May 20th, 10:00 AM

Electronic Communication Systems: Energizing the Patient with Diabetes to Engage in Their Own Health Care

Michael J. Thompson
University of Massachusetts Medical School

Electronic communication systems: energizing the patient with diabetes to engage in their own health care.

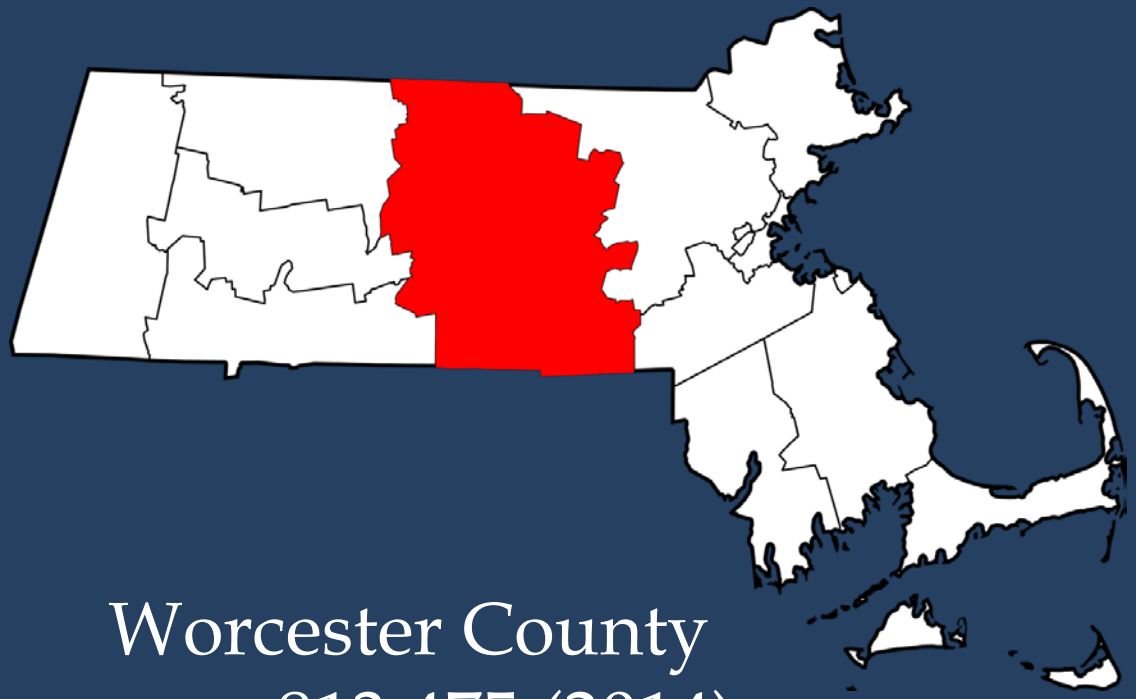
Michael Thompson MD
Chief, Adult Diabetes Clinical Research

Disclosure

I have no conflict of interest in relation to this program/presentation.

Michael Thompson MD

Diabetes in the UMMHC Catchment Area.



Worcester County
pop. 813,475 (2014)

- ~prevalence diabetes over 8%
- >65,000 with diabetes

- >22,000 UMMHC outpatients with diabetes
- > 6000 DCOE patients (Pedi and Adult)

Problems with Current Care Model

Diabetes is unique to the extent that patients are required to participate in their own care.

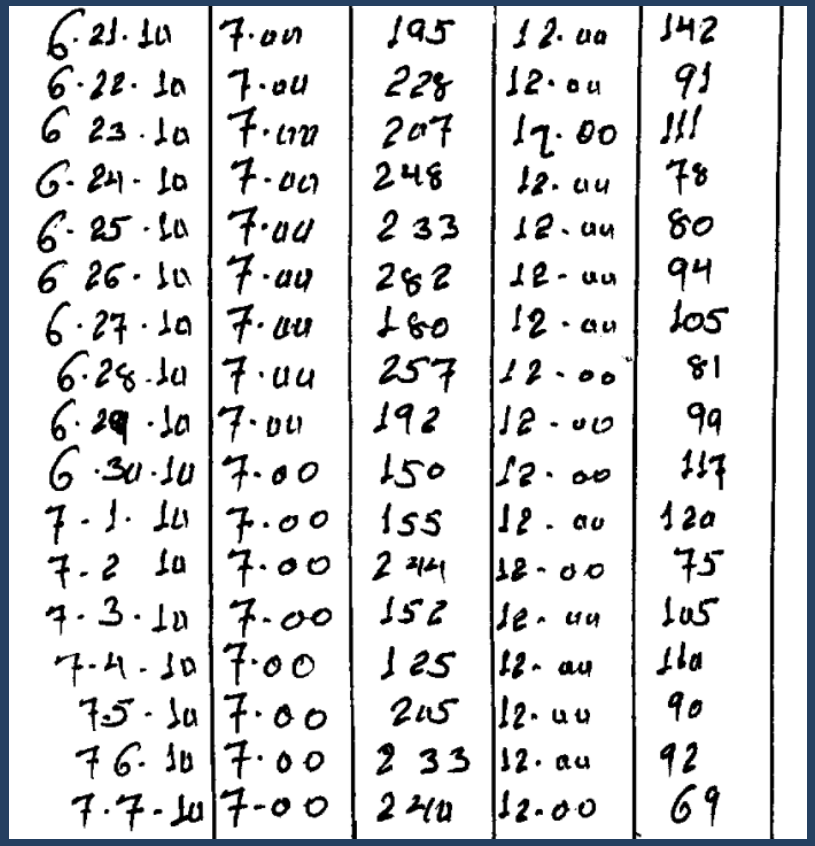
We provide intermittent medical care while diabetes is 24/7.

- Data intensive.
- Poor care for the disengaged.

Patients and Providers Need Help Managing Blood Sugars

- **Patients**
  - Inconvenient/ uncomfortable
  - Lack of understanding of BG results
  - Lack of motivation
  - Lack of symptoms
  - Cost

- **Providers**
  - Lack of time
  - Difficulty analyzing the data
  - Lack of accurate data from patient
  - Treat the A1c result

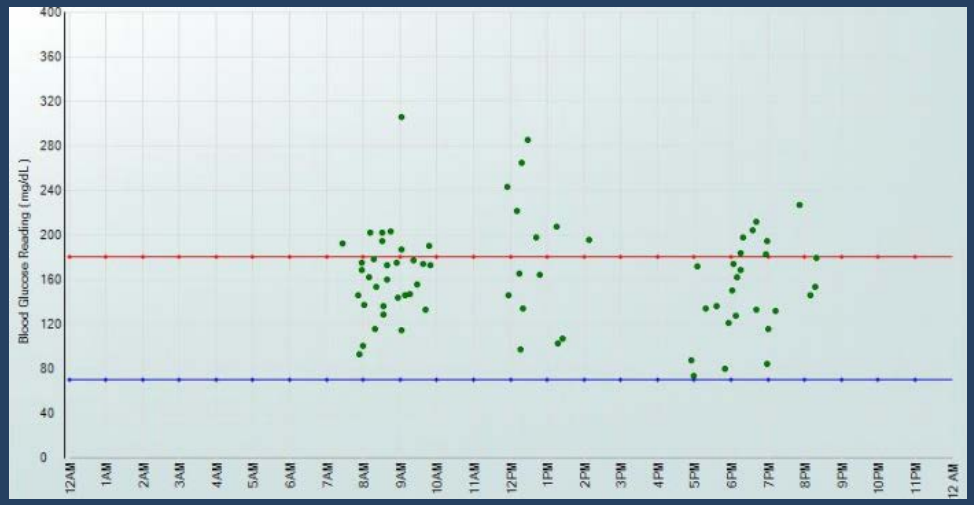


6·21·10	7·00	195	12·00	142
6·22·10	7·00	228	12·00	91
6 23·10	7·00	207	17·00	111
6·24·10	7·00	248	12·00	78
6·25·10	7·00	233	12·00	80
6 26·10	7·00	282	12·00	94
6·27·10	7·00	160	12·00	105
6·28·10	7·00	257	12·00	81
6·29·10	7·00	192	12·00	99
6·30·10	7·00	150	12·00	117
7·1·10	7·00	155	12·00	120
7·2 10	7·00	244	12·00	75
7·3·10	7·00	152	12·00	105
7·4·10	7·00	125	12·00	110
7·5·10	7·00	205	12·00	90
7 6·10	7·00	233	12·00	92
7·7·10	7·00	240	12·00	69

Connecting Patients and Providers

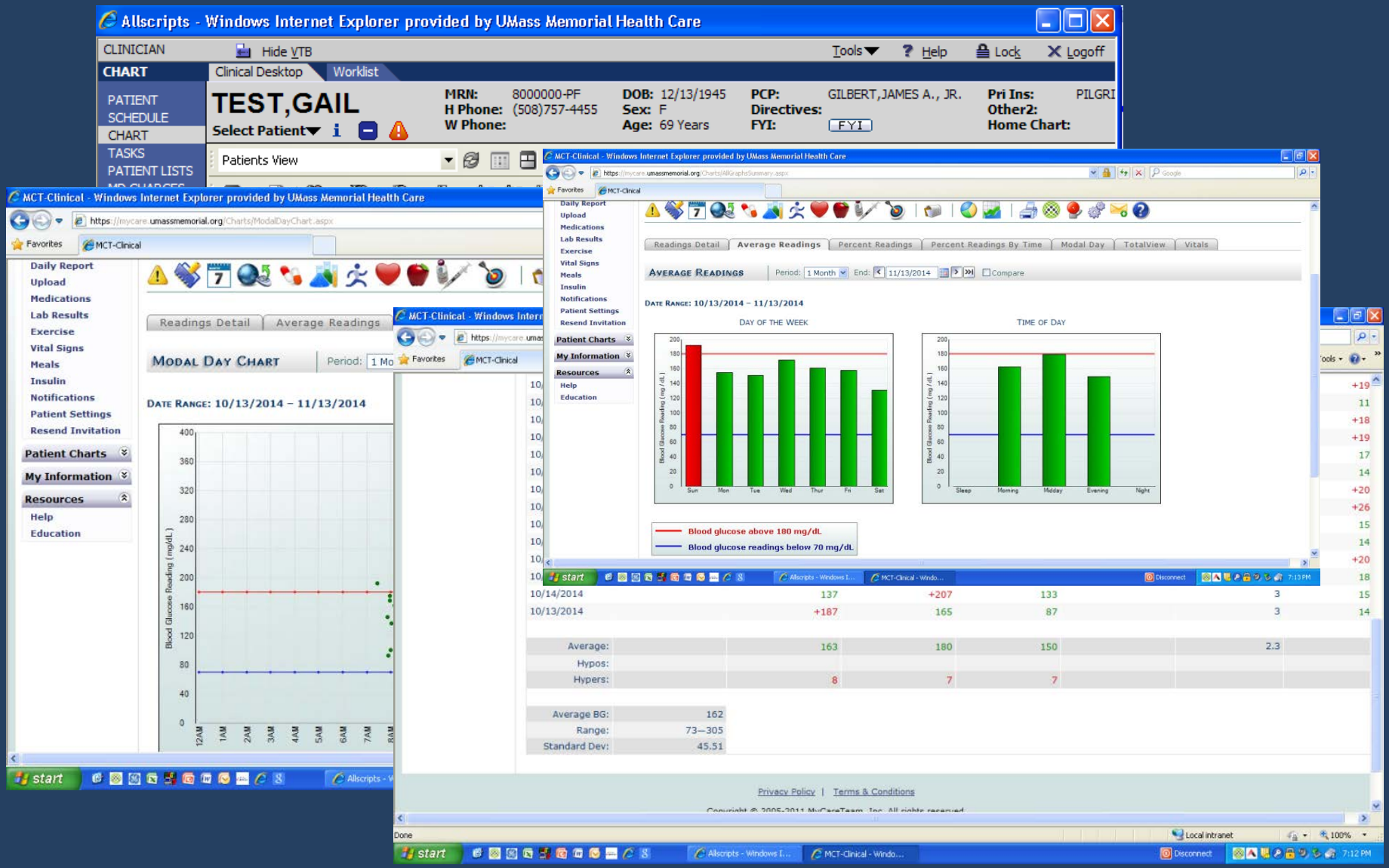
MyCareTeam™

- Web base patient portal for home use.
- Downloads over 40 meters.

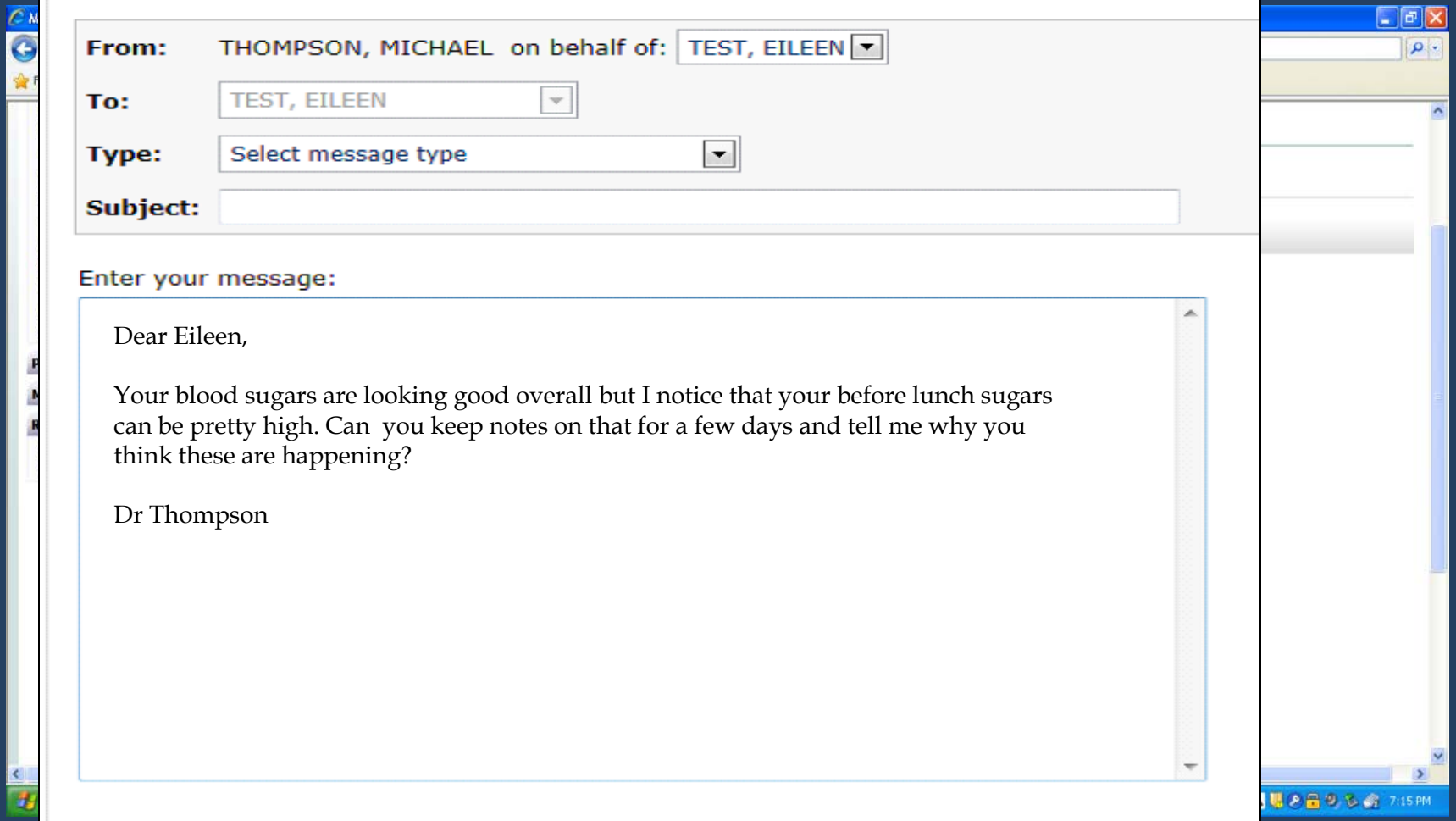


- Data analysis tools.
- Secure Messaging.
- Fully integrated into DCOE electronic chart workflow.

MyCareTeam In Allscripts EMR



Patient Communication



Getting Patients Connected

Home Glucose Downloading

Likelihood of using is provider and patient specific.

- Teaching in clinic or remotely.
- 1440 DCOE Patients have used Home Glucose Download service.
- About 9% of clinic download from home.

Harvard Pilgrim / UMMHC Diabetes Pilot Phase 1 (3/2014-3/2015)

- Promote home meter downloading for ~390 HPHC members at DCOE and 3 large primary care practices.
- Anticipated e-Visits might decrease need for clinic based care.
- Provider able to bill e-Visit (equivalent to level 1 charge).

Harvard Pilgrim / UMMHC Diabetes Pilot Phase 1

- Workflow:
  - Engagement and training of PCP practices.
  - Patient enrollment.
    - Letters sent.
    - Re-approached in clinic at visits.
  - Tracked home-downloads and e-visits.

- Patient participation lower than expected.
  - ~ 30% agreed to download.
  - ~ 10% used program.

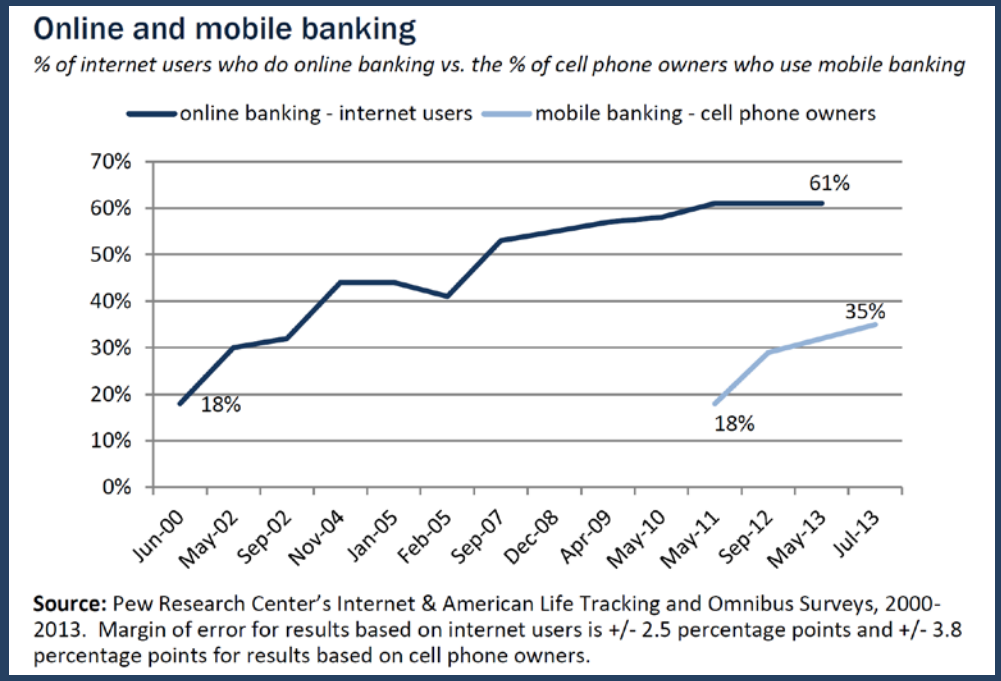
MCT Participation Survey

	Barrier Totals
Technological Difficulties	
Difficulty logging on	3
Difficulty uploading meter	6
Windows not compatible with the version MCT uses	3
Inaccessibility of Technological Devices	
Don't have USB cable (solved)	40
No computer access / Don't use the computer	71
Don't have an email account	1
Macintosh computer not compatible with meter	3
Meter can't be downloaded.	7
Perceived Difficulty	
Program seems difficult / seems like a hassle	15
Need written instructions to bring home	17
Lack of Incentive / Motivation	
Already track meter readings on paper or through pump	6
No interest	27
Haven't been using meter	2
# of Patients who Reported No Barriers	38
Total # of Patients Encountered	309

Examples:

- No computer access.
- Trouble logging on or uploading.
- Don't have a cable.
- Macintosh compatibility issues.
- Meter can't be downloaded.
- Program seems difficult / seems like a hassle.
- Already track meter readings on paper or through pump.
- No interest.
- Not testing.

Lessons Learned: Online Banking and the Future of Telehealth Services.



Federal Reserve
Mar 2015 Report

- **Online Banking 74%**
- **Mobile Banking 35%**
- **No Internet Access 15%**

- Pewinternet.org/Reports/2013/Online-banking
- Consumers and Mobile Financial Services 2015 Federal Reserve March 2015

Harvard Pilgrim / UMMHC Diabetes Pilot Provider Experience

	Benedict	Tri-River	Westborough	DCOE
Patients Total	21,500	12,500	5,300	5,200
HPHC Member	1170	1278	498	188
HPHC Member with DM	113	92	34	183

- e-Visit billing was rare.
  - HPHC 5-10% of panel so when to bill.
  - Developed Diabetes Champion roll at each site.
- Felt like extra work despite being "usual care" for our clinic.
- Primary care using A1c to manage.

Lessons learned: Why our patients and providers avoid telehealth.

- Milder cases with diet or monotherapy may not need or want to connect between visit.
- Those most in need may be disengaged .
  38% had no scheduled clinic visit
- Not part of our usual care model.
- Process of connecting remotely still too complex for many.

livongo health

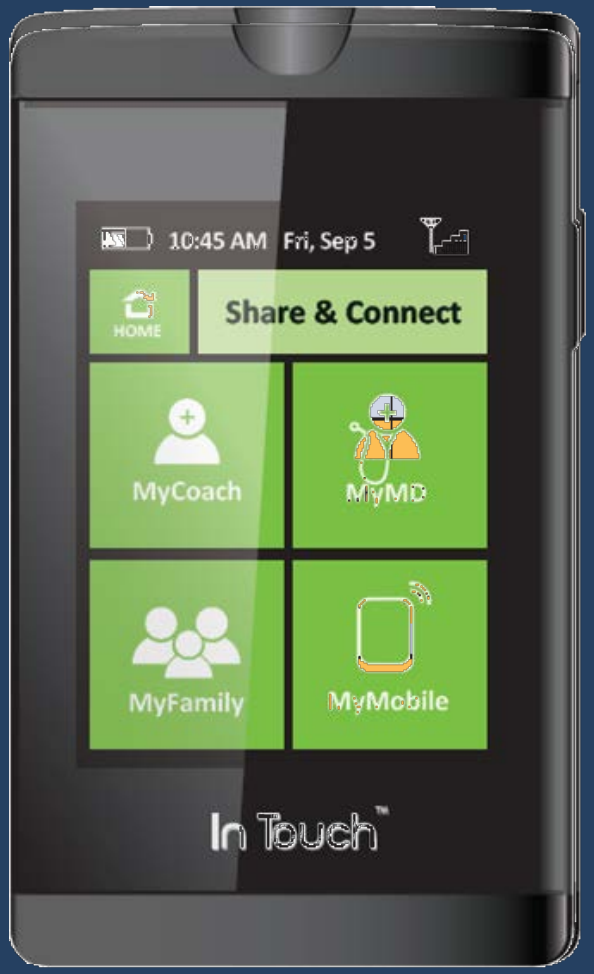
Cellular Connected Device
- No need to plug in a cable
- Records healthcare data, trends and messages

Smart Cloud
- Analyzes data and provides instant automated feedback.

Live Care Team
- Reach out to patient if readings require clinical attention.

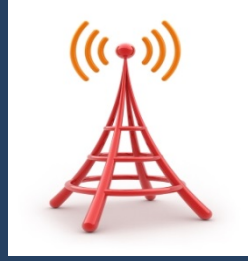
Livongo System

- Instant upload of glucose recordings to web using a cellular meter.
- Logs for medication, diet, and physical activity.
- Reminder messages and alarms, diabetes management tips.
- 24/7 monitoring by CDE coach.
- Data flows to My Care Team.



In Touch Cellular Meter: Livongo Health

Get In Touch Trial



- 12 month Randomized, controlled crossover trial
- Sample Population:
  - 120 adults with suboptimal T2D (A1c ≥8.5% twice in previous 12 months)

Aim 1. Acceptability: feedback from participants

Aim 2. Clinical Efficacy: changes in clinical outcomes including hemoglobin A1c

Aim 3. Patient-Reported Efficacy

Clinical & Population Health Research Doctoral Thesis : Daniel J. Amante UMMS

Get In Touch

Characteristics	Intervention N=60	Control N=60	p
Age, mean(SD)	56.1 (11.1)	57.4 (12.1)	0.72
Gender, female N(%)	34 (56.7)	29 (48.3)	0.36
Race, N(%)			
White	37 (66.6)	43 (71.7)	
Black	6(10.0)	3 (5.0)	
Hispanic Latino	11 (18.3)	9 (15.00)	0.75
Other	6 (10)	5 (8.3)	
Internet Access, N(%)			
No	9 (15.0)	11 (18.3)	
Yes	50 (83.3)	47 (78.3)	0.73
Not Reported	1 (1.7)	2 (3.3)	
Internet Use Frequency			
Once per week or less	17 (28.3)	20 (33.3)	
Several times per week	41 (68.3)	38 (63.3)	0.84
Not Reported	2 (3.3)	2 (3.3)	
A1c %, mean (SD)	**10.3 (1.4)**	**10.0 (1.4)**	0.10

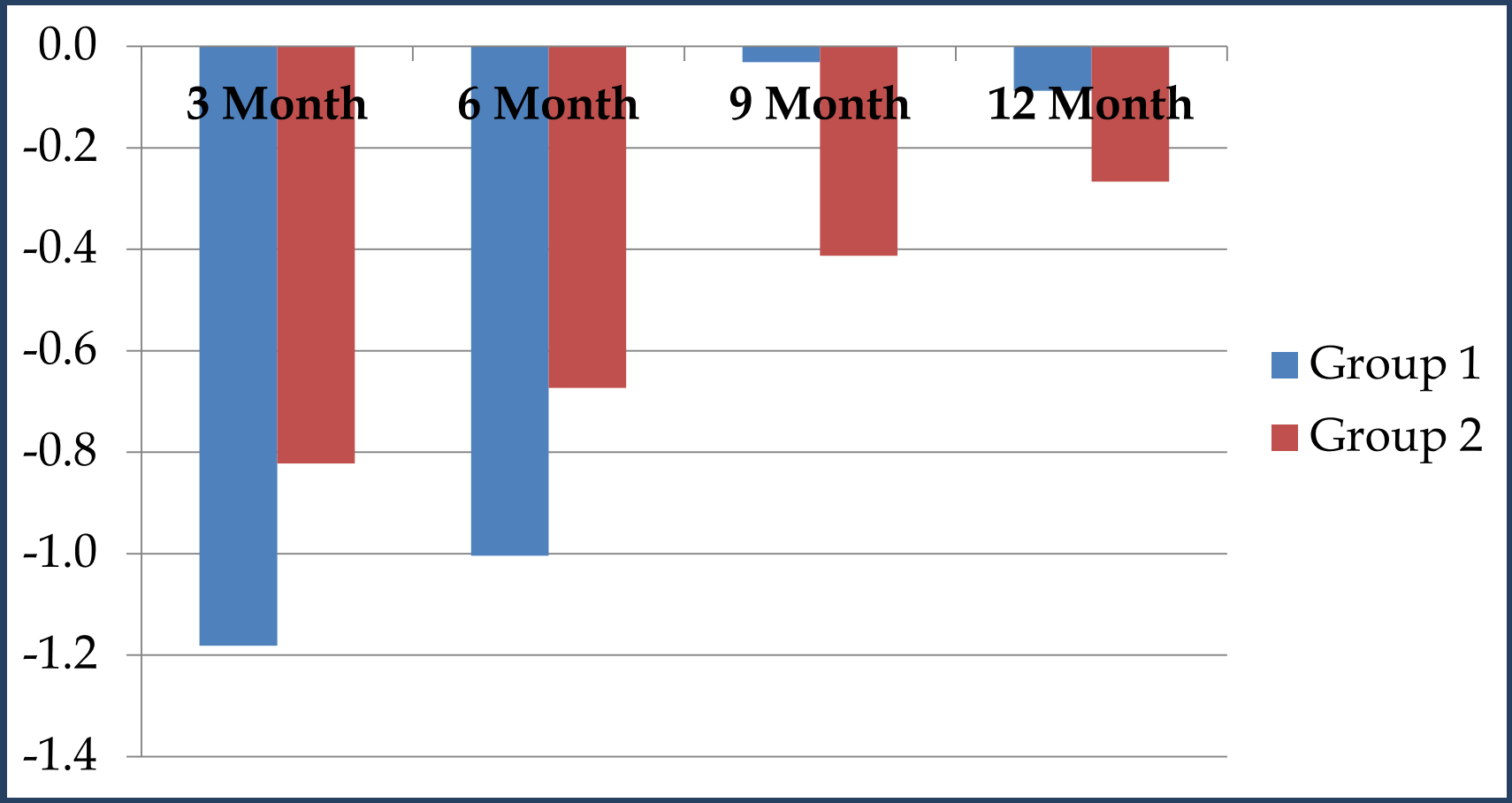
Livongo MCT

- 152 Invited at clinic visits.
- 123 Accepted (3 never enrolled).
- 96 Active at six month (47 Livongo, 49 UC).

- Group 1 (Livongo meter).
  - 13 had downloaded to MCT before study.
  - 23 were contacted by CDE for high or low BG.
  - 11 Had CDE coaching.

- Group 2 (usual care).
  - 7 had downloaded to MCT before study.
  - 2 downloaded from home during UC.

Preliminary look at Get in Touch A1c's



Group 1 = study meter month 0-6, usual care month 6-12
Group 2 = usual care month 0-6, study meter month 6-12
Nine and twelve month data set incomplete.

Preliminary Analysis GIT satisfaction Scores

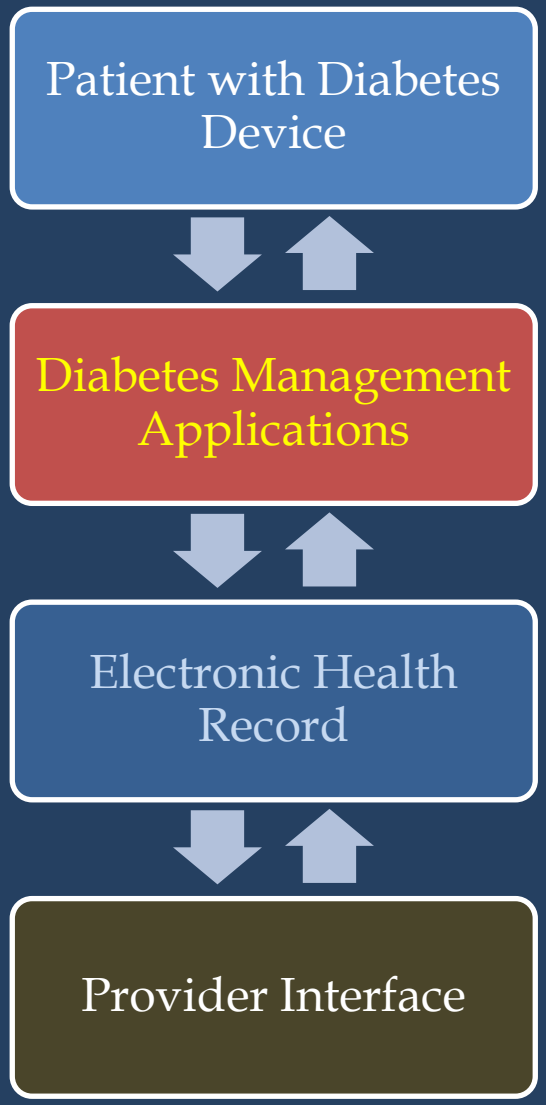
Baseline Values	Intervention group		Control group		p (IV vs Control)*
	Baseline n=59 mean (SD)	Individual Change n=44 mean (SD)	Baseline n=60 mean (SD)	Individual Change n=48 mean (SD)	
Overall Diabetes Treatment Satisfaction	29.6 (5.5)	+12.9 (5.6)	28.4 (5.3)	+10.7 (6.6)	0.04
Satisfaction with current treatment	4.7 (1.5)	+2.2 (1.1)	4.8 (1.1)	+1.7 (1.2)	0.04
How convenient treatment is	4.8 (1.2)	+2.2 (0.8)	4.3 (1.4)	+1.5 (1.4)	<0.01
How flexible treatment is	4.9 (1.1)	+2.0 (1.3)	4.3 (1.2)	+1.6 (1.4)	0.07
How satisfied with understanding of diabetes	4.9 (1.3)	+2.3 (1.0)	4.8 (1.2)	+1.7 (1.5)	0.02
How likely to recommend treatment	5.3 (0.9)	+2.1 (1.3)	5.1 (1.2)	+2.0 (1.3)	0.33
How satisfied to continue with present form of treatment	5.0 (1.2)	+2.2 (1.2)	4.9 (1.2)	+1.9 (1.3)	0.11

CDE Realtime Monitoring

" Teachable Moments"

Reading	Feel	Meal	Issue	Info
577	Light Headed	No Meal	Illness related;	State he is fine but hasn't been feeling well for a few days. Reviewed sick day guidelines and encouraged member to contact his physician for further guidance. Member has taken correction dose, is drinking water, and will recheck in 1-2 hours.
34	Feel Fine	Before Breakfast	Missed meals;	Called listed number and spoke with husband who said she was in florida and gave me her cell number. I called her and she was going to drink some juice and have a bagel. when asked she said she had family around that could help her.

Diabetes Communications Goals



- Effortless connectivity is possible.
  - Cellular / WiFi / Bluetooth

- Diabetes self-management tools should live here.
- All devices should ideally interface.

- Able to interface with multiple Diabetes Management Applications.
- All data from the DM App copied here.

- Single sign on access to diabetes data .
- Remote care needs to be supported as part of usual care.