



Architectural Design for Implementing Remote Patient Monitoring System in Hematology Units

A Proposed Model

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Hematology Unit

Therapeutic Units in Blood Banks are a Blood Transfusion department



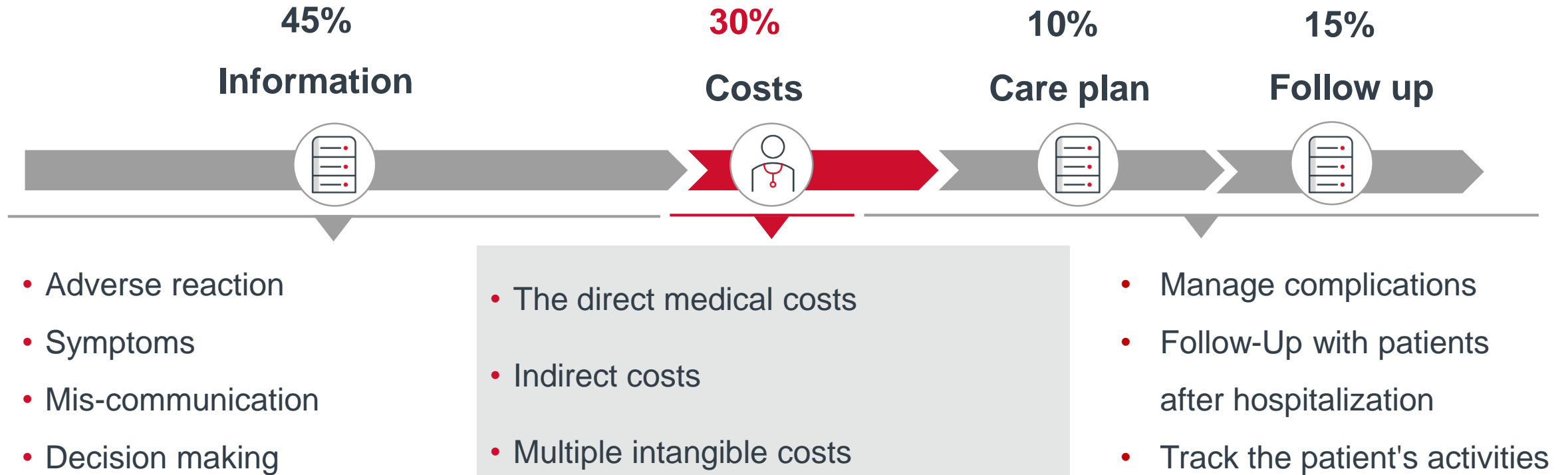
Therapeutic Units its a governmental department under Blood Transfusion Centers MOH, it provide medical care and blood treatment services for chronic blood disorder in Egypt.

Support and Enhancement blood transfusion and blood products for clinical uses and hematological diseases such as Thalassemia, Hemophilia, Bone marrow failure and other chronic illness.

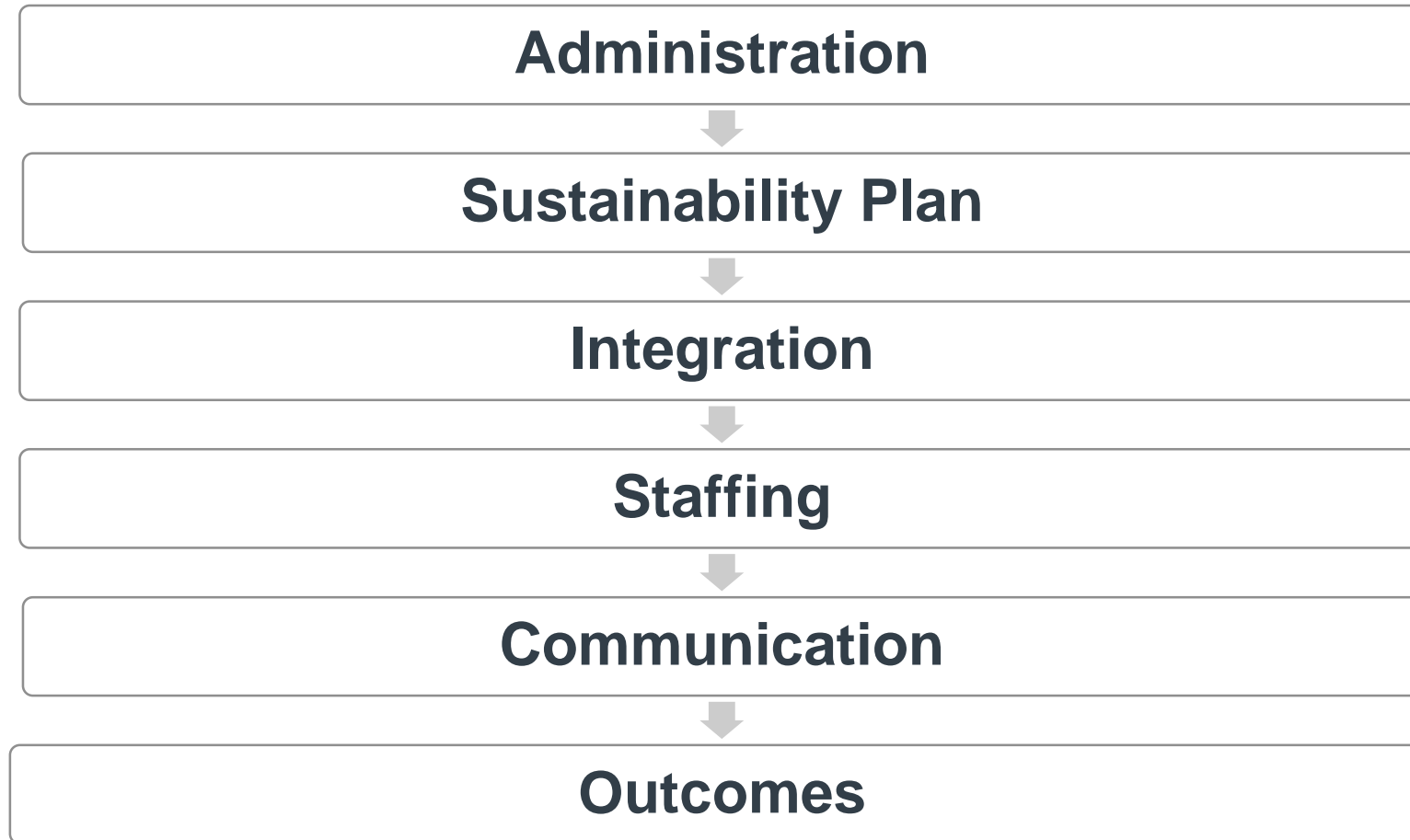
Therapeutic Units work in ensuring safe blood transfusion services through the recent development of revised National Standards for Blood Transfusion Service.

➤ The Problem

People with multiple chronic conditions are at increased risk for poorer day to day functioning and increased mortality rates.



➤ RPM Program Components



1.1 Administration

➤ Program Goals & Objectives

Clinicians



Helping providers to quickly identify potential problems and take timely action



less chance for errors in diagnosis or treatment so **Reduced Risks of Medical Mistakes**



Lower health care costs & Reducing hospital readmissions

Patients



Helping patients avoid unnecessary visits to therapeutic units /clinics



Reducing morbidity risk due to failure to provide timely assistance to in patients



Enhance patient engagement and medication compliance

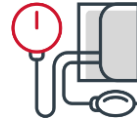
1.2 Administration

RPM allow providers to deliver necessary care at a distance



Resources

- Evaluate devices that are approved by Egyptian **MOH**
- Focus on software that can partner. As well as, what workforce and materials we need such as patient education



Limitation

- Telemonitoring continuously 12hr daily
- Patient's who require frequent vital signs monitoring
- History of poor medication compliance
- Frequent emergency care



Patient Consent

- Patients are educated on the **RPM** Program and agrees to use the device
- Patients use their biometrics and respond to any surveys as instructed



Validation

- Frequency of data interruptions and patient acceptance
- report a pilot data for
 - ✓ symptoms;
 - ✓ reactions,
 - ✓ patient-reported outcome measures

2.Sustainable Plan

Many **RPM** programs also develop a business plan to strategize for long-term sustainability



Reimbursement parity

Understanding the regulatory environment to understand ongoing costs for reimbursement, licensing, and credentialing

Analyze Financial Data



Budgeting for implementation, maintenance, and periodic upgrades of technology

Identify Patient Data

- **AI** gathers details from a patient's history
- **ML** integrates patient history and reported symptoms into a report for clinicians

Ongoing promotion to patients



Marketing RPM services to community members, providers, and other stakeholders

3.Integration with EMR

Physicians monitor patients from dashboards in the Therapeutic Unit



Inclusion Criteria ▼

Hemophilia A, B

- Hemophilia are usually an inherited bleeding disorder in which the blood doesn't clot properly
- On-demand treatment: **Fresh Frozen Plasma, Cryoprecipitate, and Factor VIII, IX injection**

Vital Signs ▼

- Body Weight
- Blood Pressure
- Pulse Rate
- Body Temperature
- Respiration Rate

Smart Medical Records ▼

- Real - Time vitals
- Data Standardization
- Interoperability
- Data reliability
- Privacy & Security

4. Staffing

High Quality Customer Service & Support Team



1 Clinical Staff

- Involve internal staff including
- **(3 Physicians /6 Nurses**
- 3 Pharmacists/ 3 Administratves)**
- Push notifications through direct-to-caregiver channels



2 Design Conceptual Model

- Review the Job description for clinical staff
- Understand what RPM is and its purpose of it
- How to enroll patients and engage in workflow
- Make sure consistent management be available from start to end

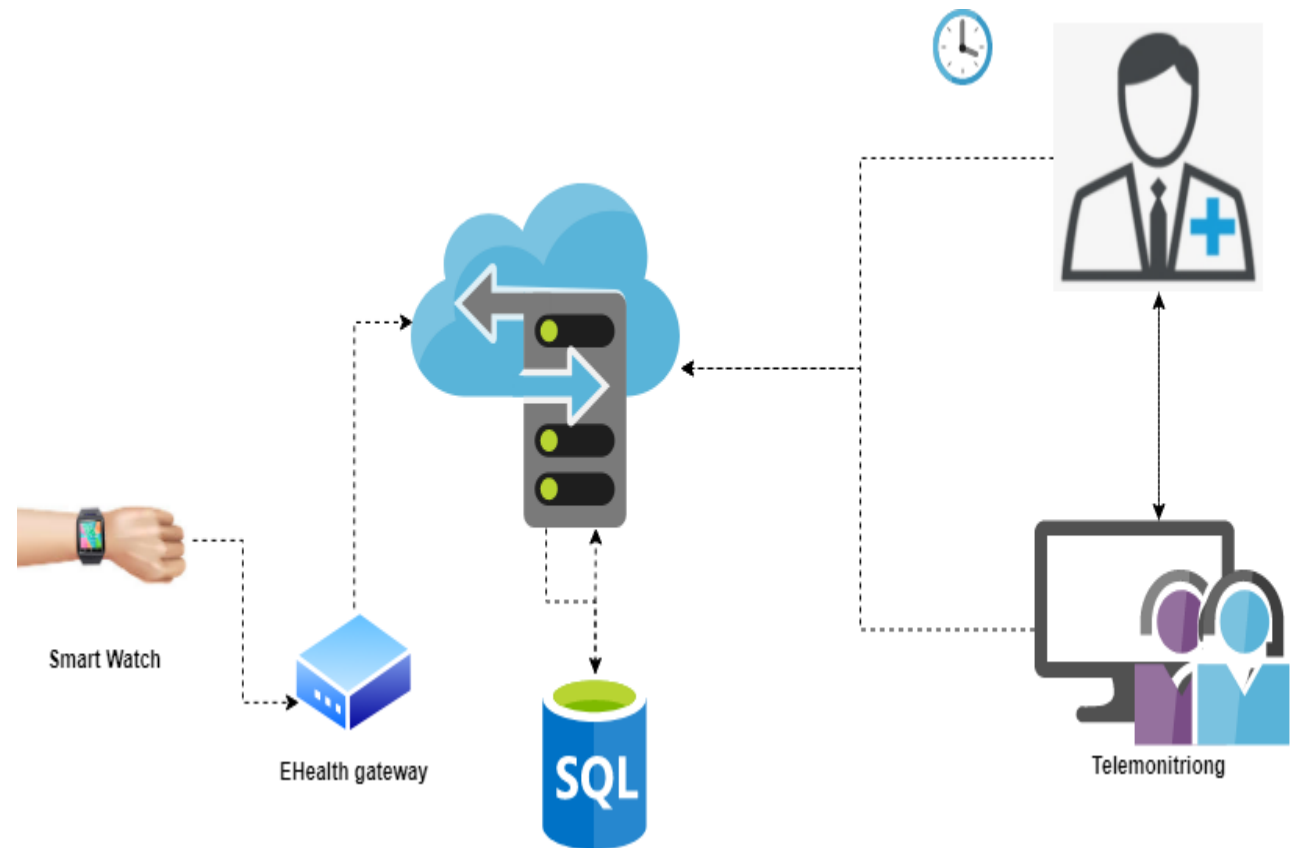
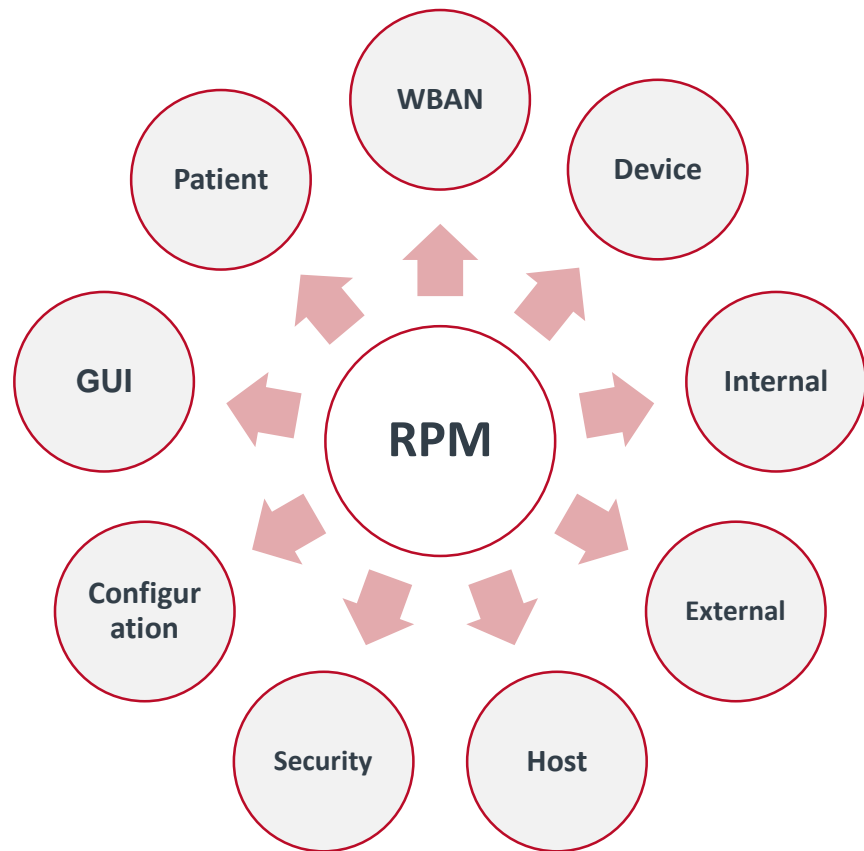


3 Support clinicians

- Offer training in advance of Telemonitoring for clinicians who don't usually do it
- IT teams are responsible for monitoring, testing software & hardware
- Provide in-the-moment support for issues that arise during Telemonitoring

5.1 Communication

Tools that provide digital connections for care and better patients management





Dashboard

- Clinical Staff
- My Patient
- Blood Request
- Analyzed Sample
- Reports
- Statistics
- Settings

Patient_ID: 37 **Patient Name:** محمد أمين جلال عبد القوي **Diagnosis:** Hemophilia A
Blood Group: o+ **Age:** 12 yrs.
Date From: **Date To:**

65 kg
weight

More Info

80 bph
Puls Rate

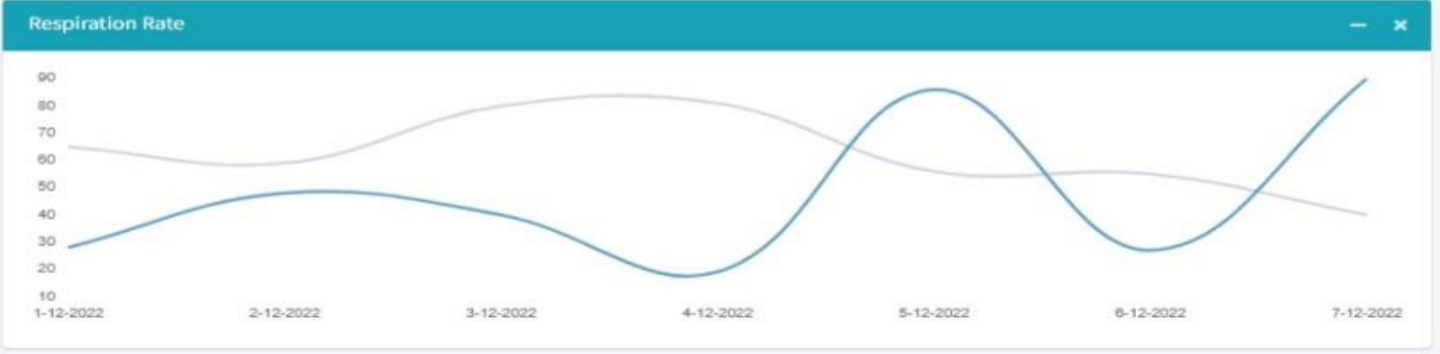
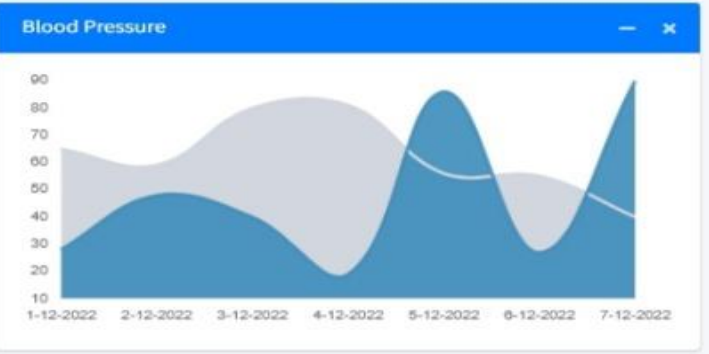
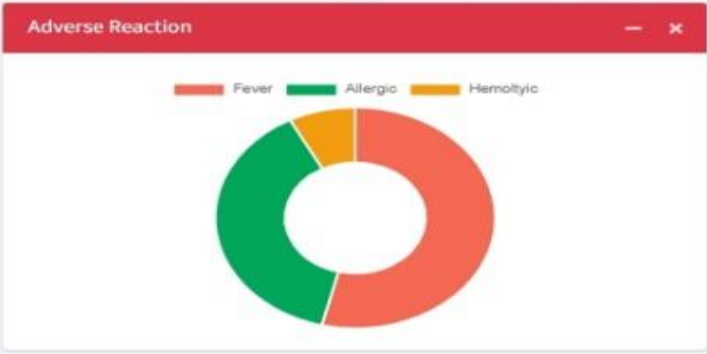
More Info

120/80
Blood Pressure

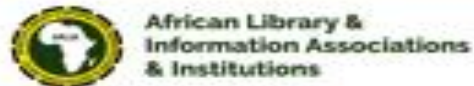
More Info

37.45 c°
Temperature

More Info



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6.Outcomes

Home therapy can be used to manage mild/moderate bleeding episodes



CHECKLIST

RPM prioritization

1. Allowing clinical staff to view, discuss and assess patient issues in real time so, support decision making
2. Home therapy allows immediate hence optimal early treatment, resulting in decreased pain, dysfunction, and long-term disability
3. better complications management and adverse reactions that sure reduces health care direct costs
4. Improving treatment outcomes so less interventions and medications are needed so enhance productivity
5. Promotes care for uninsured, rural, and minority patients
6. Reduction of readmission rate and, of course, Hospital-Acquired Infections
7. Optimizes clinical staff efficiency and combats clinical staff shortages



NEXT STEPS

Expand to the Telehealth

- Enhancing patient engagement by developing a mobile App
- Physician reviews information and treats patient via in-app messaging
- Expansion beyond telemonitoring to effective hospital-at-home

Thank You..