

Impact of Information Technology in Healthcare to Improve Lifestyle Chronic Disease Handling

Chronic Diseases

Chronic Disease Management

- An integrated care approach to manage illness which includes screening, check-ups, monitoring and coordinating treatment, and patient education.
- One of the most recognized and robust model is Chronic Care Model (CCM).



m-Health

- The use of mobile telecommunication technologies for delivery of healthcare and in support of wellness.
- Used in healthcare for patient communication, monitoring and education, and to facilitate adherence to chronic disease management.

Information Technology in Preventive Health

Information technology is a powerful tool in preventive health care. It can be used to identify high-risk individuals, provide targeted interventions, and monitor outcomes. For example, electronic health records (EHRs) can be used to identify patients who are due for a routine check-up or who have risk factors for chronic diseases. EHRs can also be used to track patient adherence to treatment plans and to monitor patient outcomes.

The Future Ahead



Conclusion

The use of information technology in healthcare is rapidly increasing. This is due to the many benefits that technology offers, such as improved patient care, reduced costs, and increased efficiency. As technology continues to advance, we can expect to see even more innovative applications in healthcare. For example, artificial intelligence (AI) is being used to develop new diagnostic tools and to improve patient outcomes. The future of healthcare is bright, and technology will play a key role in shaping it.

Screening in diagnosis of all chronic diseases



Thank You

- Priyanka Malhotra

Agenda

- Introduction
- Objectives
- Research Methodology
- Review of Literature
- Discussion
- Conclusion

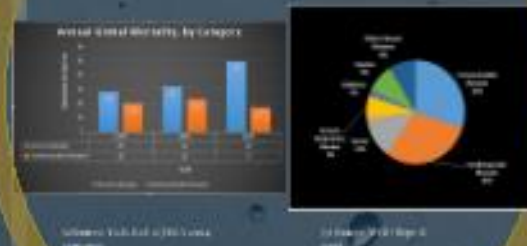
Chronic Diseases

- Chronic disease conditions are defined as any health condition requiring ongoing care activities and response from the patient, caregivers, and the health care system and in which patient self-care efforts are significant. (1)
- Commonly caused by alcohol, drug abuse and smoking as well as lack of physical activity and unhealthy eating.

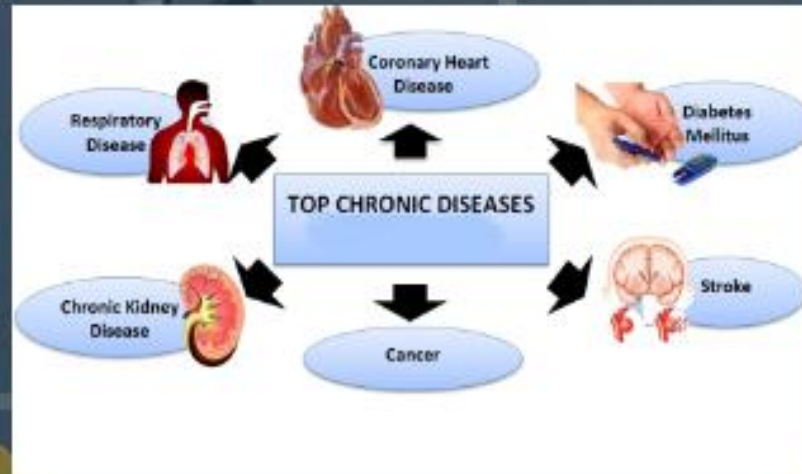


(1) Report By PHU 2011

Global Trends of Chronic Diseases



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(2)Source: Yach,D.etal
2016;2022

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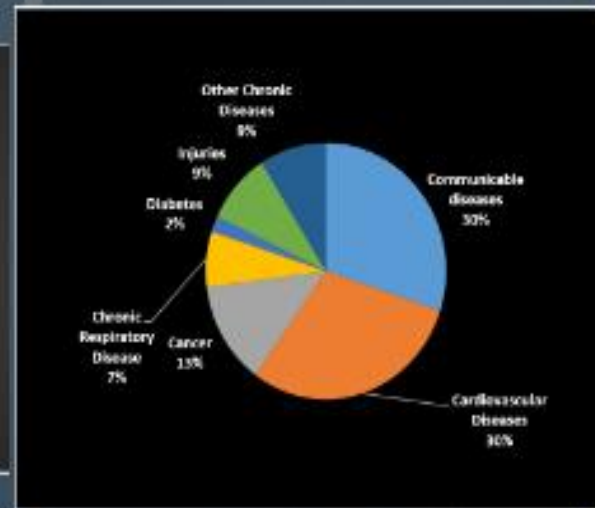
diabetes
mellitus

Stroke

Global Trends of Chronic Diseases



(2)Source: Yach,D.etAl JAMA 2004;
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(3) Source: WHO Report
2008

Objectives and Research Methodology

Objectives

- To assess the current state and future aspects for information technology in chronic disease management with a focus on market need, potential benefits, and drivers and barriers to adoption of information technology.
- To assess the role of mobile technology based health interventions delivered to healthcare consumers.
- To explore the extent to which future technologies could play a role in development of an effective and affordable healthcare.

Research Methodology

- study design: exploratory study
- Secondary Research was conducted. The data was collected from:
 - Government statistics and information from government agencies like WHO
 - Different media like articles from journals, reports from research centers
- Keywords: Lifestyle diseases, Health Data Management, preventive health, digital transformation trends, health interventions, mHealth, wearable technology, social, ethical and legal barriers to eHealth, mobile tools

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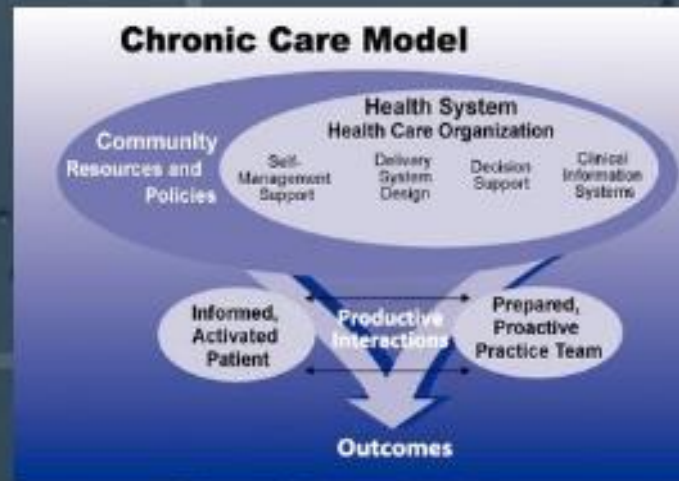
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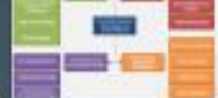
US Source: The chronic disease management and delivery system redesign project. Chronic Disease Management. Report by Policy Board & Task Force

Chronic Care Model



Information Technology in Preventive Health

- Information technology is an umbrella which covers a comprehensive range of technologies involved in capture, storage, processing and communication of information.
- In remote delivery of chronic services, specific enabling technologies used in application development include video phones, measurement and monitoring, messaging and reminder systems and personal computing devices.
- It provides enabling technology components for an integrated and coordinated electronic health information infrastructure for chronic care interventions and communication that will provide relevant, reliable, timely and secure healthcare information and services.



Market Drivers

- The growing demand for chronic care services is driving the market for IT in chronic care.
- The increasing prevalence of chronic diseases is driving the market for IT in chronic care.
- The growing demand for remote delivery of chronic services is driving the market for IT in chronic care.
- The increasing prevalence of chronic diseases is driving the market for IT in chronic care.

IT in Chronic care continuum



Market Segmentation



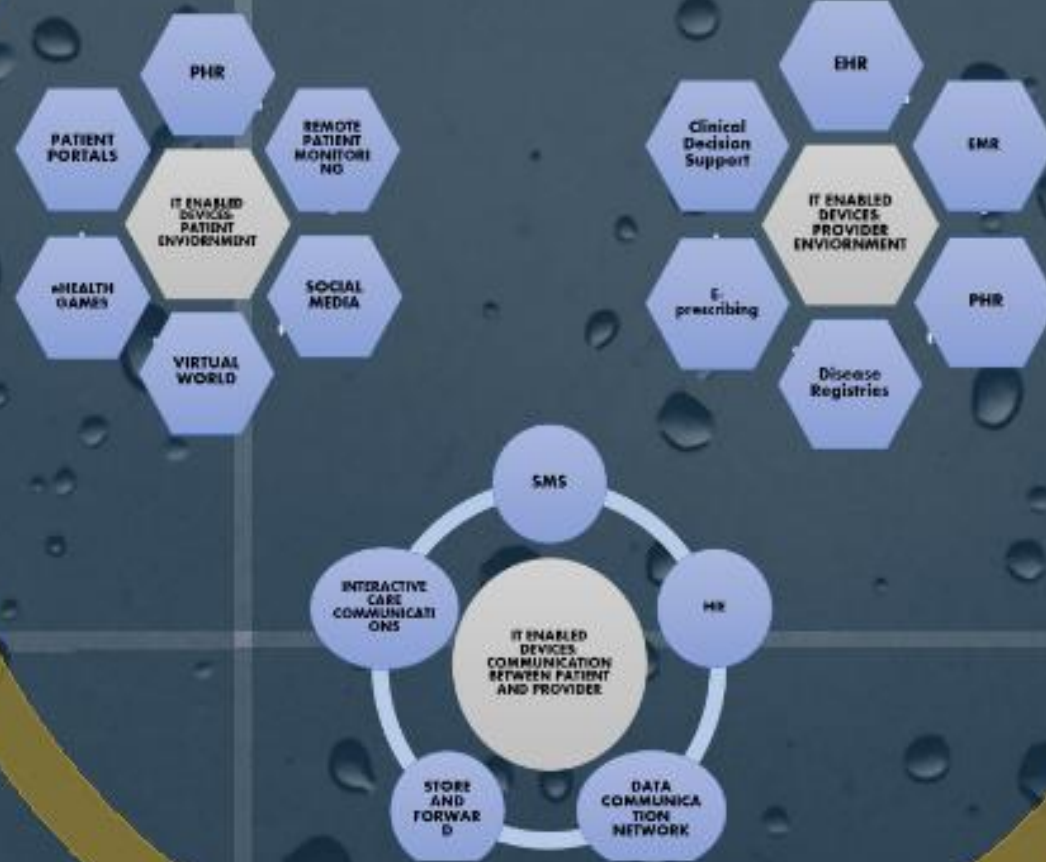
Market Drivers

Market Drivers are those factors which facilitate current market growth.

The major drivers of preventive healthcare technologies are:

- Favorable government policies for supporting information technology,
- High demand of technological upgradation from healthcare sector,
- Increasing social awareness about preventive health, and
- Self-monitoring devices for patients suffering from chronic diseases. (8)

IT in Chronic care continuum



A diagram illustrating the components of an IT-enabled patient environment. A central light yellow hexagon is surrounded by six light blue hexagons, all set against a dark blue background with a water droplet pattern. A thick, curved gold band is visible on the left side of the image.

PHR

**REMOTE
PATIENT
MONITORING**

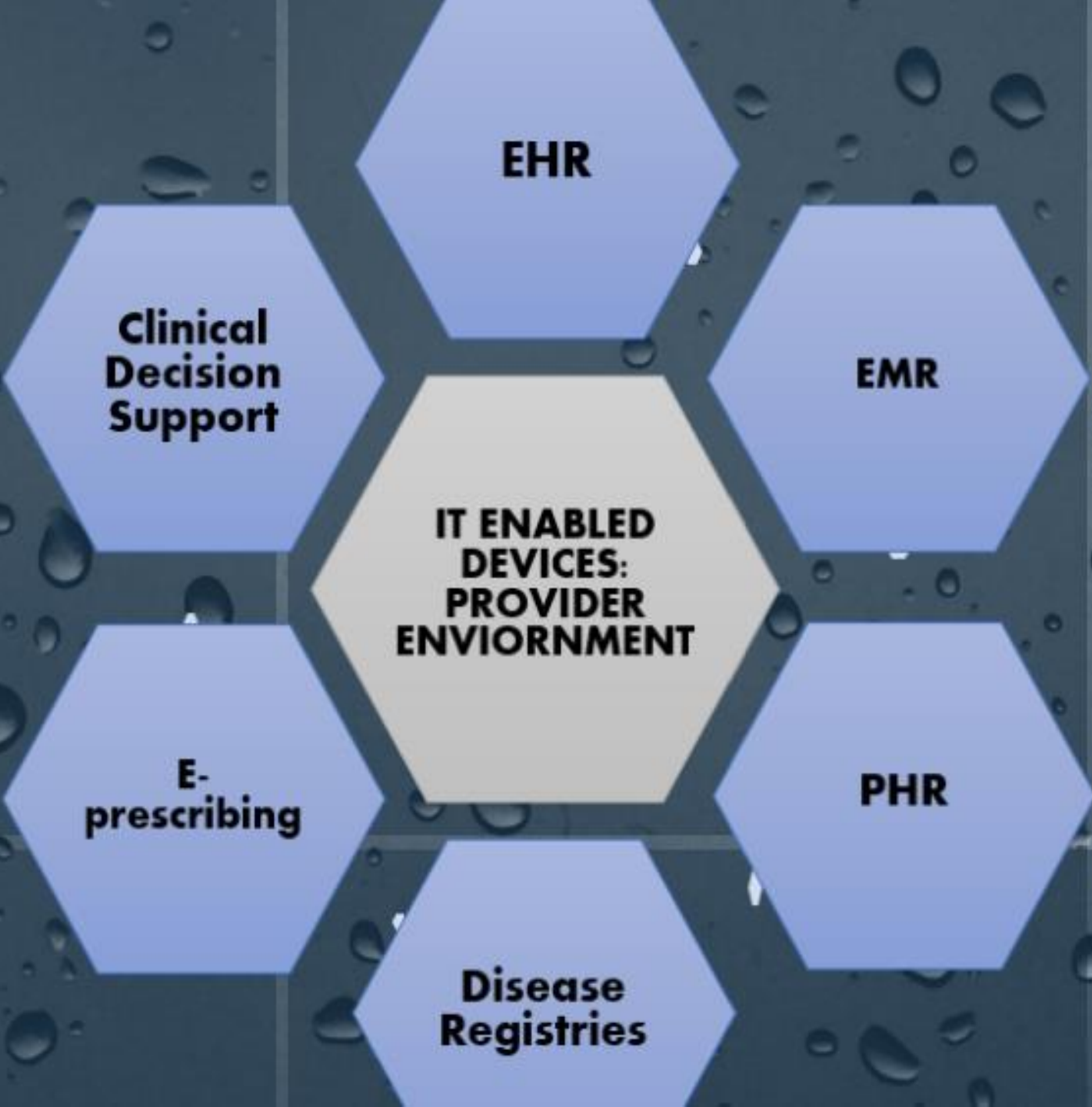
**PATIENT
PORTALS**

**IT ENABLED
DEVICES:
PATIENT
ENVIRONMENT**

**SOCIAL
MEDIA**

**eHEALTH
GAMES**

**VIRTUAL
WORLD**



The diagram features a central yellow hexagon with the text "IT ENABLED DEVICES: PROVIDER ENVIRONMENT". Surrounding this central hub are six light blue hexagons, each containing a different text label. The background is a dark blue surface with numerous water droplets of varying sizes. A vertical grey line runs through the center, and a horizontal grey line runs across the middle. A yellow triangular shape is visible in the top right corner.

EHR

**Clinical
Decision
Support**

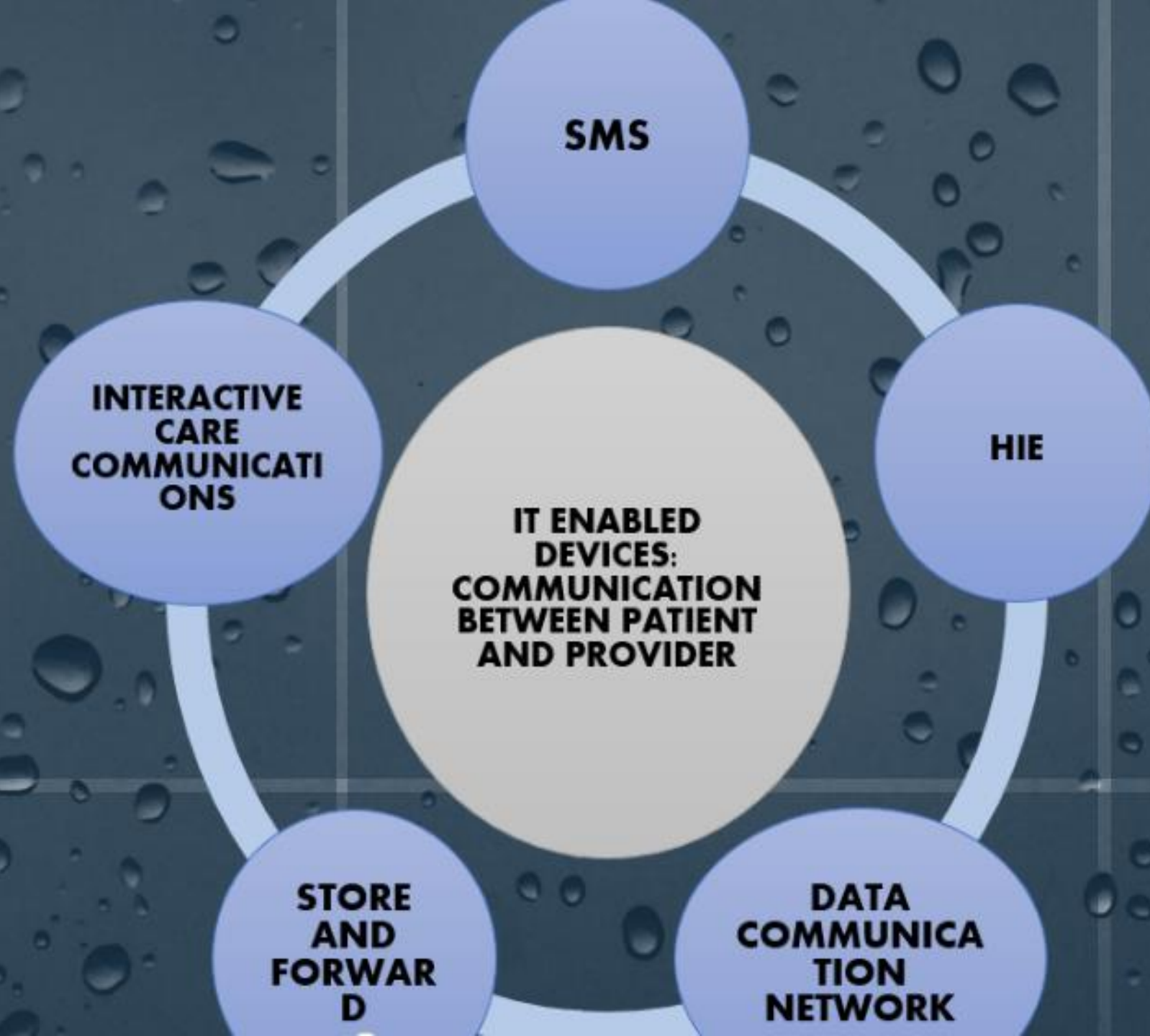
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**IT ENABLED
DEVICES:
PROVIDER
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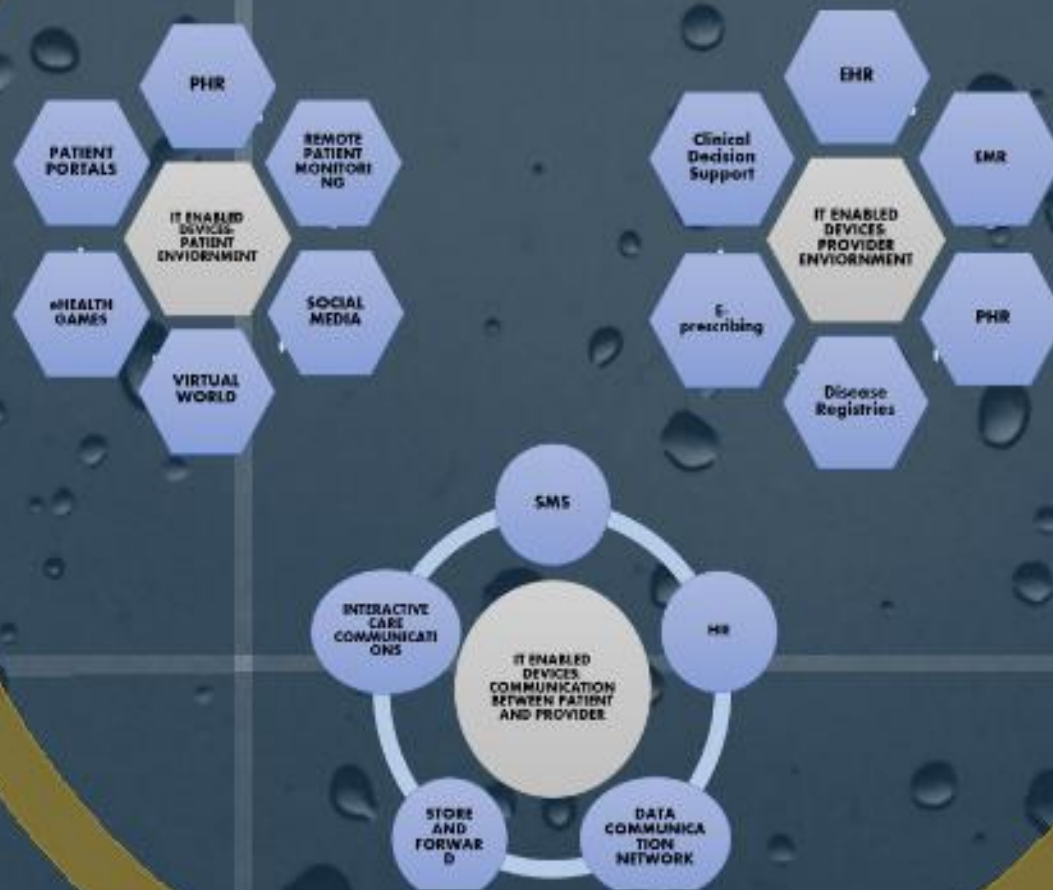
**E-
prescribing**

PHR

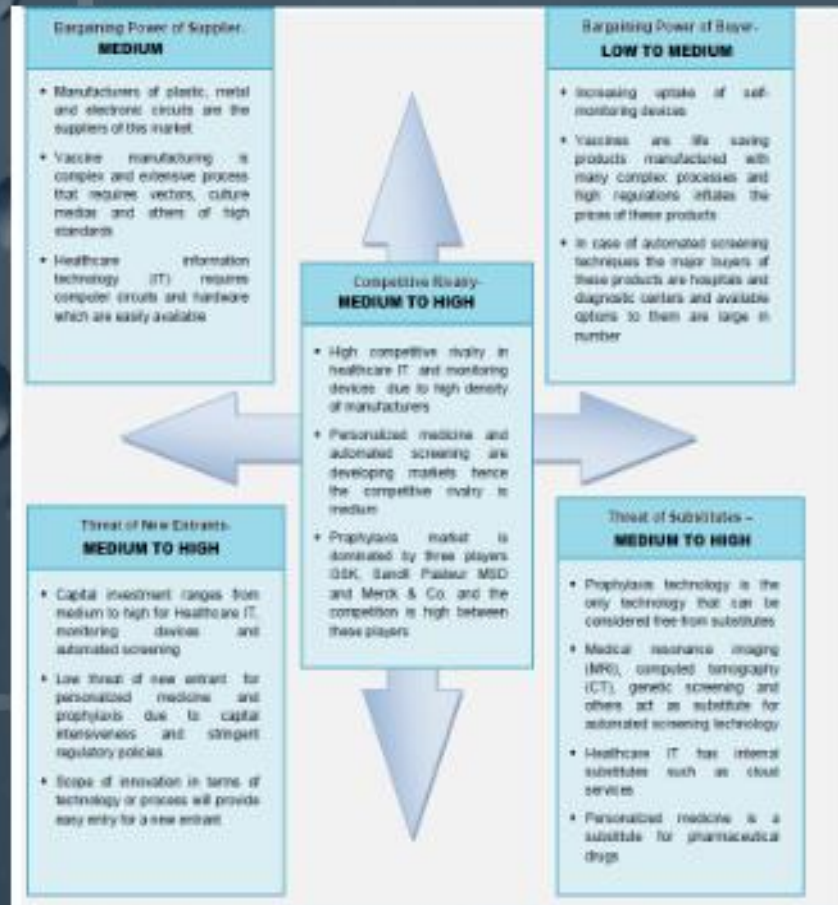
**Disease
Registries**



IT in Chronic care continuum



Porter's Five Force Analysis



m-Health

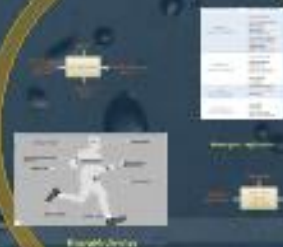
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Mobile Tools in Chronic Disease Management



Mobile Tools



Market Segmentation



m-Health

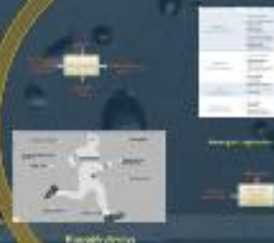
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Mobile Tools in Chronic Disease Management



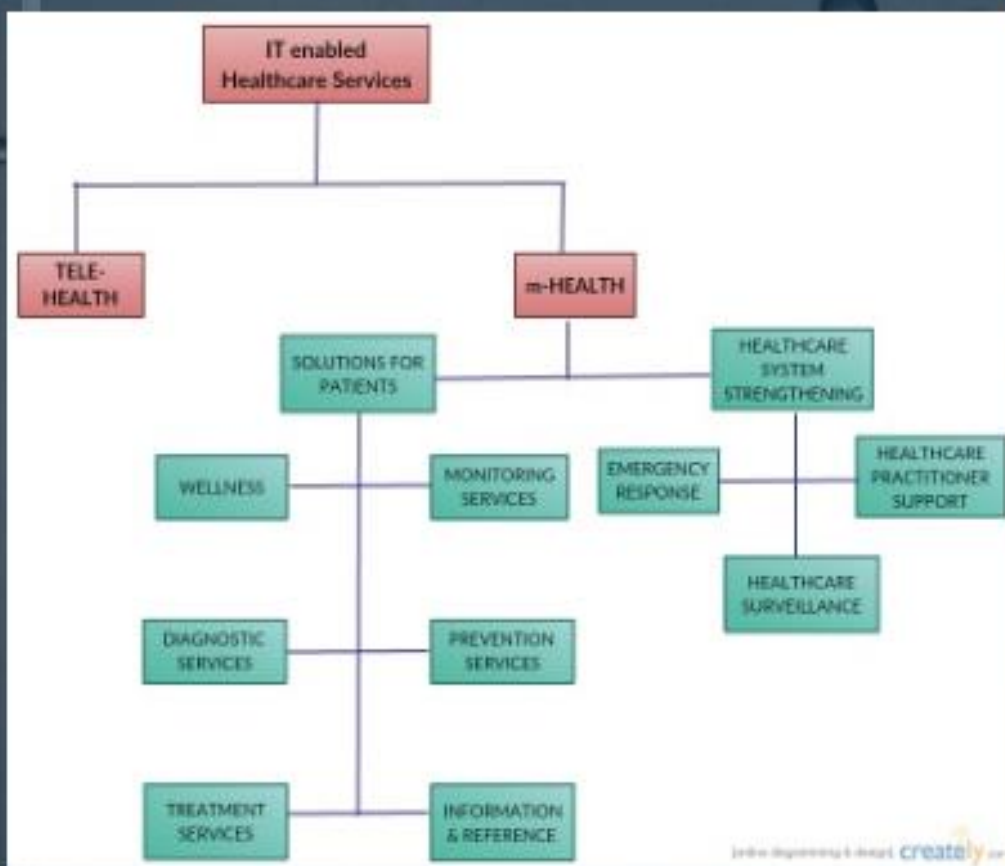
Mobile Tools



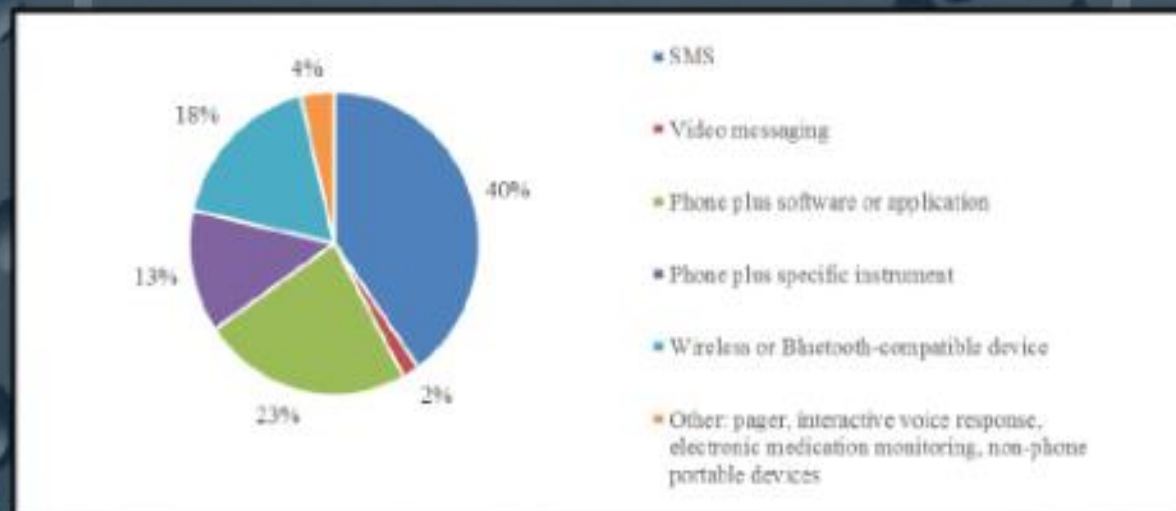
Market Segmentation



Market Segmentation



Mobile Tools in Chronic Disease Management

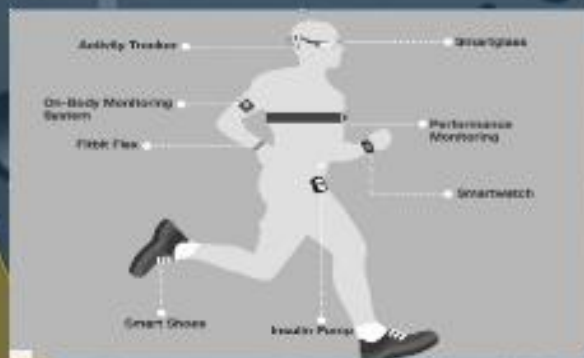


[9] Source: Hamine S., Guyette E., & Faulk D. (2015), Impact of mhealth chronic disease management on Treatment Adherence and Patient Outcomes. J Med Internet Res 17(2) <http://www.jmir.org/2015/2/e52/>

Mobile Tools



MOBILE USE CASES / FUNCTIONS	APPLICABLE HEALTH MARKETS
PERSONAL HEALTH MANAGEMENT	• Appointment Booking • Access to Clinical Information • Therapist Chat • Health Diagnostics • Personal Health Record • Clinical Decision Support Systems • Medication Adherence • Remote Patient Monitoring • e-Health, mHealth, Health 2.0
PERSONAL DETERMINANT MONITORING	• Appointment Booking • Medication Adherence • Health Diagnostics • e-Health, mHealth, Health 2.0 • Personal Health Record • Clinical Decision Support Systems • Remote Patient Monitoring • e-Health, mHealth, Health 2.0
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Wearable Devices

Phone plus Application



Text Messaging
for Health,
South Africa

airTEXT

SMS Applications

CADA Project,
China

mDiabetes,
India

MOBILE DEVICE FUNCTIONS

APPLICATIONS IN MARKET

PERSONAL
HEALTH MANAGEMENT

- Appointment Booking
- Access to Dietary Information
- Electronic Diary
- Health Monitor
- Personal Health Record
- Chronic Disease Management
- Substance Abuse/ Addiction
- Behavioral Health
- Health Device Data Capture

PERSONAL
DECISION SUPPORT

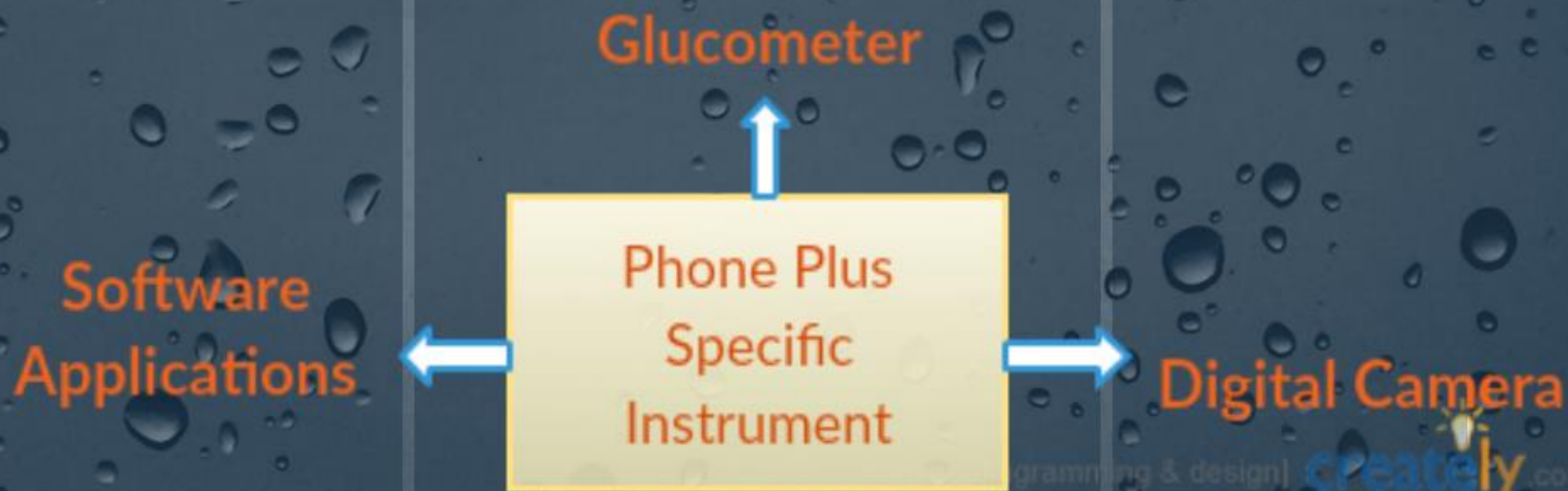
- Appointment Reminder
- Medication Reminder
- Health Coaching
- Allergy Alert for Asthmatics
- Peer-to-Peer Support
- Patient Education
- Crisis Helpline

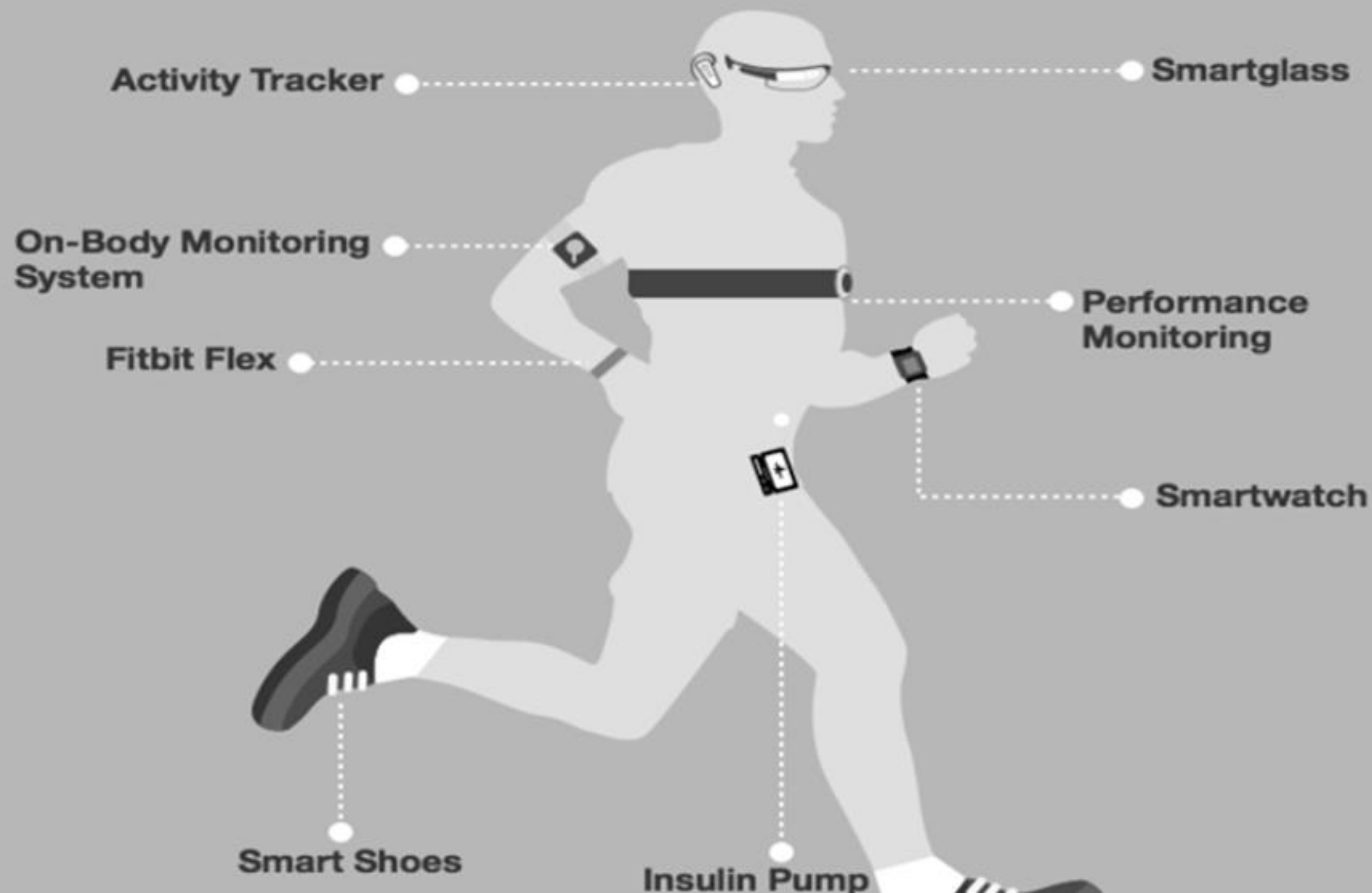
PATIENT
CARE MANAGEMENT

- Care information for family
- Patient Location Tracking
- Child Monitor

PROFESSIONAL

- Patient Paging
- ePrescribing

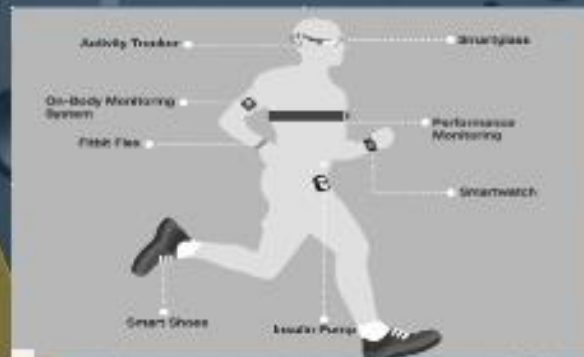




Mobile Tools



MOBILE FUNCTION	APPLICATION EXAMPLE
PERSONAL HEALTH MANAGEMENT	• Appointments Booking • Access to Clinical Information • Electronic Diary • Health Advice • Personal Health Record • Clinical Decision Support • Software Error Detection • Health Monitoring
PERSONAL DECISION SUPPORT	• Appointment Reminders • Medication Reminders • Health Coaching • Managing the Chronic Condition • Personalized Support • Patient Education • Clinical Guidelines
PATIENT ENGAGEMENT	• Text Alerts/Reminders for Testing • Patient Education Tools • Chat Systems
CLINICAL CONFORMANCE	• Patient Portal • eLearning • Patient Engagement • Patient Feedback Systems



Wearable Devices

Phone plus Application



SWOT Analysis

SWOT ANALYSIS OF

STRENGTHS



1. Investment in technology
2. Government or organizational support
3. System interoperability
4. Innovations and system capabilities being implemented
5. Growing awareness of patient centered care

WEAKNESSES



1. Can be easily damaged or broken
2. Lack of integration
3. Fragmentation within health systems

OPPORTUNITIES



1. Government focused on results interventions.
2. Increased prevalence of chronic diseases
3. Increased number of patients requiring long term care.
4. Need to reduce number of hospital days
5. Increased awareness of preventive healthcare

THREATS



1. Lack of accessibility of certain products
2. Cost
3. Need to ensure privacy and security with adoption of new technologies.
4. Need to demonstrate value for money

Barriers in Adoption of IT in Chronic Care Continuum

Barriers	Barrier Type	Solutions
Proof of both ROI/business case and clinical outcomes	System Level Barrier (Healthcare)	- Minimize incentives - Conducting feasibility studies that show benefit versus costs of implementing
Lack of patient self-education relating to their own health	Individual Level Barrier	- Creating awareness about the importance of maintaining own health starting from schools - Improving knowledge about health technologies in schools
Technologies still lack usability and functionality	System Level Barrier (Technical)	- Sometimes it is important for hospitals to redesign their medical and administrative workflow to match with fully specifications. This adaptation is important for the successful implementation - Less complicated system with system's interface design more reliable and convenient to use - Using data stored only in one way for steps in validating data on the system and it is equally important for the quality, accuracy and reliability of such results
Lack of financial support	System Level Barrier (Healthcare)	- Allocating the proper funding and enough capital to invest in it for preparing a solid budget for the project - Conducting feasibility studies that show benefit versus costs of implementing
Privacy Concerns	System Level Barrier (Healthcare)	- Certification of various applications - Given the importance of data, there are controlled on using. With sufficient not to disclose about the information otherwise they will put themselves in a liability, a considerable financial problems
Legal Barriers	System Level Barrier (Healthcare)	Ministry should start developing vision and regulations
Lack of trust in the system	Individual Level Barrier	- Certification of various applications - Given the importance of data, there are controlled on using. With sufficient not to disclose about the information otherwise they will put themselves in a liability, a considerable financial problems

The Future Ahead



Con

- Healthcare Informatics
- healthcare by be
- assist patients in
- decision making,
- personal adoption

Conclusion

- Healthcare Information Technology is reforming healthcare by becoming mainstream tools to assist patients in management, monitoring and decision making, driving a shift towards personal adoption of digital and web based tools.
- New media and technology will allow patients with chronic diseases to access health information, get online support and engage health professionals for disease management support anywhere and everywhere.
- These interactive, technologically mediated interventions can engage, empower and revolutionize chronic disease care in the coming decade.

Thank You

- Priyanka Malhotra