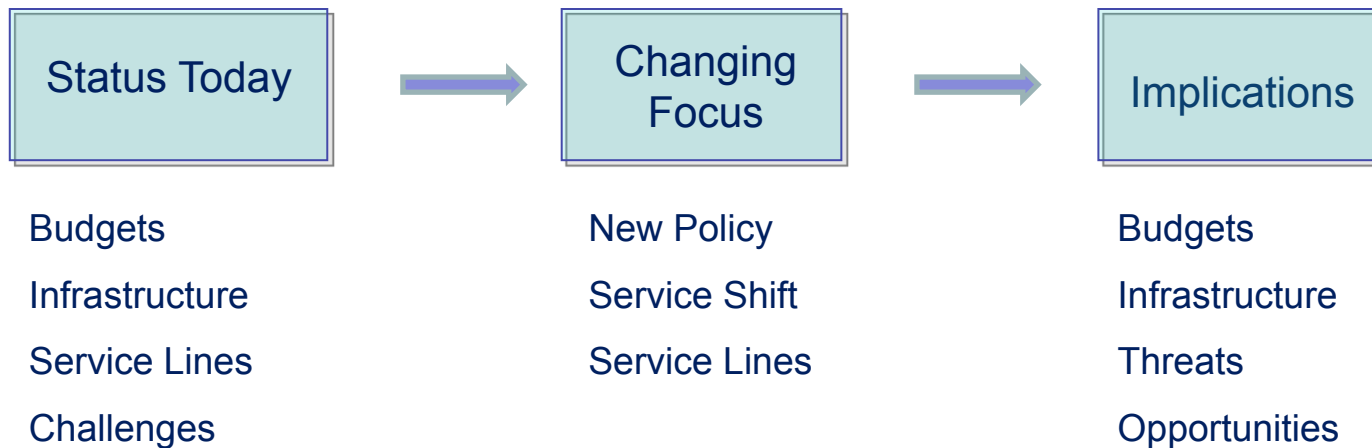
What are the changes:
- Alternative to outpatient department consultations
- Develop diagnostic capability within primary care
- Accelerate development of stand alone ambulatory care centres
- Stress on chronic disease management programmes

and most importantly
- Improving the effectiveness of services provided by trying to overcome fragmentation
    - France – multidisciplinary health centres, networks of health professionals
    - Germany – medical supply centres (MSC) high quality pathway
    - United Kingdom – GP liaison managers, ADT nurse, lower LOS

Settings for Care Provision

D — Specialist

Specialist care centres
Serving population of 250K, 500K
and 1,000K on central city sites

Diagnostic
Treatment centres
Secondary care
Tertiary care

Planned interventions
Emergency care
Complex diagnostic treatment
& inpatient care

C — Community

Community care centres
Serving populations of 100K
In the heart of the community

Resource centres
Community hospitals

Basic Diagnostic Services
Day interventions
Minor injuries
Nurse-led inpatient care
Intensive rehabilitation
Chronic care management

B — Health and Social

Health and social care centres
Close to home, serving populations
Of up to 10K

Surgeries
Drop in centres
Healthy living centres

Social care
Primary care
Outreach care
Information and advice

A — Home

Home
Nursing home
Pharmacy
Cyber café
Health kiosk

Self care
Monitoring
Automated treatment
Information and advice
NHS Direct

Care Provision
Budgets and Resources – Changes in Near Term

	Europe	North America	LATAM	APAC	India	China
Public Sector						
Acute Care	↓	↔	↑	↔	↑	↑
Primary Care	↑	↑	↔	↔	↑	↑
Private Sector	Increased Outsourcing	Increased Outsourcing				
Poly Clinics	↑	↑	↑	↑	↑	↑
Diagnostic Centre's	↔	↔	↑	↑	↑	↑
Specialized Clinics – Eye, Skin care, Dental	↓	↓	↑	↑	↑	↑
Hospital/ Hospital Chains	↔	↔	↑	↑	↑	↑

Frost & Sullivan Analysis

Care Provision
Location and Spend – Changes in Near Term

Speciality	Episode	Europe — Location VS Spending	North America — Location VS Spending	LATAM — Location VS Spending
Cardiology	Dx / Screen	🔺↑ 🟨↑	🔺↑ 🟨↑	🔺↑ 🟨↑ ★↑ ⬭↑
	In'tervn	🔵◇ 🟨↑	🔵◇ 🟨↑	🔵↑ 🟨↑ ★↑
	Rehab/ Monitor	🔺↑ ◣↑	🔺↑ ◣↑	🔺↑
Oncology	Dx / Screen	🔺↑	🔺↑	🟨↑ ★↑ ⬭↑
	In'tervn	🔵◇ 🟨↑	🔵◇ 🟨↑	🔵↑ 🟨↑ ★↑
	Rehab/ Monitor	🔺↑ ◣↑	🔺↑ ◣↑	🔺↑
Gynaecology & Obstretics	Dx / Screen	🔺↑ ★↑	🔺↑ ★↑	🔺↑ ★↑
	In'tervn	★↑ 🔵◇ 🟨↑	★↑ 🔵◇ 🟨↑	★↑ 🔵↑ 🟨↑
Other Specialties – Eye, Skin	Overall	★↑ 🟨↑	★↑ 🟨↑	★↑ 🟨↑
Health & Wellness	Overall	🔺↑ ★↑	🔺↑ ★↑	🔺↑ ★↑ 🟨↑
Rural Health	Overall	🔺↑ ★↑	🔺↑ ★↑	🔺↑ ★↑

🔺 GP / Primary Care 🔵 Public Acute Care Hospitals ⬭ Diagnostic Centre's ★ Specialized Clinics/ Polyclnics/ Pharmacy 🟨 Private Hospitals/ Hospital Chains/HMO's ◣ Elderly care centre//LTC

Implications for the Acute Care Sector
Evolution of Transversal Medical Trends

Trends focussing on OP and Primary Care	UK	FRA	GER
Shift of patient diagnosis / management to primary care (family physician)	✔✔✔	✔	✔✔
Shift of patient management to the home environment	✔✔	✔✔	✔✔✔
Improving efficiency levels within Hospitals, ensuring the right care goes to the deserving patient	✔✔	✔✔✔	✔
Private and Public convergence	✔✔	✔✔✔	✔ ✔

Focus

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Q&A

Creation of the Healthcare Elite

- Creation of "healthcare elite": those that can, will spend money out of pocket for elective procedures, executive and personalized levels of care.
- Have nots utilize public facilities. Wealthier patients will pay out of pocket or use premium coverage plans for elective procedures in top-tier facilities.
- Tier 2 hospitals in urban areas need to become stronger, develop competitive edge to survive.

income growth increases middle class

FIG 1 Distribution of world population

income class
- rich
- middle class
- poor
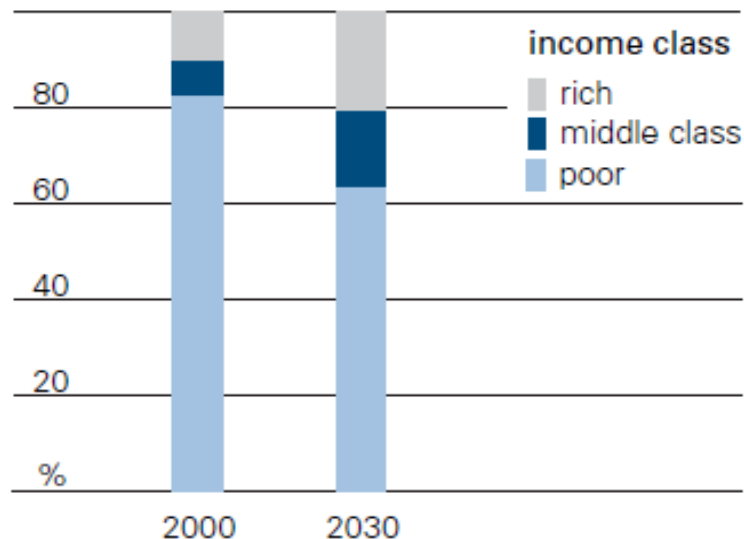
where will the middle class come from?

FIG 2 Origin of global middle class

- East Asia/Pacific developing
- other developing
- rich countries
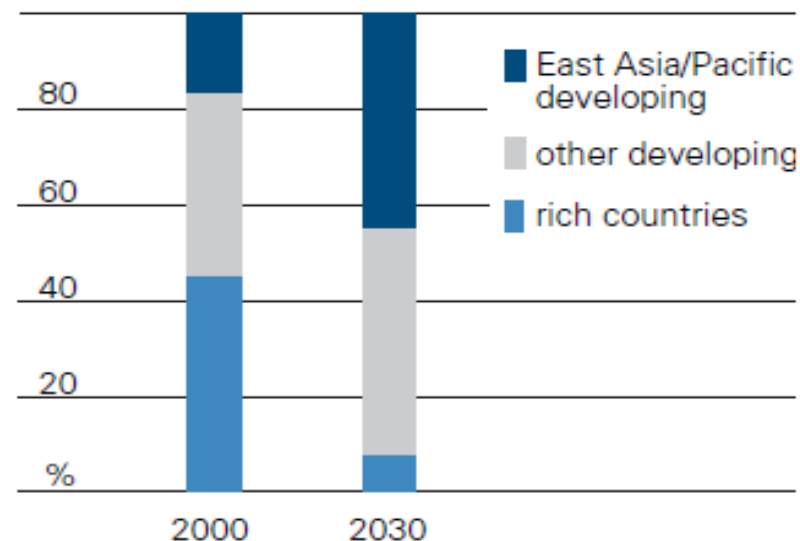
Source : WHO

Sources of Consumer Spend

Decreasing Order of Magnitude of Funds Used by Consumers in the Future

+++   +

Region					
Europe	Public Funding	Private Insurance	Co-Payment Shared	Out of Pocket	HMO's/ Care Organization
North America	Public Funding	HMO's/ Care Organization	Private Insurance	Co-Payment/ Shared	Out of Pocket
LATAM	Private Insurance	Public Funding	Out of Pocket	HMO's/Care Organization	Co-Payment/ Shared
APAC	Private Insurance	Public Funding	Out of Pocket	HMO's/Care Organization	Co-Payment/ Shared
India	Out of Pocket	Private Insurance	HMO's/Care Organization	Public Funding	Co-Payment/ Shared
China	Out of Pocket	Private Insurance	HMO's/Care Organization	Public Funding	Co-Payment/ Shared

+++   +

Consumer Mindset

Experiences in other markets influence consumer expectations for health care

Retail & Finance
- **Customer service focus**
- **Comparison shopping**
- **Self-service, online shopping**
- **Special offers**

Entertainment & Media
- **Customized products**
- **Home services**
- **Variety**
- **Engaging interface**

Consumer Expectations

- ➤ **Real time info at point of use**
- ➤ **Info comes to consumer**
- ➤ **High levels of interaction and Q&A online and in person**

- ➤ **Ability to control and customize**
- ➤ **Flexibility and convenience**

Manufacturing & Distribution
- **Faster time to market**
- **One stop shop**
- **Anytime anywhere care**
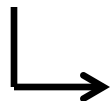
- ➤ **24 / 7 / 365 support**
- ➤ **One stop resolution or call back**
- ➤ **Proactive outreach to address issues affecting consumers**

Source: Frost & Sullivan analysis

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The Medical Technology Spectrum

CT Scanner	Neurostimulators	Insulin Pumps	Thermometers
Anesthesia Machine	External Pacemakers	Hearing aids	Blood Glucose
Radiation Therapy	Sleep Therapy	CPAP Machines	Wellness Solutions

Exclusively Professional | **Primarily Professional** | **Primarily Consumer** | **Exclusively Consumer**

| Driven by clinician needs, does not require active involvement by patient to achieve effect, requires RX or MD order | Driven by clinician needs, requires active involvement by patient to achieve effect , requires RX or MD order | Driven by consumer needs, requires a clinician intermediary or Rx prior to purchase | Driven by consumer needs, does not require a clinician intermediary or Rx prior to purchase |

Care Setting
Healthcare Facility, High Acuity ⟷ *Home*

Purchasing Authority
Healthcare Facility Covers Most Costs with Little Direct Reimbursement ⟷ *Consumer Covers Most Costs Personally*

User
Exclusively Used by Clinicians ⟷ *Exclusively Used by Patient*

Technical Complexity
Highly Complex, Significant Training Required Prior to Use ⟷ *Low Complexity, Little Training Required Prior to Use*

Safety Risk
High Risk for Injury if Used Improperly ⟷ *Low Risk for Injury if Used Improperly*

FROST & SULLIVAN

What's Driving Technology Innovation

The 'Pull Factor' is predicted to come from Governments, Private Insurers and Self-Pay Consumers as they will decide what sells and at what price

Innovation is moving to emerging markets due to inertia in the developed world. Academic involvement

Emerging markets – breeding ground for smaller, faster, more affordable devices 'bending the HC cost curve downwards'

- Value based incentives
- Competing regulatory systems
- Individualised & price sensitive customers
- Global financial networks

Innovation – Value Creation:

More value is predicted to be created from 'new entrants' as compared to 'incumbent' technologies . Higher RoI.

Healthcare Avatars – Out of the Box

DEFINITION

- Computational 3D models: virtual patients
- Software agent: pocket doctor or physician assistant
- Healthcare supercomputer: next-gen diagnostician
- Combination of virtual technology, mathematical modeling, patient records, & healthcare databases

PURPOSE

- Use patient genome & physiology to tailor drug therapy
- Software that can answer simple queries, give drug reminders & results of medical tests
- Computer assisted diagnostics (CAD) in hospitals
- Training tool for health professionals & students

ADVANTAGES

- Cut down on time spent on routine questions to focus on treatment
- Reduce chances of misdiagnosis
- Schools & hospitals save on training costs
- Easier to simulate & prepare for emergencies & epidemics
- User-friendly & visual method to navigate patient records

IMPLICATIONS

- Computers eventually replace GPs in diagnosis via evidence-based medicine
- Doctors provide personalized therapy & treatment regimen based on genetically identical virtual patient
- Virtual therapy (cybertherapy) to help psychologists treat phobias, anxiety via simulations

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Care Demand Pushes Patients Around the World with Medical Tourism

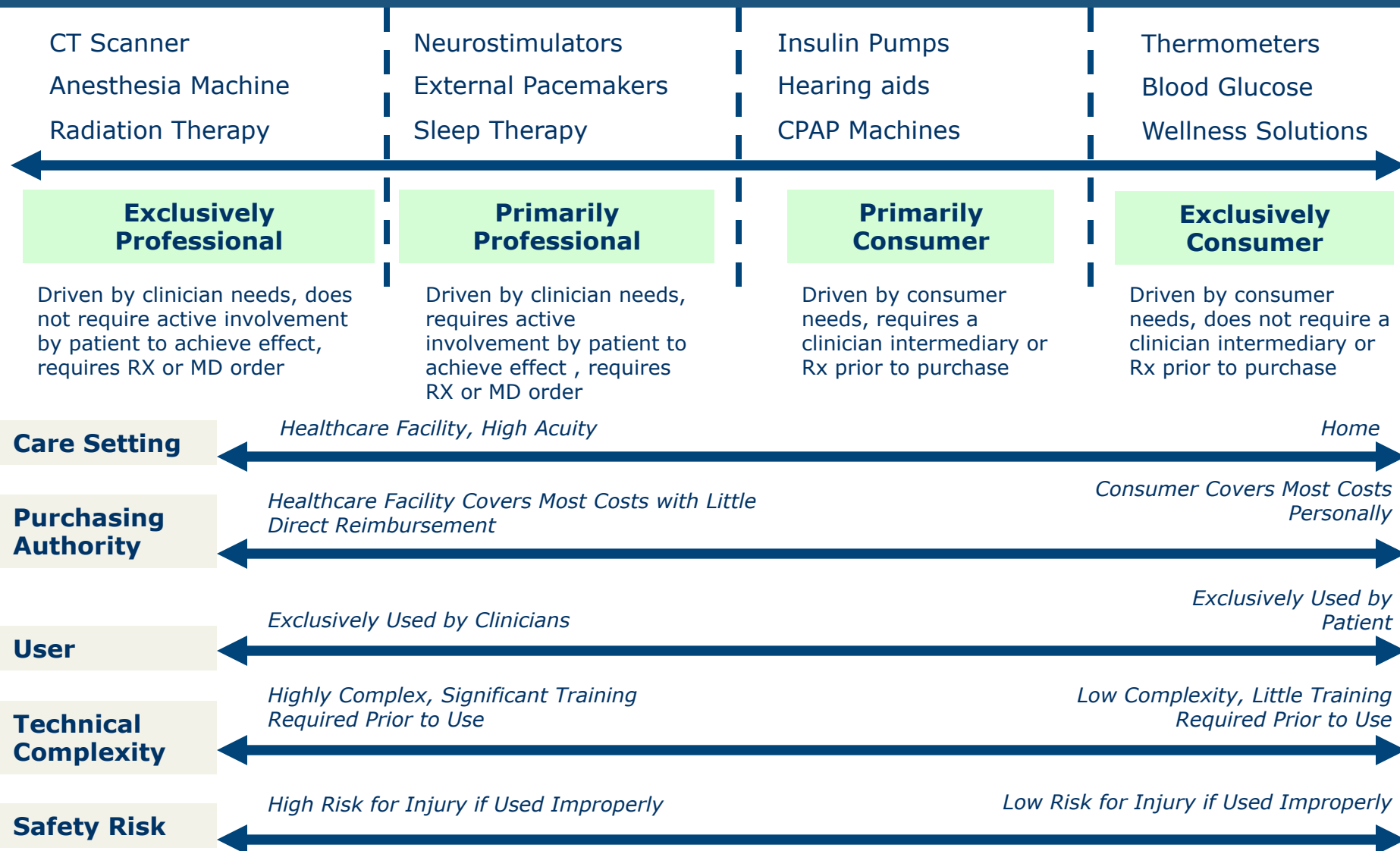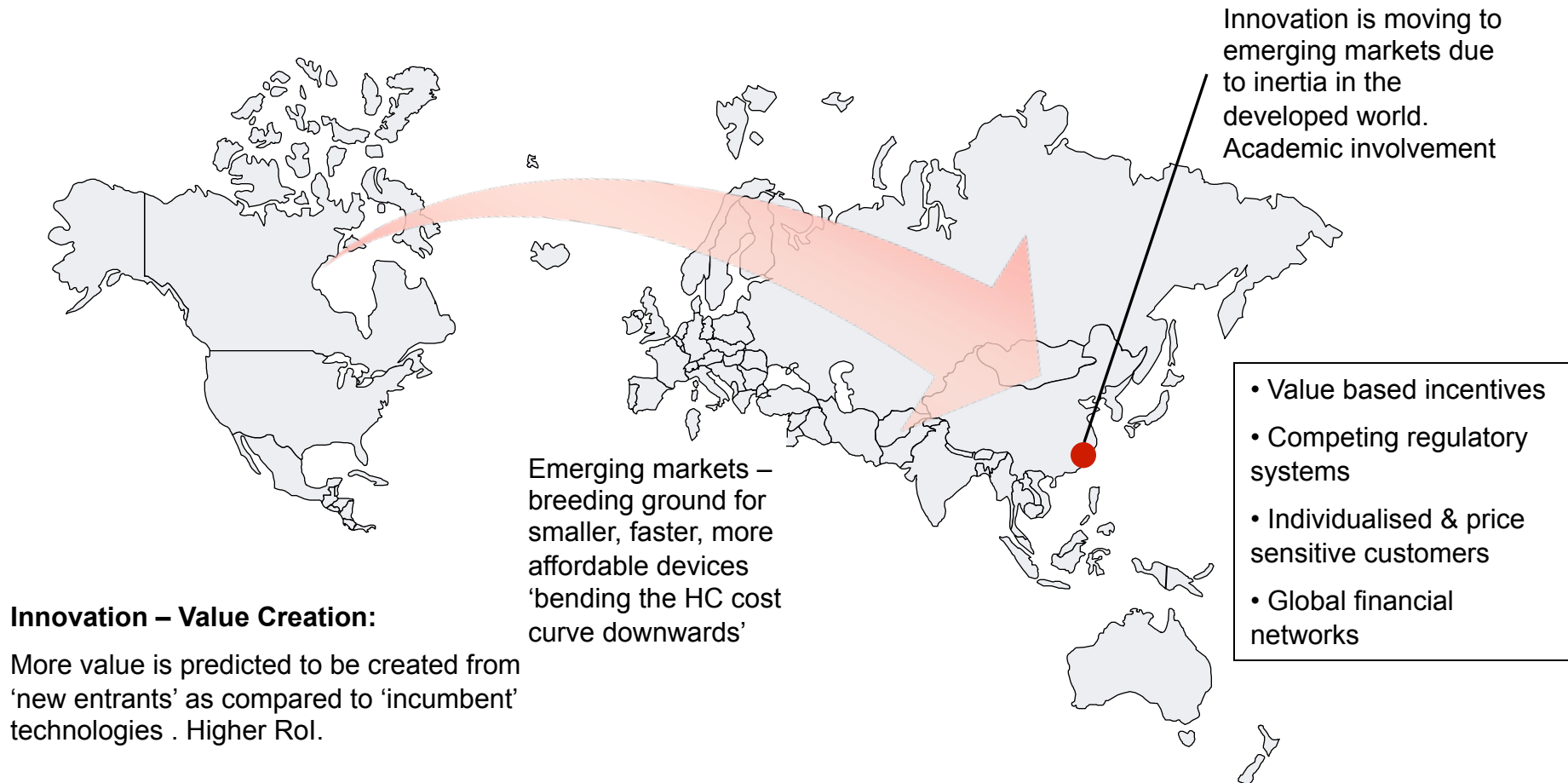## Reasons for Medical Travel, Global

Reduce Wait Time

Vacation + Care

Seek Specialized Treatments

Seek Expertise/ Technology/ Quality

Seek Value

Seek High End Care in Region

Seek Value

Seek Value

Seek High End Care in Region

Seek Specialized Aesthetic Procedures

Top 15 Medical Tourist Destinations by Volume of Care
Thailand
Hungary
India
Singapore
Malaysia
Philippines
United States
Costa Rica
Brazil
Mexico
South Korea
Colombia
Belgium
Turkey

Procedure Type	Average Cost in the US (USD)	Average Cost Abroad (USD)
Heart Valve Replacement	$175,000	$16,000
Heart Bypass	$145,000	$14,500
Spinal Fusion	$103,000	$10,000
Knee Replacement	$65,000	$12,500
Gastric Bypass	$22,000	$5,000
Lap Band	$20,000	$6,500

Future Scenario?
As regulatory bodies (FDA,CE Mark, SFDA) that approve the sale of new technologies continue to become more stringent and delay access to new treatments, it is possible global hubs other countries and regions could become the go to hubs for cutting edge care.

Medical Tourism Changes Flow of Spending

Mexico
- Variety of Hospital Group Infrastructure Expansion (StarMedica, AmeriMed, GrupoAngeles)
- Cosmetic, dentistry and hip replacement are the most popular procedures among tourists

Costa Rica
- One in five visitors is a medical tourist
- Plastic Surgery, General and Cosmetic Dentistry and Bariatric Medicine are the most popular procedures among tourists

Brazil
- Oncology, cardiology and neurology are the most popular procedures among tourists
- Medical tourism grows 30% per year

Hungary
- Treatment cost is half that of west Europe – Alternative to Asia

Thailand
- One Bangkok hospital (Bumrungrad) served over 500,000 health tourists annually

Singapore
- More internationally accredited hospital facilities than any other country

India
- Government investing $3.6 Billion in medical tourism infrastructure.
- Estimates show Indian medical tourism at $2.3B by 2012

❑ 87% of LatAm patients travel to USA

❑ 95% of African patients travel to Asia
❑ 40% of outflow from Europe is to Asia

Source: Frost & Sullivan, Burrill & Co.

Success Factors – Medical Tourism

Hospital Based Services

Food Variety
Interpreter Services
Food Quality
Information provided by Admissions Staff
Attitude & Attentiveness of Admissions..
Doctors & Surgeons' Consultation
Attitude & Attentiveness of Nurses &..
Standards of Nurses & Medical Assistant..
Room Condition & Appearance
General Facilities
Treatment/ Surgery Standards
Medical Equipment & Facilities
Hospital Environment

Services in the Country

Leisure & sports facilities
Natural attractions (beaches, mountain etc)
Entertainment availability
Shopping facilities
Tourist/vacation spots
Food variety
Public facilities
Hospital pickup services on arrival
Travel agent services quality
Helpful Locals
Minimum Language Barrier
Country Infrastructure availability
Living Cost
Friendly locals
Political Stability
Hotel pickup services on arrival
Hotel Services Quality
Immigration Services
Visa Application & Procesing
Treatment/surgery cost
Hospitals/medical facilities service quality
Safety of travel
Connectivity of airlines/transportation
Information Availability

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What Does This New Healthcare World Look Like?

More emphasis on diagnosis, monitoring, preventative care =

INCREASED COLLABORATION

Tighter cost constraints, declining reimbursement, more expensive tools   =

BETTER FINANCIAL MANAGEMENT

Healthcare Spending by Type of Activity

	2007	2012	2025
Monitor	10%	12%	16%
Treat	70%	66%	51%
Diagnose	15%	17%	21%
Prevent	5%	7%	12%
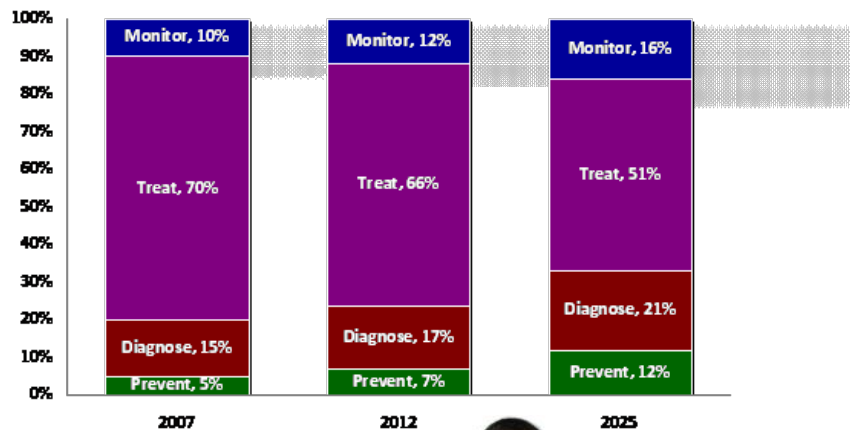
P4P, more public scrutiny, evidence-based medicine =

TRACK AND DOCUMENT OUTCOMES

Greater info flows to support training, supply chain, patient education

COMMUNICATIONS AND CONTENT

Shifts in the Future
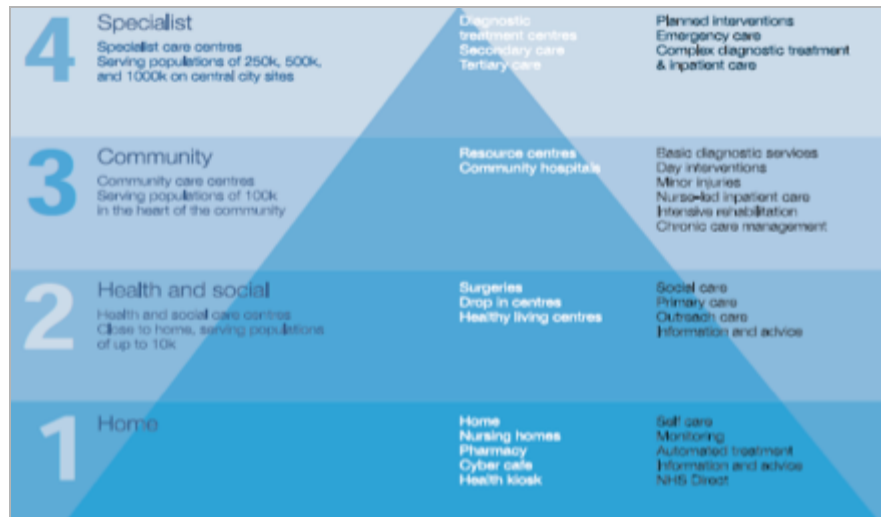
Commercial Providers

↓

Community Care

↓

Shopping for Health

↓

Living for Health

In the future, the average citizen will not just be a consumer of healthcare resources. It is predicted that local communities will take far greater responsibility for rethinking what it is to be healthy. Health will be seen as a product of broader policy and personal lifestyle choices. The associated recognition that prevention is better than cure will be driven by increasingly sophisticated social marketing techniques. It is predicted that a significant amount of national budgets will be put aside for a 'community wellness fund' in the mid term.

All Stakeholders Increasing Focus on Patient Engagement

Collaboration with payers and providers to drive technology innovation. All devices connect remotely

Strongest center of influence on behavior change

Direct to consumer applications, advice, quality ratings, etc.

FAMILIES

MEDTECH VENDORS

CONSUMER INFO and APPS

EMPLOYERS

PROVIDERS

PAYERS

Emphasis on wellness programs and incentives

New era of collaboration, communication, engagement

Data and information for shared decision-making, Direct patient engagement

Source: Frost & Sullivan analysis.

Decentralisation of Care Delivery

Depending on location, wait times to a see a clinician can range from days to weeks, or even months. Through virtualization, the majority of routine care can happen within seconds or minutes.

Instant Healthcare

As opposed to discrete interactions, the provision of healthcare is moving to a model where information is being transmitted and shared in real time between individuals and caregivers.

Continuous Healthcare

Errors resulting from to misdiagnosis of issue, procedural errors, and errors in medication administration are all easily avoidable with IT and sensor based tools to provide guidance and support.

Error Free Healthcare

Rather than the one-size fits all approach, care will increasingly be customized in an infinite variations to best tune the approach to the individual and their family.
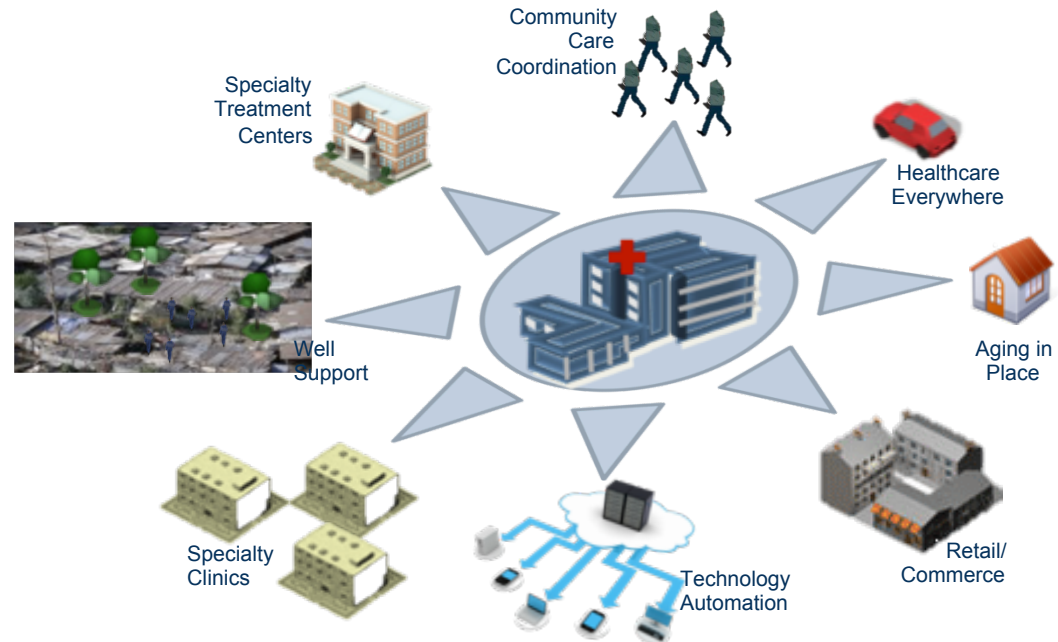
My Healthcare

The most innovative companies in healthcare are improving quality of treatment while simultaneously collapsing extraneous tasks and costs tied to legacy processes.

Cost Effective Healthcare
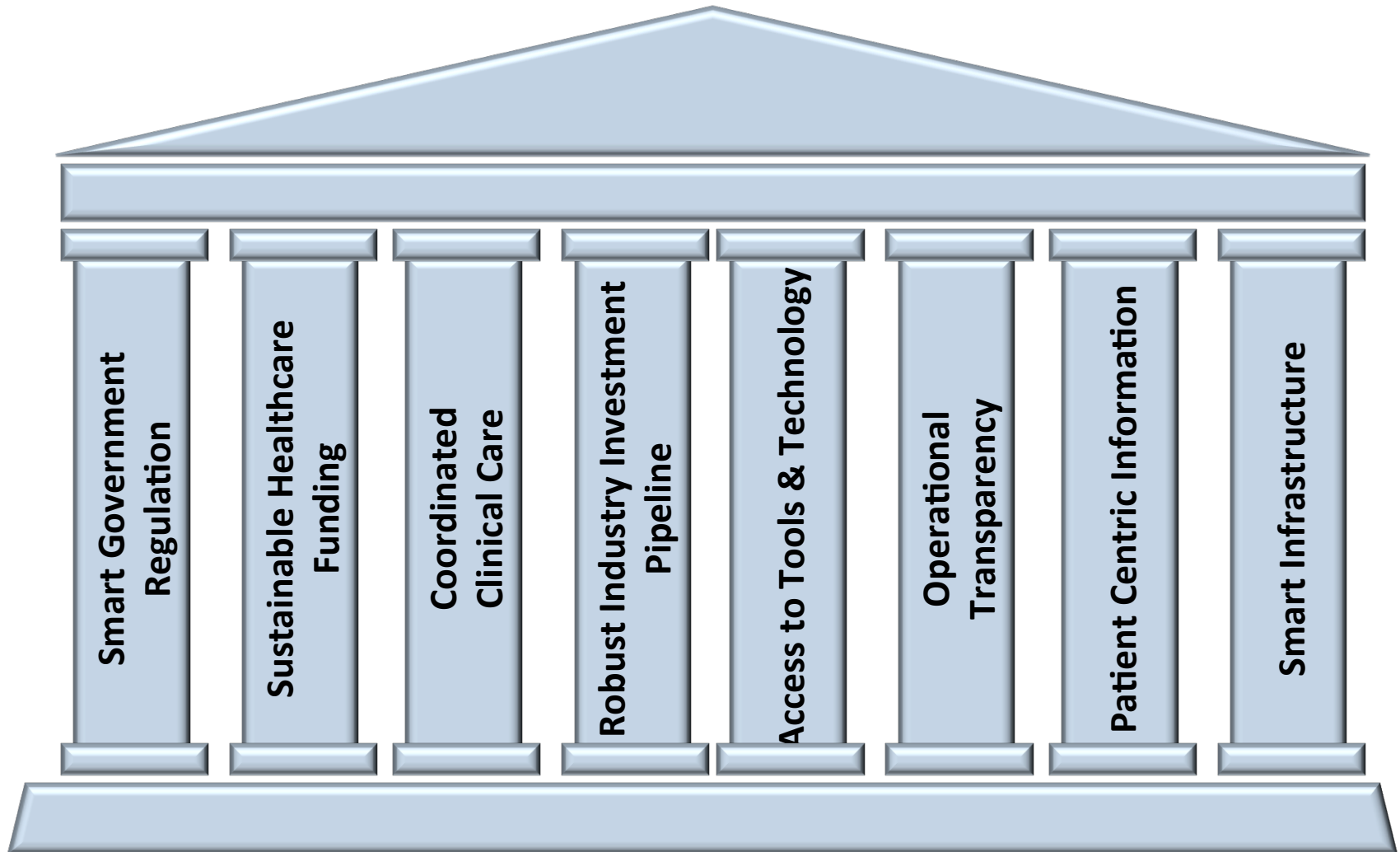
Visionary Healthcare: Care Decentralization

Community Care Coordination

Specialty Treatment Centers

Healthcare Everywhere

Well Support

Aging in Place

Specialty Clinics

Technology Automation

Retail/ Commerce

Essential Pillars of the Future Healthcare Model

Eight Pillars Essential For Progress

Smart Government Regulation

Sustainable Healthcare Funding

Coordinated Clinical Care

Robust Industry Investment Pipeline

Access to Tools & Technology

Operational Transparency

Patient Centric Information

Smart Infrastructure

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