Chronic Care Management Solutions
-Its' time will come-

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Agenda

- Background of Chronic Care Management
- Disease Self-Management Network (DSMN) Project
- Project Findings
- Project Learnings
- Future of DSMN

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Disease Self-Management Network (DSMN)

OPTIUM Digital Solutions Inc. (1995):

- Business Model: Healthcare technology consulting company that plans, develops and successfully implements innovative solutions
- MISSION: become a leader in the deployment of mobile, Internet-based technologies that support dynamic communication between patients and their health team.
- Awards: Smithsonian Computerland Award

Disruptive Technology:

- Mobile & Web-based System
- Electronic patient diary system for Type I Diabetes patients
- Model for other disease management models

Business Partners:

- CANARIE
- Charles H.Best Diabetes Centre
- Children's Hospital of Eastern Ontario
- Compaq Canada (HP)
- IRIS Systems Inc.

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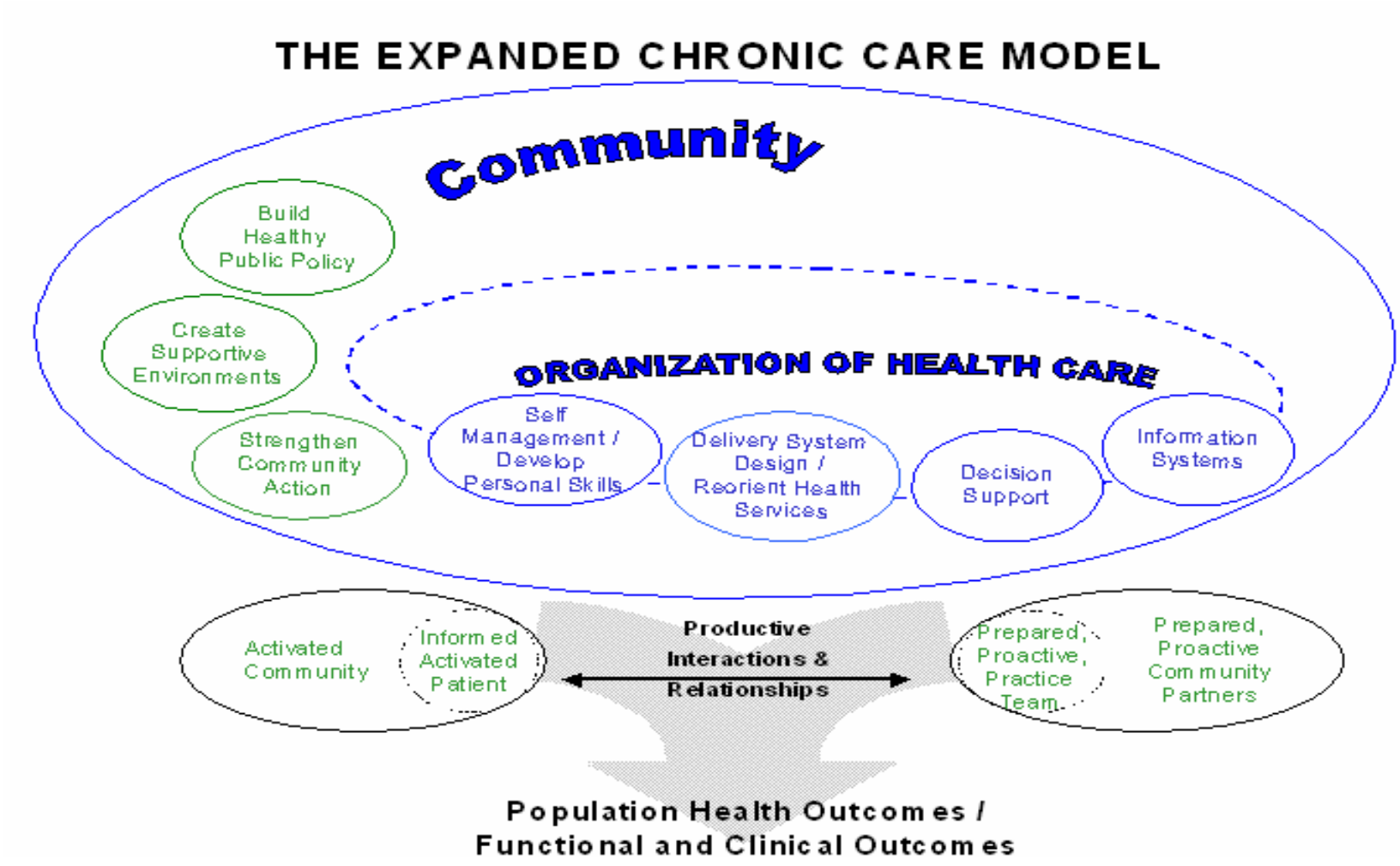
DSMN supports chronic care management



Note: created by: Victoria Barr, Sylivia Robinson, Brenda Marin-Link, Lisa Underhill, Anita Dots & Darlene Ravensdale (2002) Adapted from Glasgow, R., Orleaans, C.,Wagner, E., Solberg, L. (2001)

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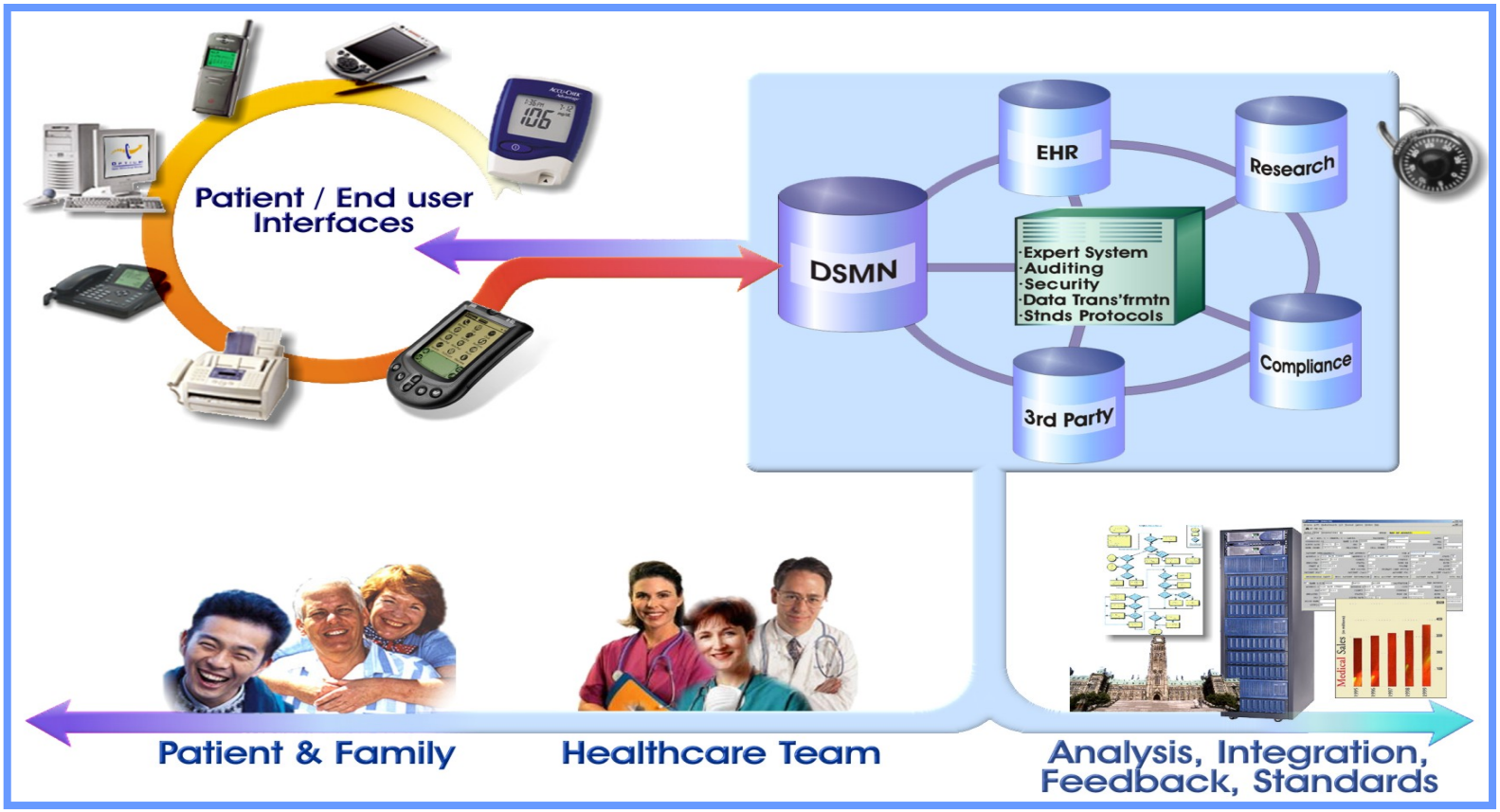
Architecture

Technology platforms to improve Disease Management by connecting patients with



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The Problem – lack of timely information to empower clinical decision making

- Patients with Type 1 diabetes are:
  - Young (typically between the ages of 5 and 25)
  - Lack motivation to poke themselves several times a day to monitor blood sugars
  - Lack the ability to regulate their doses based on their blood sugar readings
  - Generally have poor blood sugar control
    - Good control = good health, in this population
- To manage diabetes effectively requires:
  - Specific behavioural reinforcement
  - Accurate data management and sharing
  - Adherence to evidence-based guidelines
- Diabetes costs Canadians more than $10 billion annually (CIHI 2001)

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The Solution – share data in a timely manner

- Allows patients to:
  - Communicate with healthcare team more often
    - Every few days instead of every 3-4 months
    - Receive advice on managing their blood sugar levels
  - Manipulate their own data to understand their disease better
  - Feel empowered and motivated

- Allows Healthcare team to:
  - Send advice on medication doses for optimal blood sugar control
  - Send encouraging messages to patients

- **Benefit:**
  - **improved clinical information exchange facilitates shared care and patient self-management which is known to improve health outcomes**

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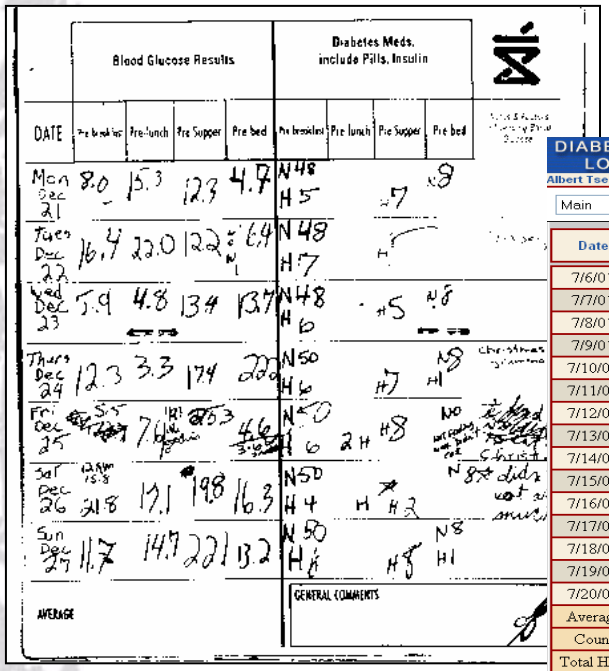
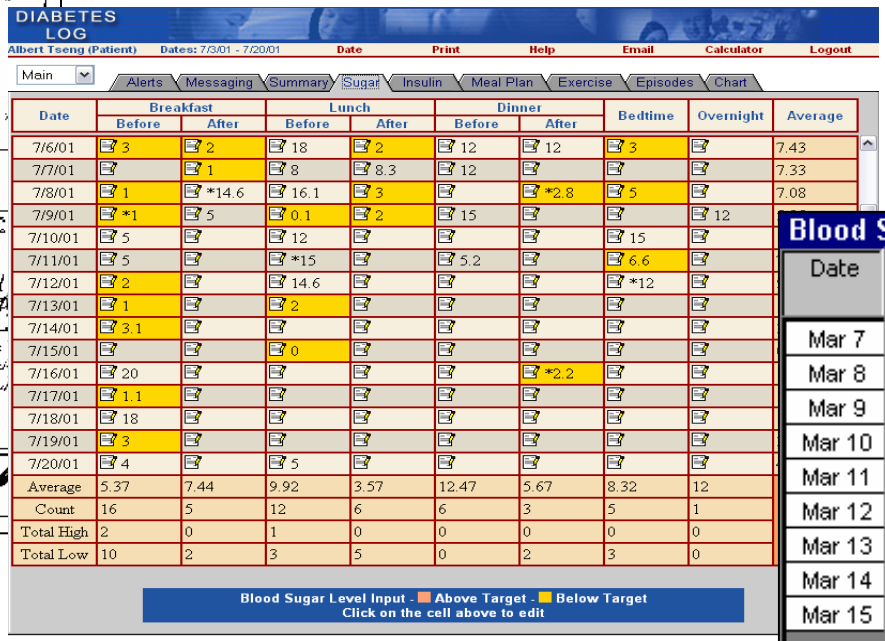
DSMN - Creation of Digital Patient Diary

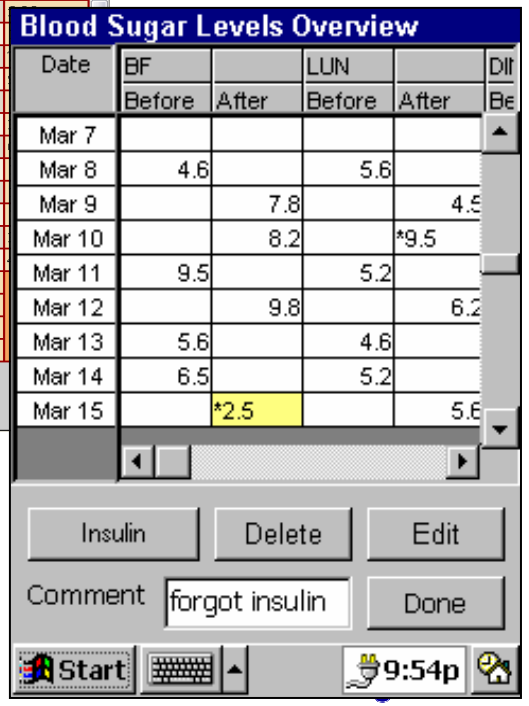
Paper



Web



PDA



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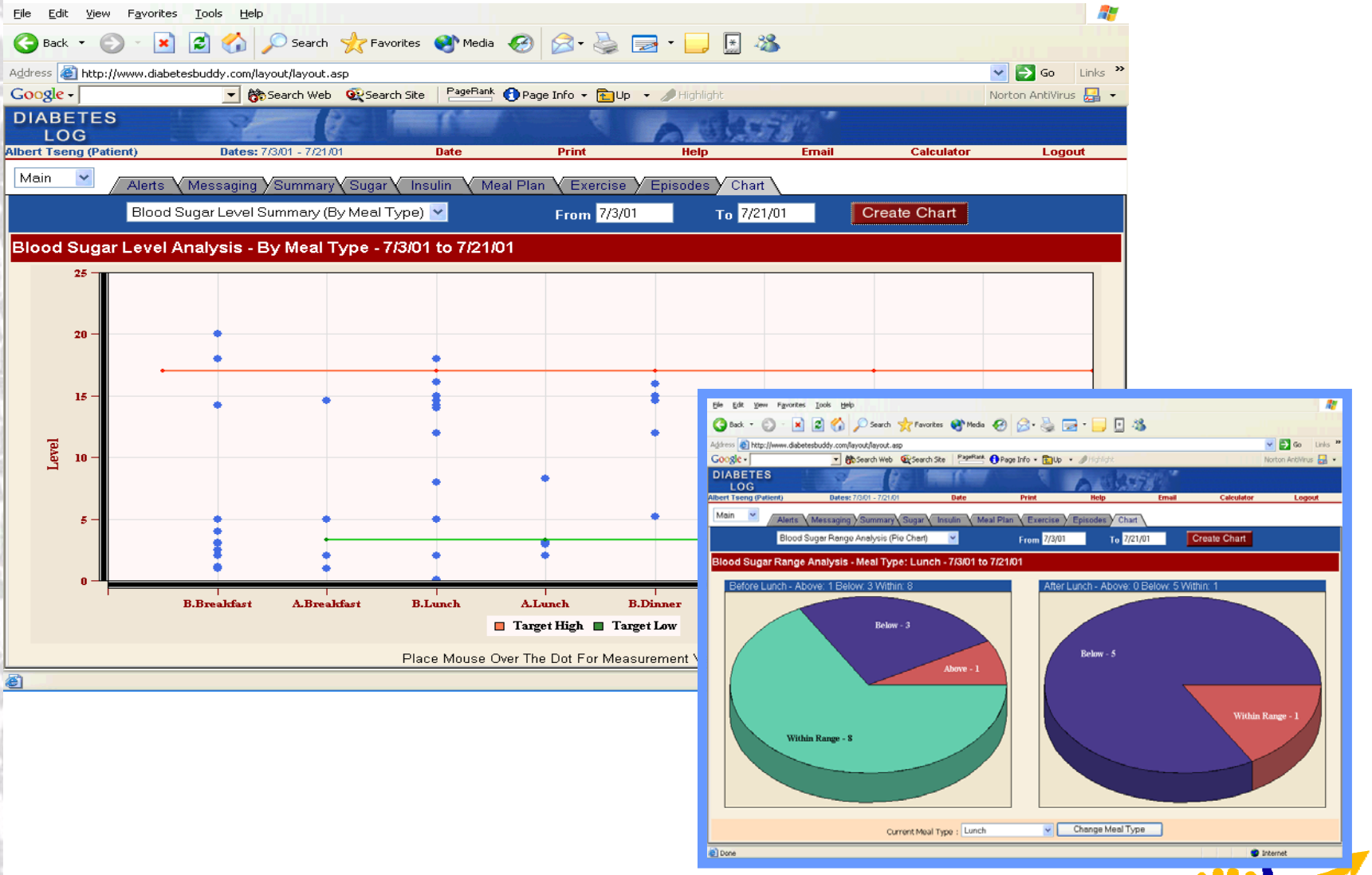
DSMN – Website Data Features



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DSMN Information Process

Patient

1. Checks blood sugar with glucometer
2. Downloads glucometer data into PDA
3. Synchronizes PDA with Data repository

8. Acts on advice sent by care givers

4. Review patient's blood sugar results
5. Develop care advice
6. Message advice and encouragement to patient
7. Can audit data to see which patients are not using the system

Healthcare Team

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What Worked?

- **Technology concept**
  - Using PDAs increased communication of results to providers
  - Information is more organized
  - Young people were attracted to the technology (Games, MP3 players, MSN/ICQ and e-mail)
  - Most would recommend it to others (even if it hadn't worked for them!)
- **Training**
  - Most felt their questions were answered and they were able to use the technology
- **Interface Design**
  - Entry screens are intuitive and easy to use
  - Even with no previous exposure to PDAs, patients quickly learned how to use it
  - When data gets synchronized properly, extremely satisfying for patients and care providers
- **Most would use it if problems were worked out**

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What Didn't Work?

- **City phone, country phone**
  - Diabetes centre has large catchment area
  - Rural phone lines are not as reliable as city lines
  - Configuration issues and ISP reliability was variable
- **Glucometer**
  - Cleaning the unit sometimes reset the date/time stamp
  - Batteries drop out easily, resetting the date/time stamp
- **PDA Logistics**
  - People forgot to charge their PDAs and would lose their data
  - Many were unfamiliar with the PDA and didn't want to carry it around with them (entered data in batches later – tedious)
- **Synchronization was a challenge**
  - IR synchronization of glucometer
  - Modem connections to ISP was not reliable
  - Time outs

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Lessons Learned

- Full Integration and Convergence of Technology
  - Synchronization between different technologies should be seamless
- Change management is critical
  - Patients and health care team
  - Effective training helps patients to transition to new ways of thinking and doing things (ie. leave paper behind)
- Continuous Quality Improvement Study rather than a Randomized Controlled Trial
  - RCTs are rigid, CQI allows incremental interventions to improve usability
  - Use patient trials to target appropriate users
- Health care team must take ownership of the technology
  - Integrate technology into clinician's workflow
  - Support and encourage patient utilization
- Anticipate the lag time between product development and technology adoption

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Future for DSMN

- The health care environment is becoming ready:
  - CHI support for integrated Clinical information systems and EHRs
  - Western Health Information Collaborative (WHIC) Chronic Disease Management Infostructure Initiative
- The technology requires further updating
  - New development team in place (IRIS System Inc.)
  - Update the technology to .Net and support XML and HL7
  - Increase functionality to other diseases (Type II, Cardiac, etc) and co-morbities
  - Expand to other diseases Incorporate into a broader system offering
- OPTIUM has become virtual company
- Joined Courtyard Group Ltd.
  - (enabling health system transformation)
  - Pioneering - Practical
  - Proven - Professional

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