eHealth Coaching

Institute for Healthy living and Chronic Disease Prevention, UBC-Okanagan, May 29, 2017.

Dr. Harvey Skinner

Founding Dean, Faculty of Health

York University

health | YORK UNIVERSITÉ UNIVERSITY

10TH ANNIVERSARY 2006 - 2016

Chronic Disease and Obesity:

GLOBAL HEALTH ISSUES

Chronic conditions leading cause of death . . .

By 2030, chronic conditions will cause 75% of all deaths globally

2030 **57.8%**

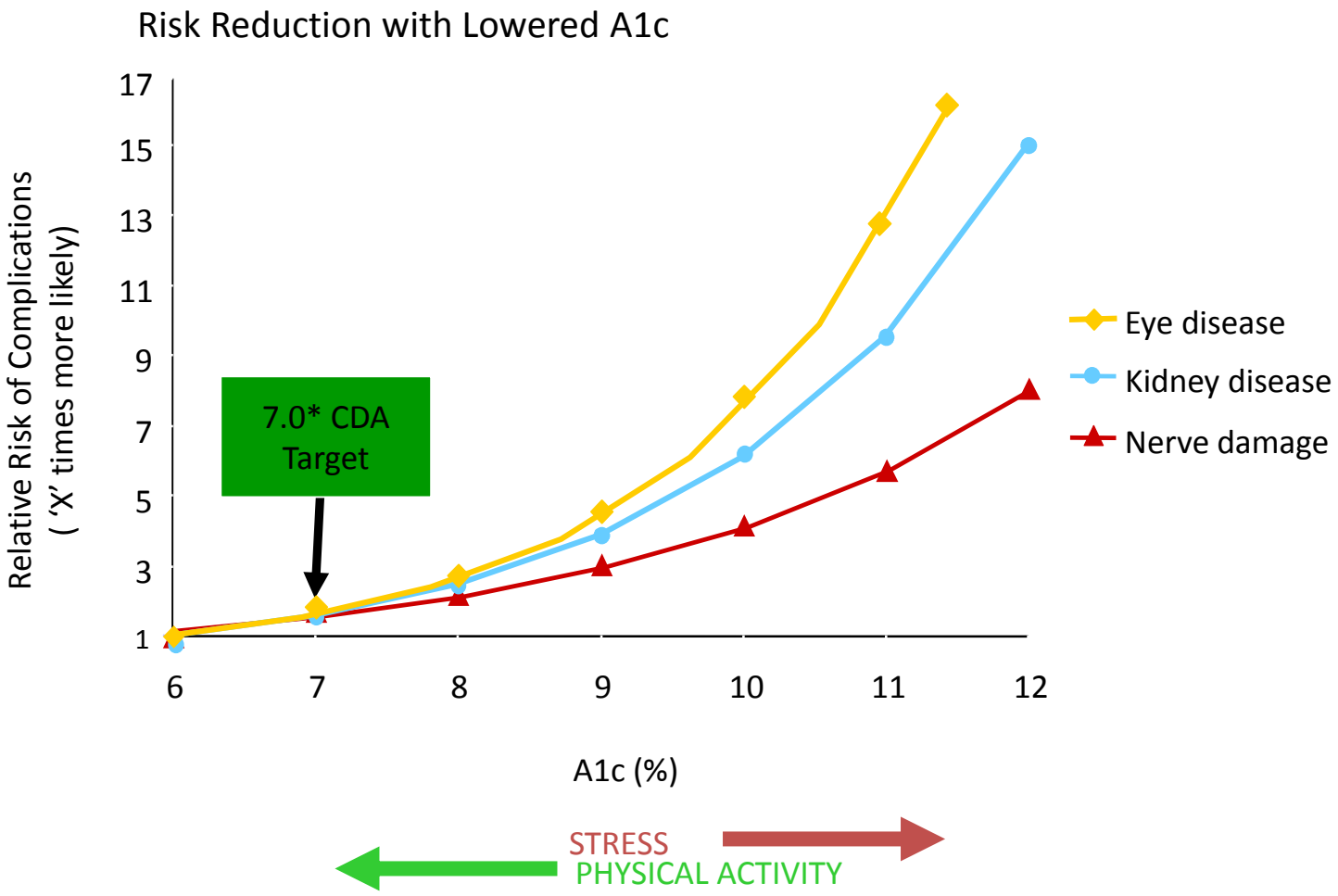
Global overweight and obesity

2005 **33%**

WHO. *World Health Statistics*. 2008.
Kelly T. *Int J Obesity*. July 8, 2008.

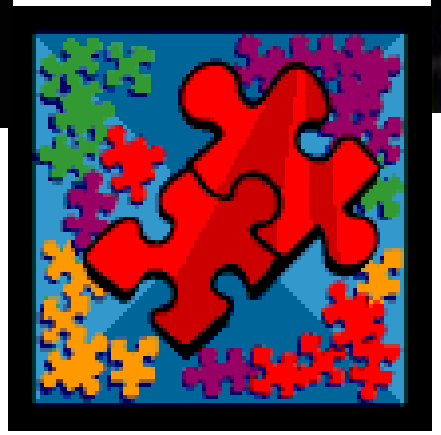

ONE WAY
Diabetes
HALAL
BAKERY
& PIZZA
COLD CUTS
FREE DELIVERY
695-2500
TACO BELL
24 HRS
FRESH
COFFEE & DONUTS
PIZZA
Special

What is diabetes control and why should we care?



Adapted from DCCT Research Group: *N Eng J Med.* 1993;329(14):977-986.

* AACE recommends A1c ≤6.5 (AACE Guidelines. *Endocr Pract*. 2007.13(Suppl):13-68.).



Over 6.8 billion mobile device users globally!

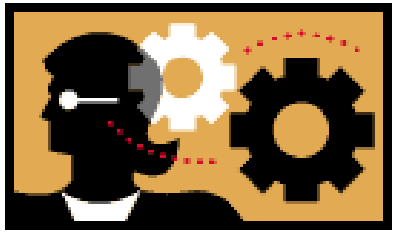
But, can eHealth provide effective solutions?

TODAY'S OBJECTIVES

- Describe the evolving concepts, use and evidence for Health Coaching: *why now?*

- Present some examples of Health Coaching using mobile technology and cloud computing: *great beginnings, but?*

- Critical Reflection: *what are the Pros and Cons of eHealth-mHealth for Health Coaching?*

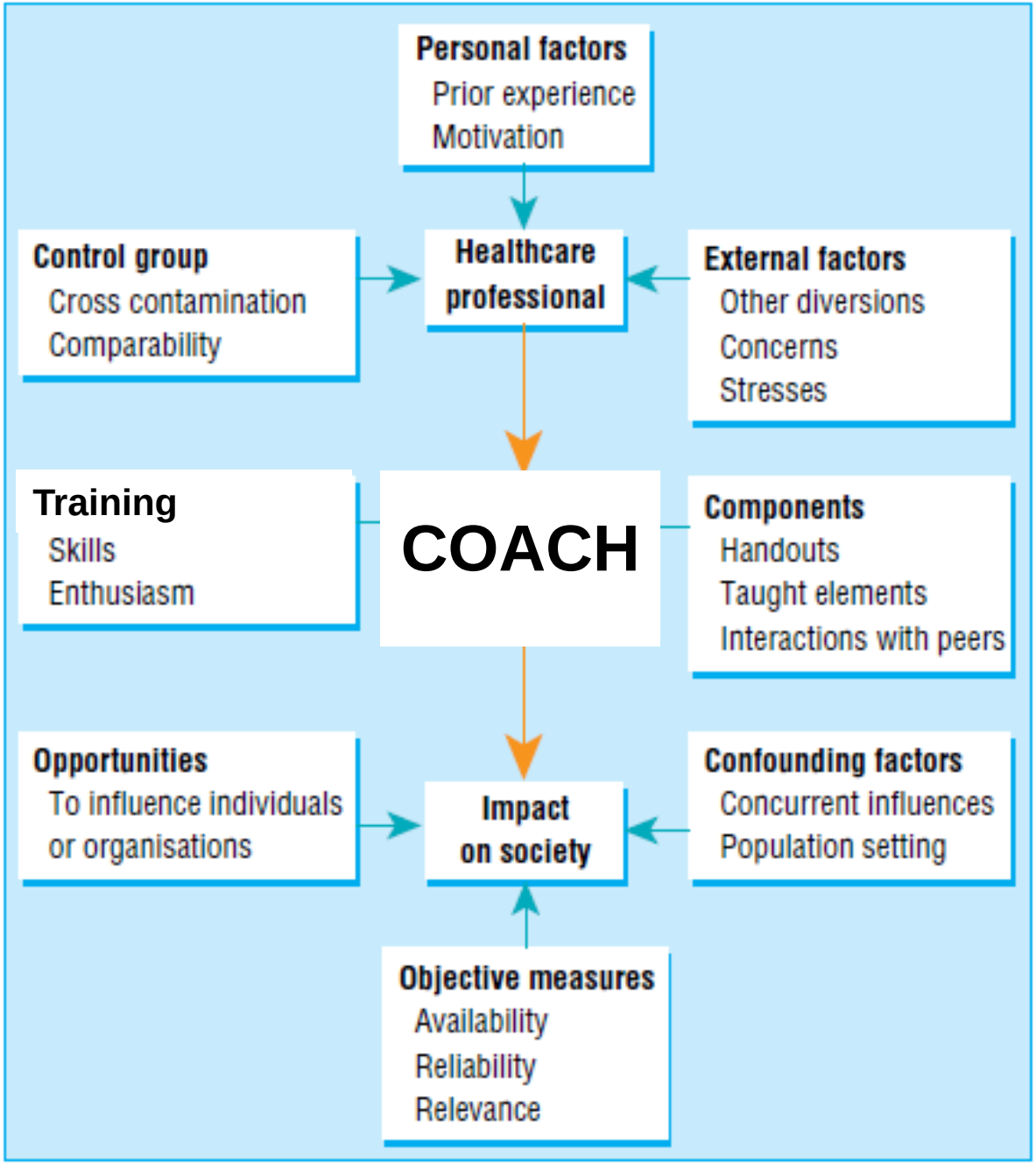


A word about *Coaching?*

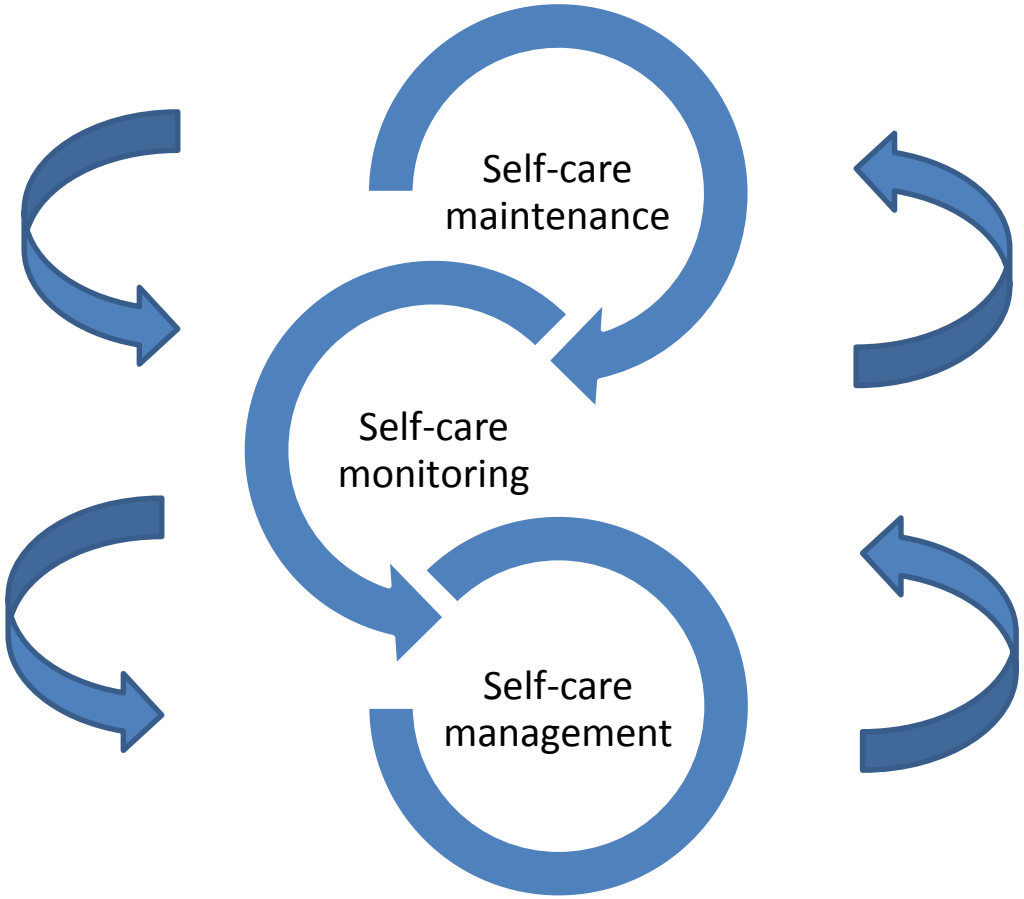
- ✓ Health wellness or disease specific
- ✓ Comprises elements of health promotion, disease prevention and management/care/rehabilitation
- ✓ Variety of trained health care providers
- ✓ Offer support, facilitate learning (education), behaviour change, problem solving, advocacy, goal setting, etc.

Examples of potential factors that may influence effectiveness of coaching

Adapted from Hutchinson, BMJ 1999



Diabetes Coach & Self-Care

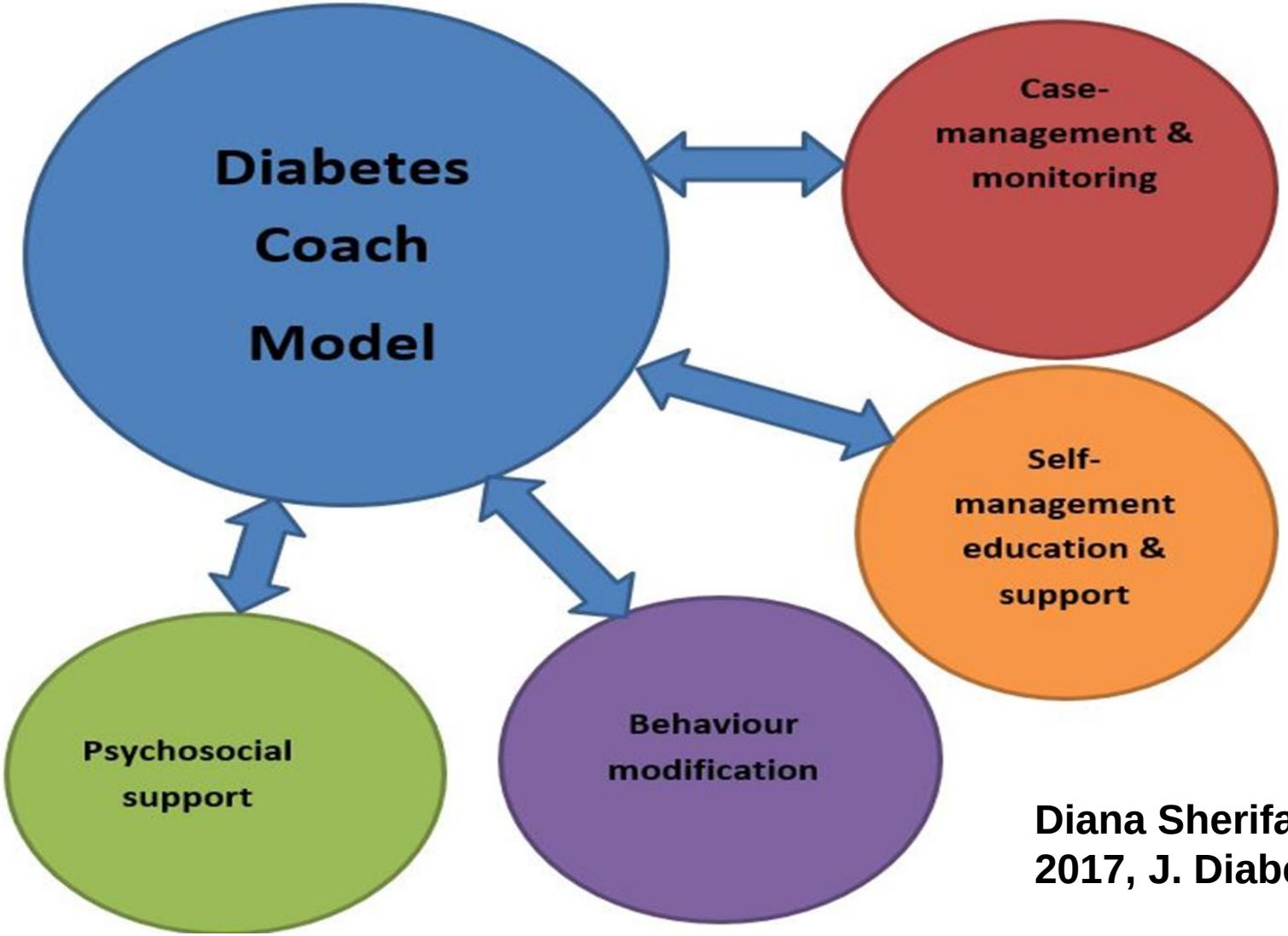


Diabetes Health Coaching Evidence

systematic review 8 trials to Jan 2015

- A growing body of evidence pertaining to health coaching for chronic conditions, including T2DM, suggest that invididuals achieve better health outcomes with health coaching than with traditional education and support. Sherifali D. *Journal of Diabetes*, 2017.
- The pooled effect of health coaching overall was a statistically significant reduction of A1C levels by 0.32%. Longer health coaching exposure >6 months resulted in a 0.57% reduction. Sherifali D et al. *Can J Diabetes,* 2016;40:84-94.
- Only 2 of the 8 trials leveraged technology for coaching communication – prospects for the future?

Evidence Based Components of Health Coaching



Diana Sherifali
2017, J. Diabetes

Diabetes Coaching Essentials

Sherifali D. *Journal of Diabetes*, 2017.

1) Case management and monitoring
   - *process of care and system navigation*
2) Self-management education and support
   - *'just in time learning': knowledge, skills and problem solving*
3) Behaviour modification - motivational interviewing
   - *'not all behaviour change is equal': goal setting, reinforcement, behavior change and maintenance*
4) Psychosocial Support
   - *address social conditions and supports, manage distress, active listening and empathy*

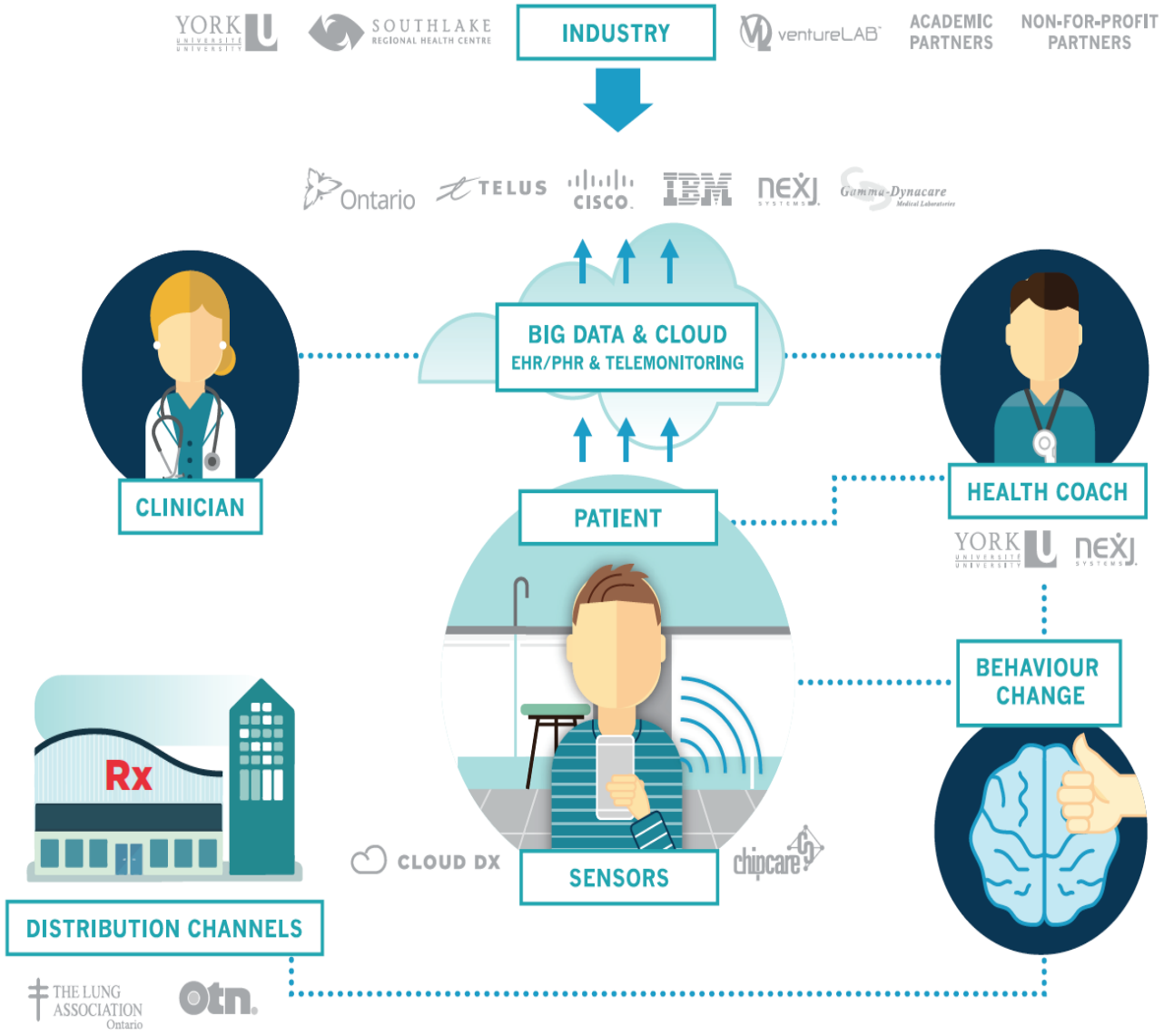
Diabetes Coaching Triple Aim Framework

Sherifali D. *Journal of Diabetes*, 2017.

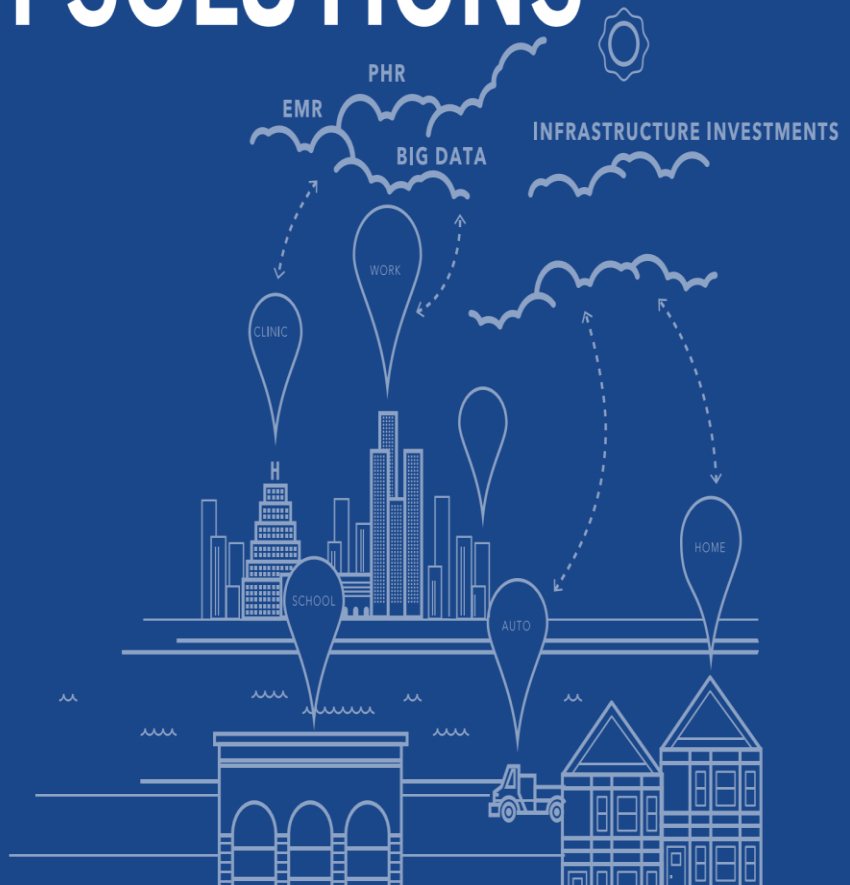
1) *Patient experience*
   - quality of life
   - beyond conviction, confidence, attainment
2) *Improving health of populations*
   - Health promotion ‘upstream determinants’, prevention (primary, secondary), risk status, disease burden, premature mortality
3) *Cost of Health Care*
   - mitigate healthcare utilization
   - foster self care and management: ‘hidden healthcare system’

where to?

Moving Health Promotion and Care Out of Traditional Centers Into New Spaces



THE HEALTH ECOSPHERE: AN INNOVATION PIPELINE FOR COMMERCIAL HEALTH SOLUTIONS



Partners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nexJ
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astellas


BresoTec Inc.


UNIVERSITY OF
TORONTO


chipcare


Seneca


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MDA


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MEDELLA HEALTH


AstraZeneca


TCCC

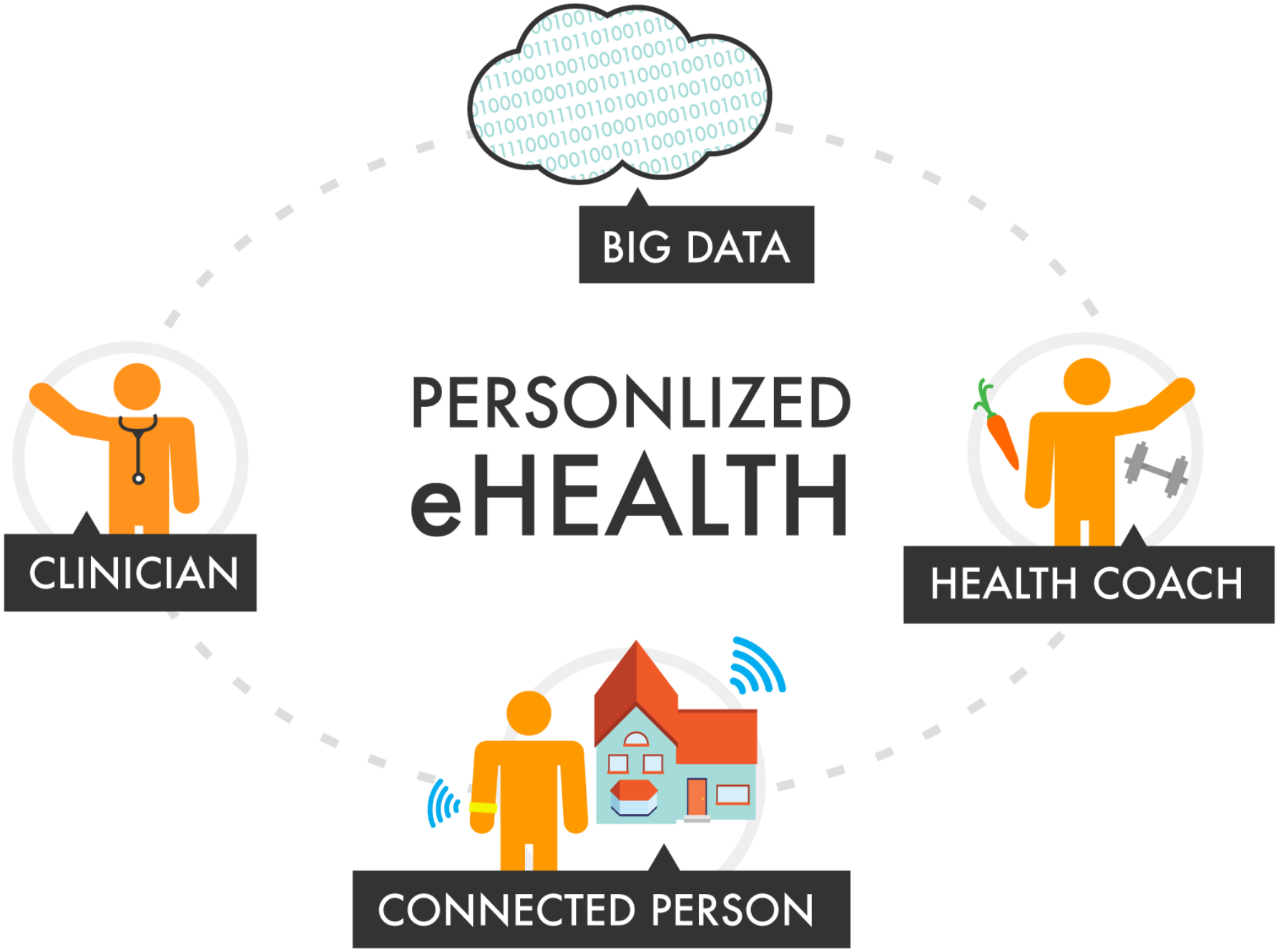

SickKids


Canada Health Infoway
Inforoute Santé du Canada


Interactive
HEALTH


LMC
DIABETES &
ENDOCRINOLOGY


CLOUD DX


BIG DATA
PERSONLIZED
eHEALTH
CLINICIAN
HEALTH COACH
CONNECTED PERSON

YOUR HOME

PHARMACIES

eHEALTH
IN NEW SPACES

REMOTE COMMUNITIES

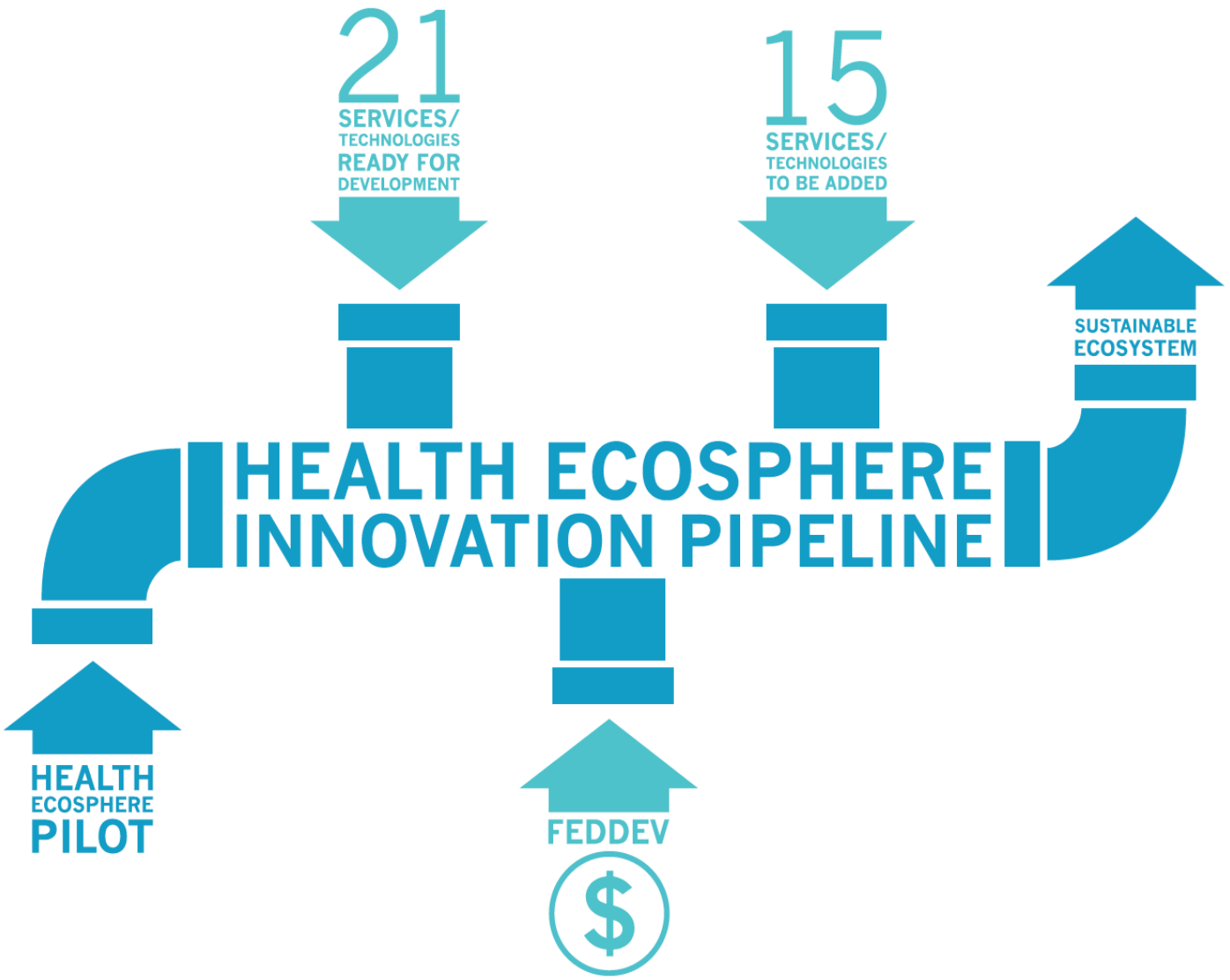
SCHOOL & WORK

TECHNOLOGY
TO FACILITATE HEALTH

PERVASIVE TECH

WEARABLES

Concurrent Flow of Activities Within the Health Ecosphere Innovation Pipeline



Video of NexJ Connected Health

Game Changing eHealth Technology Research

Connecting People & Information

Personal Health Information
i.e., Biometrics, Activity, PHRs, EMRs, EHRs

Wellness Network
i.e., Providers, Health Coaches, Advocates, Family, Friends

Health Content
i.e., Instructions, Recall Information, Side Effects

Social & Gaming
i.e., Team & Group Activities, Challenges, Rewards

Informed

Personal Health Coaching

Intelligent Service Model

- **Conditional Coaching**
  - Diabetes
  - Hypertension
  - Mental Health
  - Weight
  - Physical Activity
  - Medications
- **Wellness Coaching**
- **Applied Content**

Educated & Supported

Positive Outcomes

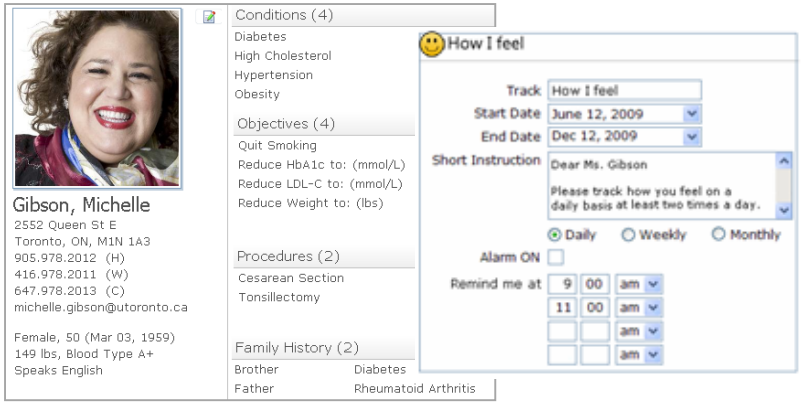
Sustained Behavior Change

- More active & fun lifestyle
- Fewer appointments with healthcare system
- Fewer visits to Emergency
- Less dependence on medications & supplements

Responsible

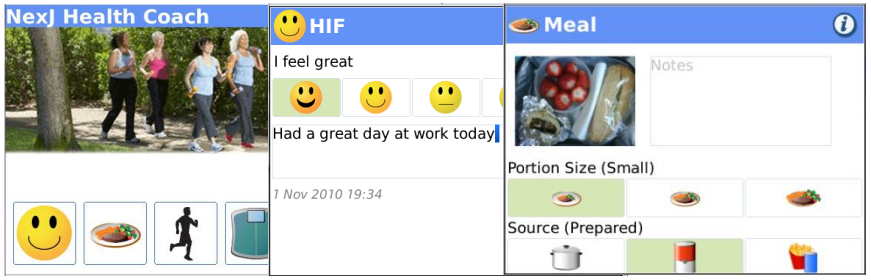
An Engaged Person is a Healthier Person

Personal Health Coaching to Promote Behaviour Change



Provider Portal

Physician prescribes personalized health metrics for patient to track condition.



Mobile Health Coach

Patient receives health coaching and records personal health metrics.

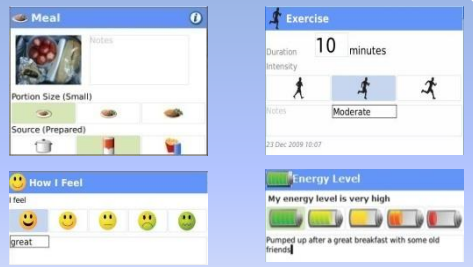
Patient Portal

Patient understands the relationship between their behaviour, bio-metrics, and how they feel. The patient becomes self managing through sustained behaviour change.

Health Coaching enabled by eHealth-mHealth

Type 2 diabetics given free BlackBerry (& data) pre-loaded with NexJ Health Coach

Culturally congruent instructional videos



Log diet, exercise, mood and energy

Health Coach monitors, prescribes plans & motivates via mobile or a secure portal

Daily secure communications & reminders via mobile

NexJ SYSTEMS · ROGERS · htx.ca The Health Technology Exchange · YORK UNIVERSITY redefine THE POSSIBLE.

Blood Glucose – Weekly AVG

June 2011 – Oct 2011

Radical reduction by week 4 results in physician reduction of Diamicron dose

Regulation then under more behavioural control

Exercise & Blood Glucose – Daily View

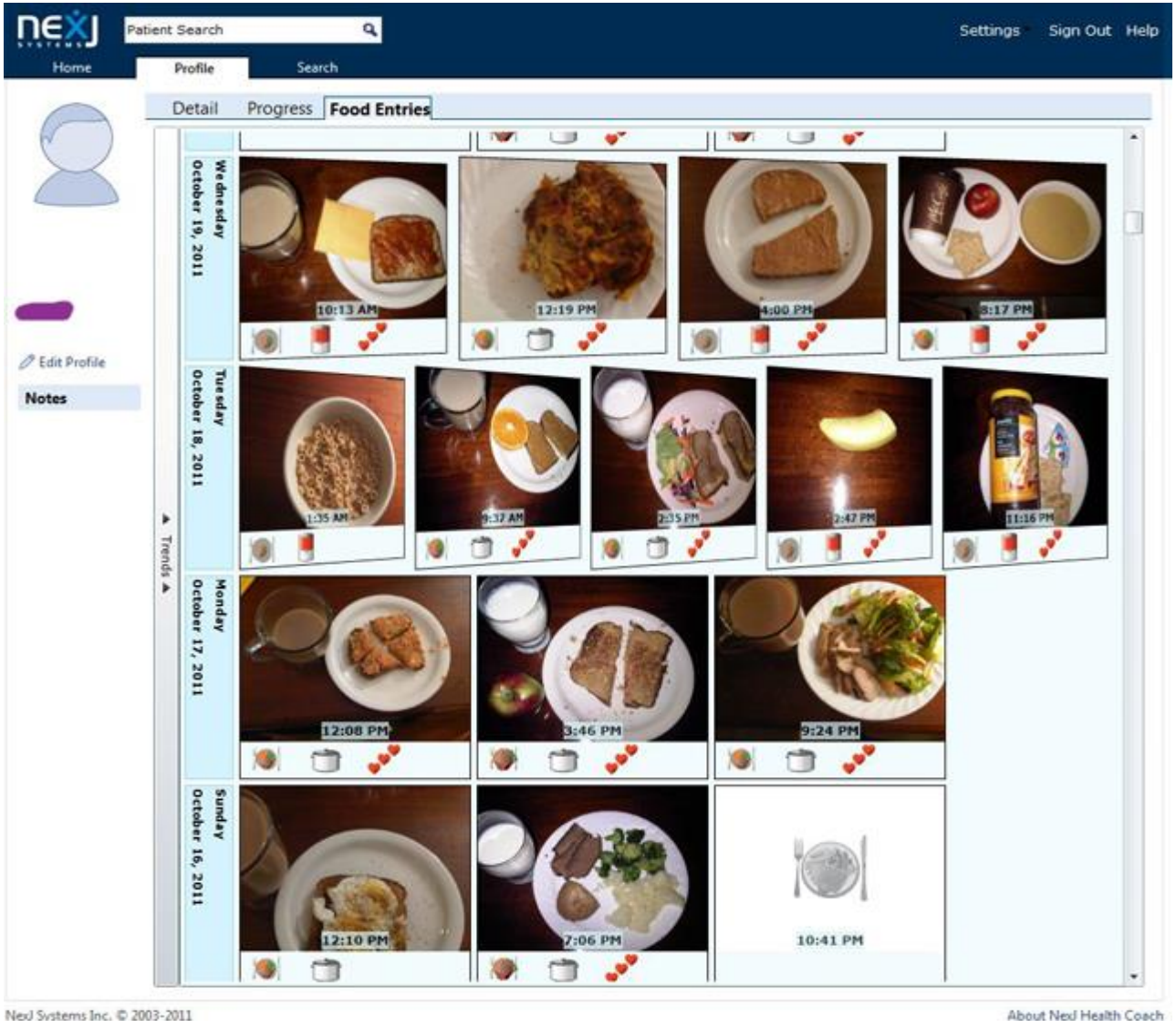
August 29 – September 26

Exercise increases to several sessions/ wk.

Death in family results in 3-day exercise gap & glucose spike, followed by *resumption & reduction*

Food View

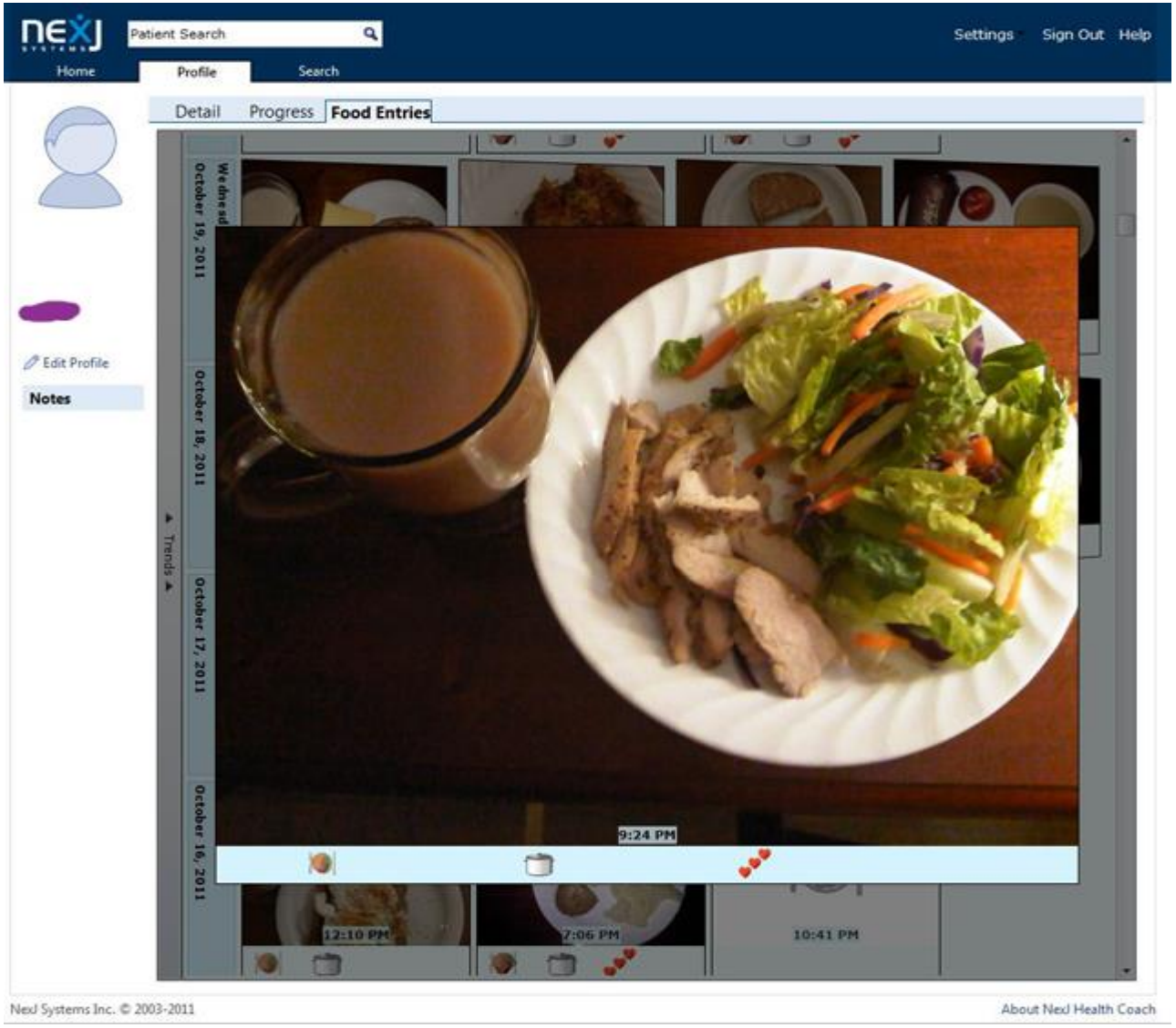
October 16-19



Food pictures reflect healthier choices

Close up of Food

October 17 2011 – 9:24pm



*Note: absence of simple carbohydrates & introduction of salad

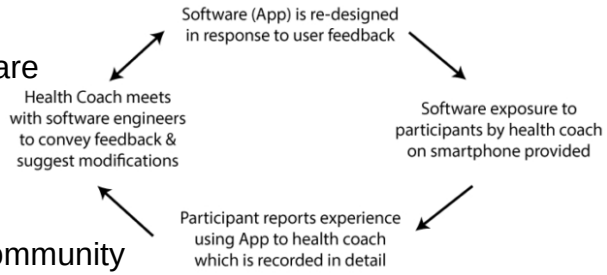
Pilot Health Coaching – Diabetes

BLACK CREEK COMMUNITY HEALTH CENTRE

YORK UNIVERSITÉ UNIVERSITY

Purpose

- To pilot test personal health coaching using NexJ Connected Wellness
- Intervention effects on glucose regulation, weight, waist circumference, BMI, depression, anxiety, mood, and quality of life
- Create innovative improvement cycle between deployment & software engineering



Pilot Single Arm Trial

- N=21 type 2 diabetic patients from a lower socioeconomic strata community
- Patients with type 2 diabetes at various levels of management
- Personal health coaching with NexJ Connected Wellness
- Behavioural focus on Exercise, Diet, Stress Management and Medication Adherence

Results

Significantly Lowered HbA1c in Poorly Managed T2DM

Innovation Cycle Highly Effective at Developing

High Satisfaction with Intervention (Low Attrition)

Wayne, N., & Ritvo, P. (2014). Smartphone-enabled health coach intervention for people with diabetes from a modest socioeconomic strata community: single-arm longitudinal feasibility study. Journal of Medical Internet Research, 16(6), e149. http://doi.org/10.2196/jmir.3180

Health Coaching reduces HbA1c in Type 2 Diabetic Patients from a Lower-SES Community:

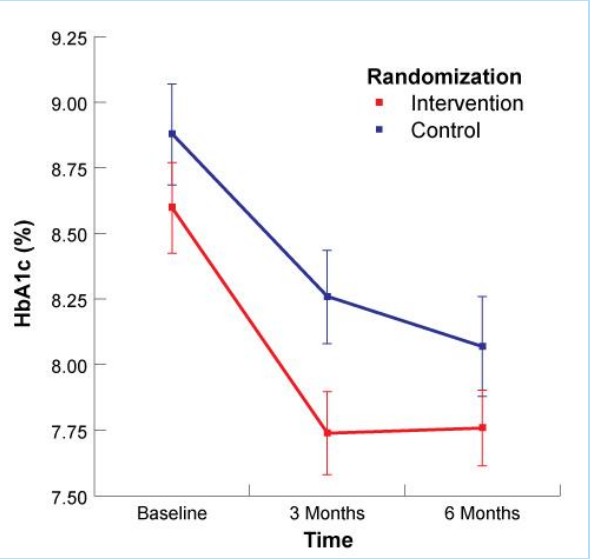
Randomized Controlled Trial

Journal of Medical Internet Research, 2015:17(10)

BLACK CREEK COMMUNITY HEALTH CENTRE

YORK UNIVERSITÉ UNIVERSITY

- N=131 type 2 diabetic patients from a lower socioeconomic strata community
- Intervention and control groups both received health coaching, the intervention group also received NexJ Connected Wellness
- The intervention group showed a significantly sharper rate of improvement of HbA1c
- Pilot trial results, qualitative user experiences, and data mining of behavioral tracking available in sister publications



Improved Results with NexJ Connected Wellness

Significantly Lowered HbA1c in Half the Time

Significant decrease in Weight & Waist Circumference

Improved Mood, Satisfaction with Life, Quality of Life

Participant experiences in a smartphone-based health coaching intervention for type 2 diabetes:

Qualitative Inquiry

Journal of Telemedicine and Telecare, 2016:22(3)

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YORK UNIVERSITÉ UNIVERSITY

- 'I liked sending all the information to my health coach. I didn't have to tell her' (Pt. #11, HbA1c: –2.0%)
- 'I could just take a picture ... a visual record of what I have eaten' (Pt. #1, HbA1c: –0.6%)
- 'It was a helpful reminder of keeping a check on my blood...what I eat...what I shouldn't' (Pt. #4, HbA1c: –1.1%)
- 'I think this study helped me emotionally a lot, more than physical, I feel emotionally happy. That is important to me' (Pt. #9, HbA1c: –0.4%)

"It was like the doctor looking at you. I have to do this, I have to test my blood sugar, I have to test my pressure, how much exercise...Your meal, what you eat…you have this eye looking at you on the phone"

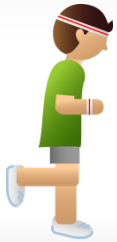
(Pt. #6 –HbA1c: +0.1%)

Four Themes Emerged

Smartphone & Software

The Health Coach

Frustrations in Managing Chronic Conditions



Self Activation

Data mining of a remote behavioural tracking system for type 2 diabetes patients:

Randomized Controlled Trial

Journal of Medical Internet Research, 2016:1(1)

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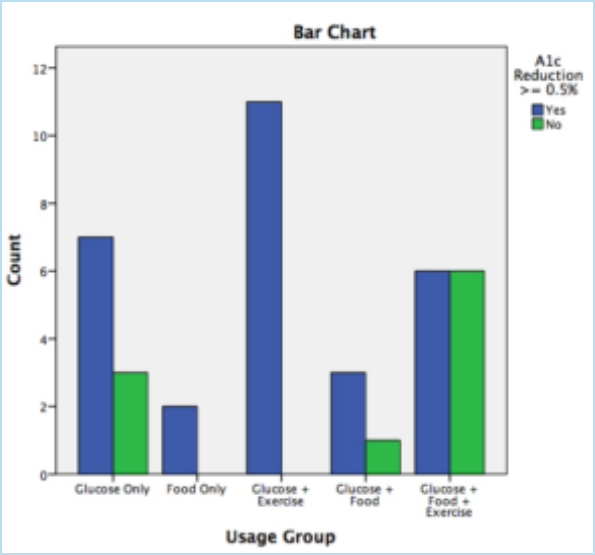
- N=29 type 2 diabetic subgroup participants from RCT
- Goal to understand the relationship between tracker use in NexJ Connected Wellness and overall glucose regulation
- Trackers of interest: Exercise, Diet, Blood Glucose
- The intervention group showed a significantly sharper rate of improvement of HbA1c



Improved Results with NexJ Connected Wellness

Single Tracker Use of Diet Tracking Associated with Reduced HbA1c

Significant decrease in Weight & Waist Circumference

Improved Mood, Satisfaction with Life, Quality of Life

Canada-India Diabetes eHealth Coaching Project

Lets Harness the Power of eHealth Local to Global

Amber Fort, Jaipur

m-Health and Chronic Conditions in Rural India:
Note of Caution

- Qualitative study of type 2 diabetes and depression in two villages in rural Andha Pradesh identified very different pathways to care for these medical conditions, where patients avoid or bypass the formal health system
  - **Diabetes**: is familiar (called 'sugar' or 'sugar disease') appears to carry little or no stigma – indeed, may be seen as a sign of modest affluence. Yet, treatment is unlikely to be sought in a recognized medical clinic
  - **Depression**: is deeply problematic and stigmatized. When individuals sought help they typically present with physical symptoms or sleeplessness – rarely admitting to any kind of mental distress
- Importance of healthcare outside the formal health system provided by 'registered medical practitioners'(RMP), who despite the title are neither registered or trained
- Ownership of phones did not translate (yet) into widespread use: basic phones, seasonally erratic electric supply, short battery life, limited use
- Promotion of 'self-management' may not be readily translated to a country like India as proponents of m-Health might assume.

Nahar P. et al. *Anthropology & Medicine*, 2017,24:1-16.

Your Reflections ?

Research on e-Health Coaching

- Wayne, N., & Ritvo, P. (2014). Smartphone-enabled health coach intervention for people with diabetes from a modest socioeconomic strata community: single-arm longitudinal feasibility study. Journal of Medical Internet Research, 16(6), e149. http://doi.org/10.2196/jmir.3180
- Wayne, N., Perez, D. F., Kaplan, D. M., & Ritvo, P. (2015). Health Coaching Reduces HbA1c in Type 2 Diabetic Patients From a Lower-Socioeconomic Status Community: A Randomized Controlled Trial. Journal of Medical Internet Research, 17(10), e224. http://doi.org/10.2196/jmir.4871
- Pludwinski, S., Ahmad, F., Wayne, N., & Ritvo, P. (2016). Participant experiences in a smartphone-based health coaching intervention for type 2 diabetes: A qualitative inquiry. *Journal of Telemedicine and Telecare*, *22*(3), 172–8. http://doi.org/10.1177/1357633X15595178
- Wayne, N., Cercone, N., Li, J., Zohar, A., Katz, J., Brown, P., & Ritvo, P. (2016). Data mining of a remote behavioural tracking system for type 2 diabetes patients: results from a randomized controlled trial. *JMIR Diabetes*, *1*(1), 1–14. http://doi.org/10.2196/diabetes.4506

Figure #1 – Breakdown by Smartphone Usage Group

Wayne, N. et al.
JMIR 2016