E-Health Technology and Self Care:

Improving Heart Failure Outcomes for those Living in Rural or Remote Areas

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Disclosure

I have no financial disclosures.

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Objectives

- Recognize the prevalence of heart failure and other chronic illnesses requiring innovative interventions.
- Identify current technology used in e-health and self management of heart failure and other chronic illnesses.
- Examine how e-health impacts patient outcomes especially for those living in rural or remote areas.
- Discuss protocols and strategies for utilization of e-health in an ambulatory setting.

Definition of E-Health

E-Health - Healthcare services provided electronically via the Internet (Google Dictionary).

Todays Focus:

- Virtual Visits
- Tele-Monitoring

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Tele-Monitoring Research

- Kaiser-Permanente- 1990's did foundational research
- University of Minnesota also did this in 1998 with comparable results
- Florida's Veterans Administration noted greater impact in 2004 with RN care coordination
- Ascension Health – 2012 did research under Beacon Grant adding self-care education with like results

Remote Monitoring of Patients with HF

In 2017 Systematic Reviews by Bashi, et. all

- 19 systematic reviews met inclusion criteria.
- RPM with diverse interventions such as telemonitoring, home telehealth, mobile phone–based monitoring, and videoconferencing.
- All-cause and HF mortality were the most frequently reported outcomes
- Others were: quality of life, rehospitalization, ER visits and LOS
- Self-care and knowledge were less commonly identified.

Conclusions:

- Telemonitoring and home telehealth were effective in decreasing HF rehospitalizations and mortality.
- Mobile phone–based monitoring and videoconferencing, require further investigation.

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Ambulatory HF Program

- Established in 1998
- Wagner Model
- ACC/AHA/HFSA HF Guidelines
- Multidisciplinary team-based approach
- Patient-centered care
- E-Health option

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Essentia Health at a Glance

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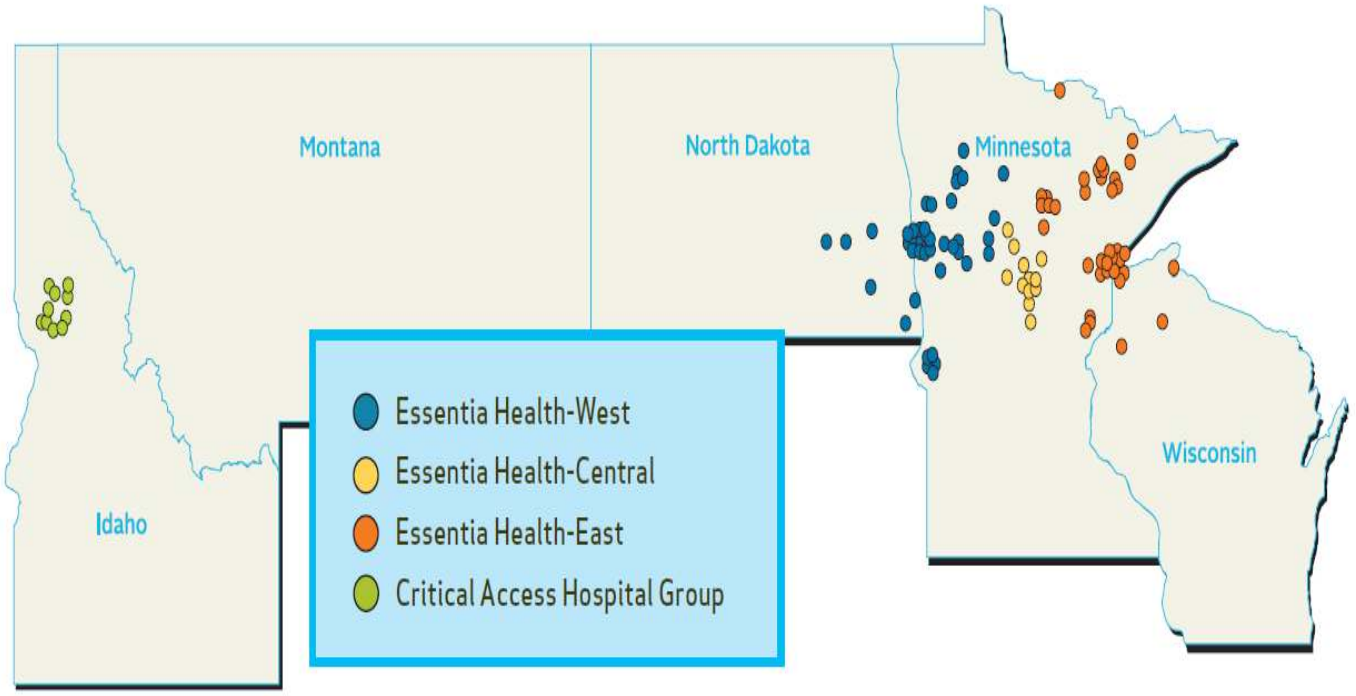

together as one—
for the needs of all

- 15,011 total employees
  - 939 physicians
  - 1,032 advanced practitioners
  - 13,040 other staff
- 75 clinics
- 15 hospitals
- 7 long-term care facilities
- 5 ambulance services
- 2 assisted living facilities
- 4 independent living facilities
- 1 research & education institute

Prevalence of Heart Failure?

- Affects 5.8 million in the U.S.
- Over 650,000 new patients annually
- The lifetime risk of developing HF is 20% for Americans ≥40 years of age.

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Prognosis for HF Patients

What is the average life expectancy for a HF patient?

a. 1 year
b. 5 years
c. 10 years
d. 15 years

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Prognosis for HF Patients

- 1/2 of people who develop HF die within 5 years of their diagnosis
- Less than 25% are alive at 10 years

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Other Reasons We Care?

- HF is the most frequent cause of hospitalization in elderly (> 65 y/o) and the most costly DRG to Medicare.
- 24% of patients discharged with HF are readmitted within 30 days
- Estimated lifetime cost per each individual HF patient is $110,000/year

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What will it Cost?

- In 2012, total cost for HF was estimated to be $30.7 million.
- Projections show that by 2030, the total cost of HF will increase almost 127% to $69.7 billion from 2012

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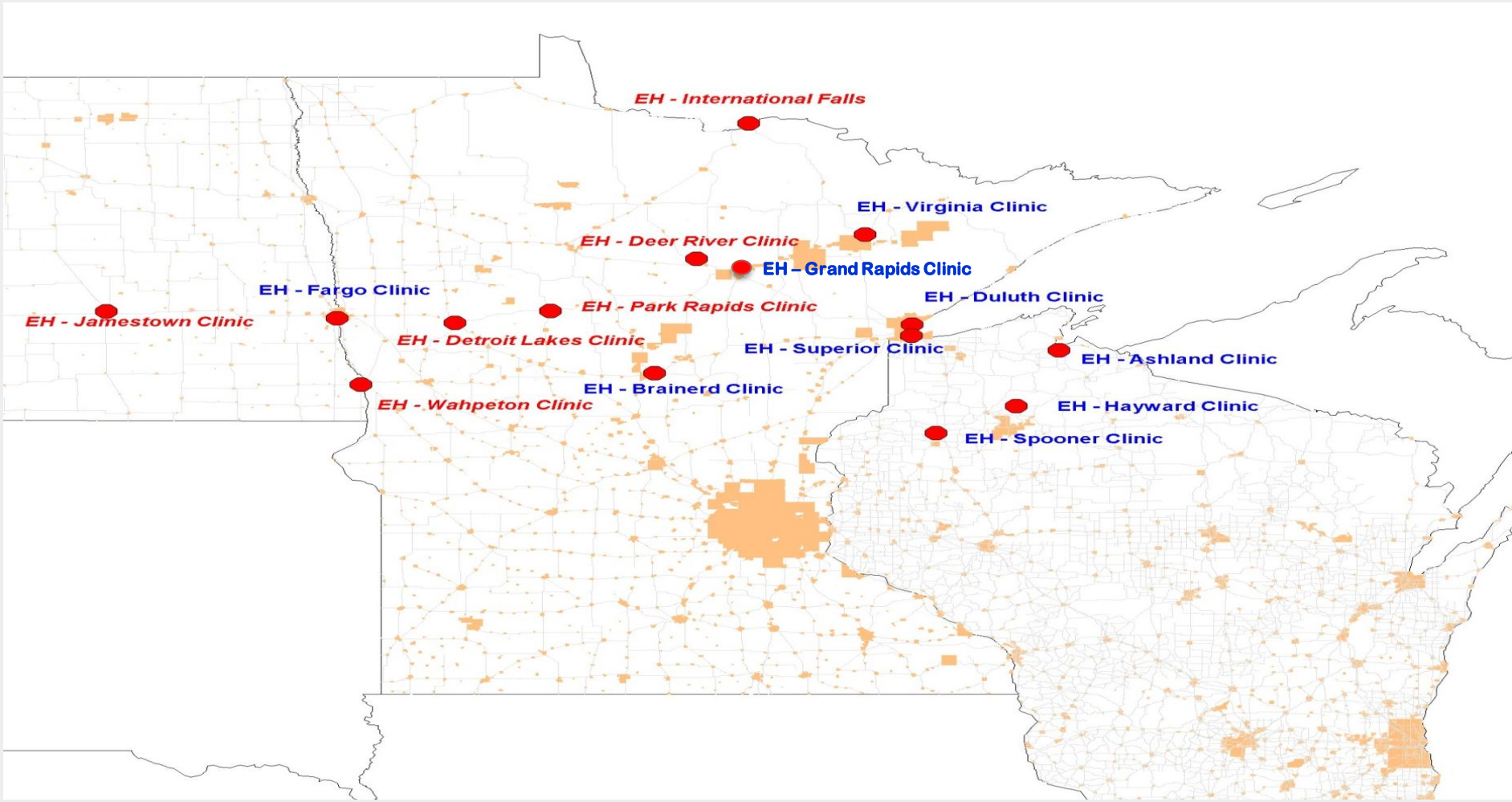
Heart Failure Progression is Inevitable

- Population of the US is aging
- Survival rate has improved with MI and revascularization
- HF is not always treated correctly
- Patients do not adhere to diet and medication regime
- Projections show the prevalence of HF will increase 46% from 2012 to 2030, resulting in >8 million people ≥18 years of age with HF

Causes for Readmissions

- Inadequate inpatient medical care
- Failures in discharge planning and fragmentation of care
  - Patient not ready for discharge/ “cookie cutter” education
  - Poor social support
  - Poor self management skills
- Insufficient outpatient care and poor hand off
- Inadequate community care
- Progressive illness
- Lack of advance care planning

Essentia Health HF Program Sites



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Overview of Essentia's HF DMP

- Cardiology Consult – In hospital or clinic
- Advance Practice Provider – Manages HF care per ACC/AHA\HFSA HF guidelines
- Registered Nurse provides care coordination
- Tele-scales utilized for high risk patients

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HF PROGRAM DYNAMICS

- Patient and Family Centered Care - Goals
- Multidisciplinary team approach to care
- Provider/Nurse Consistency
- Coaching
- Education
- Support
- Immediate feedback on health choices
- Relationship building with patient/family
- Engaged/passionate staff

Piloting a Heart Failure Program

- Pilot of 25 patients in 2000
- This pilot revealed:
  - **82% Reduction in HF hospitalizations**
  - **81% Decrease in Length of Stay**
  - **88% Decrease in ER Visits**

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Pilot with Payer BCBS of MN

N=29 patients

Type of Care	Pre-Program 6 months	Post-Program 6 months	Percent Change
Inpatient	**$1,149,080**	**$185,134**	**-84%**
Outpatient	$124,884	$125,498	0%
ER	**$379,852**	**$66,318**	**-83%**
Prof. Fees	$674,428	$706,298	5%
Lab/Radiol	$138,781	$118,064	-15%
Pharmacy	$124,229	$137,312	11%
Total	**$2,591,254**	**$1,338,624**	**-48%**

Savings 1.25 Million

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Why Virtual Visits?

- Increase access to specialty care in rural remote areas
- Decreases or eliminates travel time (often hours)
- Eliminates driving in the “Big” city or “across the bridge”
- More timely access with decompensated patient
- Increases scheduling options
- Cross coverages options with other sites
- CHFN Education

Virtual Visit Challenges

- CA/Nurse present during visit.
  - Training
- Learning billing rules and regulations
  - Different everywhere
- Change
  - Patients Love It!
  - Providers need ongoing support
  - Identify any barriers early on
    - Trainers on site the first few times

Advantages to Tele-Monitoring

- Facilitates early interventions
- Prevents ER visits and hospitalizations
- Improved patient adherence with care plan
- Patients learn self care while gaining immediate feedback on life style choices
- Family reassured
- Provides additional opportunity to educate patients
- Builds trust between patient and provider
- High patient satisfaction

Tele-Monitoring Challenges

- Not all patients are a good candidate
- Not reimbursed by all payers
- Cost – Want to be fiscally responsible in choosing appropriate patients

Guidelines for Use of Tele-Scales

Consider For:

- Patients with 2 or more hospitalizations for heart failure during the past year?
- Patients unable to weigh self-daily and self-report weights within given parameters with inadequate social support?
- Patients who live remotely and find it difficult to get to clinic office visits?

Not Always Ideal Candidate:

- Unsteady patients
- Patient has no cellular or internet access
- Cognitive, vision or hearing impaired
- Patient not wanting to participate
- Patients residing in skilled nursing facility with 24 hour care
- Dialysis patients
- Weight loss program

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CMS Billable Tele-Monitoring Codes

As of January 1, 2019 - FDA Medical Device

- 99453 – Set-Up and Patient Education
  - 1 time
- 99454 – Daily Recording and/or Programmed Alert Transmissions
- 99457 – Live Interactive Communication with Patient/Caregiver

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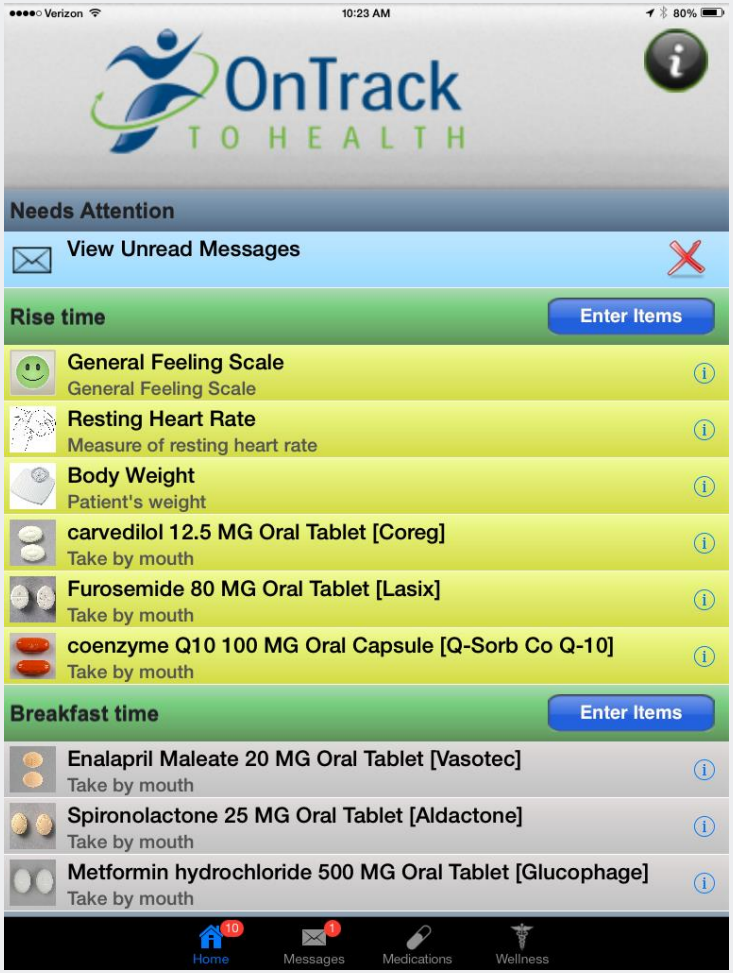
Need for utilizing Virtual Visits/Tele-monitoring

- Decrease HF admissions
- Decrease readmissions rates
- Decrease ER Visits
- Decrease length of stay
- Improve quality measures
- Improve patient quality of life
- Improve patient self-care
- Improve patient satisfaction

Telemonitoring



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Alert Date View: 12/8/2014 | 12/9/2014 | 12/10/2014 | 12/11/2014 | 12/12/2014 | 12/13/2014 | Today

Acute : 1

Alert	Score	Date Time	Name
A +1	10	12/14/2014 08:19 (EST)	H 39 Rasmusson, Angela

Symptoms : 4

Alert	Score	Date Time	Name
Sx	17	12/14/2014 07:21 (CST)	H 20 Hernandez, James
Sx	15	12/14/2014 07:22 (CST)	H 8 Johnson, Bobby Jo
V	9	12/14/2014 07:24 (CST)	H 4 James, Lois
C	0	12/14/2014 07:25 (CST)	Luther, Jerome

Biometrics/Symptoms : 9

Alert	Score	Date Time	Name
X +2	17	12/14/2014 07:32 (CST)	H 25 COPD, DAVID
P +2	14	12/14/2014 08:26 (EST)	ASTHMA, CHARLIE
▲ +2	6	12/14/2014 07:43 (CST)	HEARTFAILURE, JUDITH
▲	5	12/14/2014 07:32 (CST)	H 16 Hendrickson, Kathy
▼	3	12/14/2014 07:16 (CST)	H 15 Brown, Clifford
B	0	12/14/2014 07:29 (CST)	IVR, JANE
♥	0	12/14/2014 07:34 (CST)	H 19 Barry, Walter
G	N/A	12/14/2014 08:37 (EST)	GLUCOSE, BETTY
B	N/A	12/14/2014 07:52 (CST)	MULTIDISEASE, BARBARA

Not Reported : 4

Name	Days	Expected Transmit
REPORTED, NEVER	6 (Never)	7 Days / Week
Burns, Harold	4	7 Days / Week
Redmond, Calvin	3	7 Days / Week
Olson, Gladys	0 (Never)	7 Days / Week

First Reported : 1

	Date	Name
1st	12/14/2014	Smith, Sally

Follow Ups Due : 6

Detail

Due Date	Name	Type
12/13/2014	GLUCOSE, BETTY	Provider Appt
12/13/2014	Sanders, Hal	Parameter Review
12/13/2014	Wallen, Stewert	Post Provider Visit
12/13/2014	MULTIDISEASE, BARBARA	Med Change
12/14/2014	HEARTFAILURE, JUDITH	Acute Priority
12/14/2014	DIALYSIS, DONNA	Intervention Follow Up

Incomplete Interventions : 4

Detail

Date	Name	Type	Action
12/12/2014	HEARTFAILURE, JUDITH	Weight And Symptom Issue	Education Complete
12/12/2014	INTERVENTION, OPEN	Weight And Symptom Issue	Medication Adjustment
12/12/2014	PRESSURE, ROBERT B	Blood Pressure Issue	Medication Adjustment
12/12/2014	MULTIDISEASE, BARBARA	Weight And Symptom Issue	Medication Adjustment

Monitoring and Exception Review

- Patient alerts
  - Nurse reviews data in both monitoring program and EPIC
  - Makes decision if patient needs to be contacted

- If assessment needed, RN considers the following:
  - Nursing assessment and education needs
  - Review medication list
  - Dietary adherence
  - Follows diuretic protocol as indicated/or talks with HF provider
  - Initiate office visits or primary care referrals as needed
  - Care plan monitoring; hospitalization initiation
  - Communicates with team members (other specialties)

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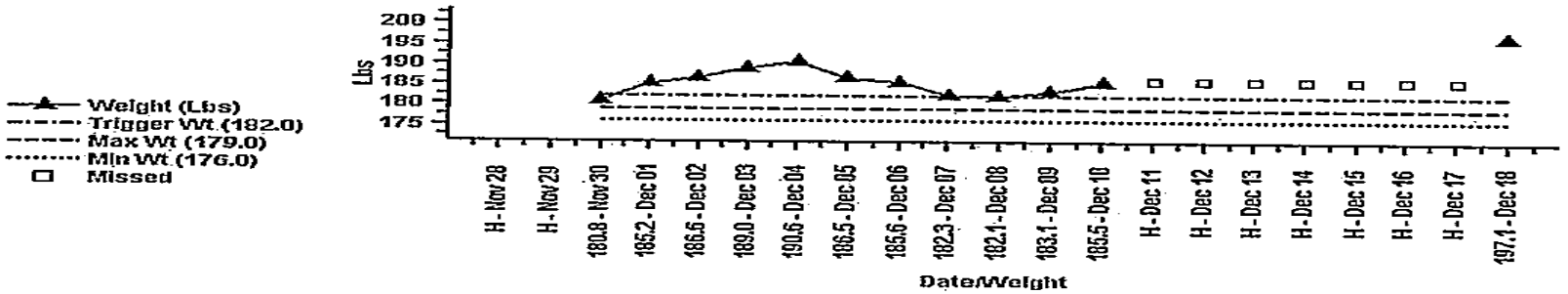
EXPERTS IN TELEHEALTH

Exception Report

Chart ID DOB PA
Phone

Weight Graph

Highest Wt: 197.1 Lbs Lowest Wt: 180.8 Lbs Average Wt: 186.2 Lbs



NA - Missed Day H - Hospital A - Away From Home NH - Nursing Home ER - Emergency Room

Symptom Detail *Markers Indicate Symptomatic Response*	Nov 28	Nov 29	Nov 30	Dec 01	Dec 02	Dec 03	Dec 04	Dec 05	Dec 06	Dec 07	Dec 08	Dec 09	Dec 10	Dec 11	Dec 12	Dec 13	Dec 14	Dec 15	Dec 16	Dec 17	Dec 18
Ankles Or Feet More Swollen				•	•	•	•	•	•	•	•	•									•
Stomach Feels More Bloated			•	•	•	•	•	•	•	•	•	•	•								•
More Tired Than Usual			•		•	•	•			•			•								•

Medication *This List May Not Be Complete And Must Be Verified*

Aldactone	25 mg	daily	Metolazone	2.5 mg	PRN
Potassium Chloride	40 mEq	tid	Torsemide	80/80 mg	bid

Provider Comments

Last Note

11:26 AM – No data reported today. Status is listed as not available (Vacation, Hospital, Etc). Discharged to home today per discharge note. will await weights on scale tomorrow.

Audience Response Question

1. Why do you think HF patient weight is up 12# upon discharge?

a. Patient didn't take his diuretic the morning after he was discharged from hospital.
b. Patient weighed with his clothes and shoes on that morning.
c. Patient was given salt packets with his meal trays while hospitalized.
d. Patient had more intake than output while hospitalized.

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Exception Report

Chart ID	**DOB**	**Cardiologist**	(218)786-3443
Phone		NP	

Weight Graph

Highest Wt: 256.7 Lbs Lowest Wt: 243.1 Lbs Average Wt: 249.3 Lbs

NA - Missed Day H - Hospital A - Away From Home NH - Nursing Home ER - Emergency Room

Medication *This List May Not Be Complete And Must Be Verified*

Provider Comments

Lasix 20 mg

Symptom Detail

Markers Indicate Symptomatic Response

	Apr 20	Apr 21	Apr 22	Apr 23	Apr 24	Apr 25	Apr 26	Apr 27	Apr 28	Apr 29	Apr 30	May 01	May 02	May 03	May 04	May 05	May 06	May 07	May 08	May 09	May 10
Ankles or feet are more swollen		•	•		•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•

Last Note

5/10/2016 - 11:24 AM - Alerts generated: weight gain of 3.0 lbs over 1 day(s), weight gain of 5.0 lbs over 7 day(s) and weight gain of 3.0 lbs since last weight. Biometric data: weight is 251.9, +8.1 lbs from previous weight on 5/9/2016 and Reported symptoms: Ankles or feet are more swollen. Transmit date/time was 5/10/2016 at 10:48 AM (CST). Weight up 8.1 lbs from yesterday. He denies symptoms. He states he weighed with all of his clothes on . He also reports he ate 3 pieces of Papa Murphy's pepperoni pizza and one of the deep dish pizza and then ate corned beef hash this AM. Educated on low Na+ diet and the foods he ate in the last 12 hours are not low Na+. He took an extra 20 mg of Lasix this AM. Continue to monito

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Exception Report

[redacted]

[redacted]

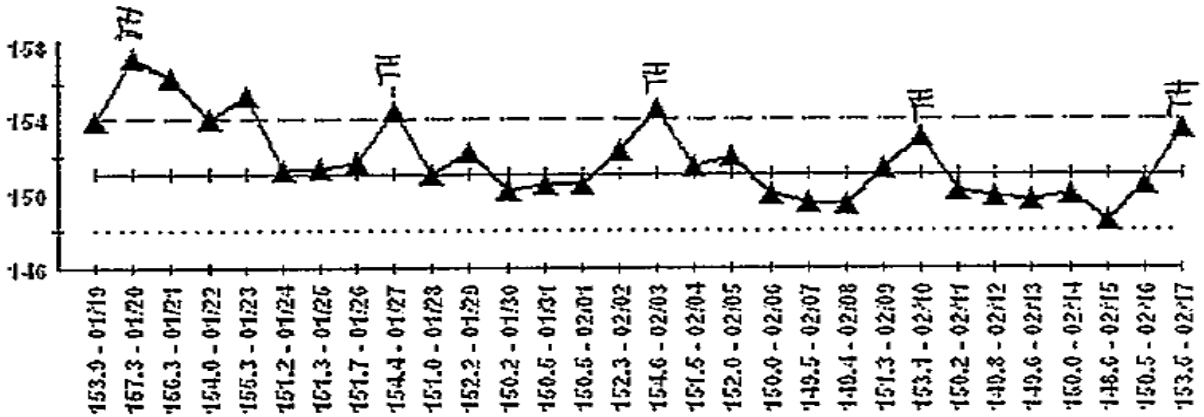
Patient ID	SS Number	Cardiologist
Phone	DOB	NP

Weight Summary

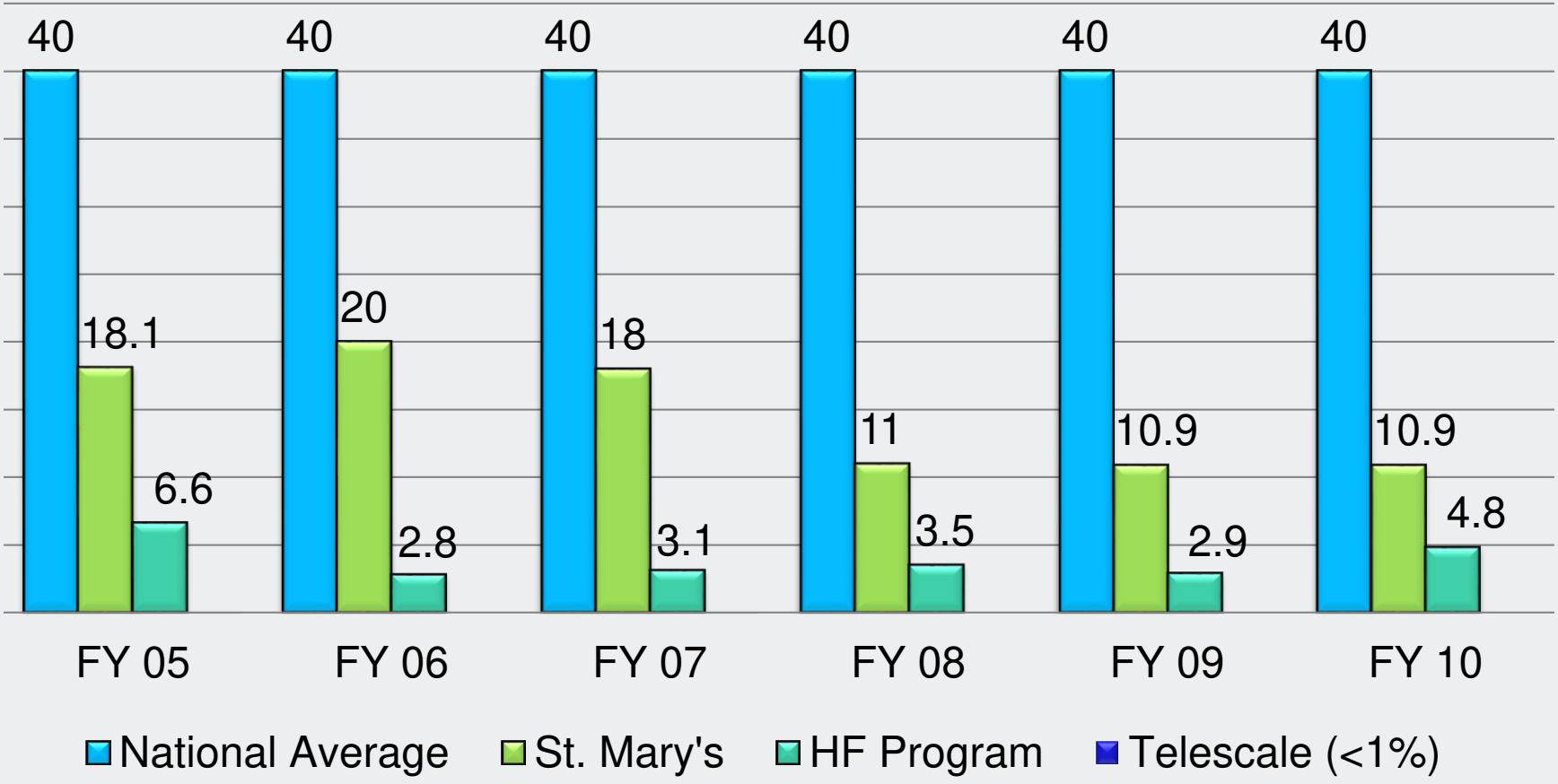
Daily Wt
Trigger Wt
Max Allowed
Min Wt

Current Wt Parameters (lbs):
Trigger: 154
Max: 151
Min: 148

Missed Days:
H = Hospital
E = ER
V = Vacation
O = Other
NA = Did Not Report



6 Month Readmission Rate for HF



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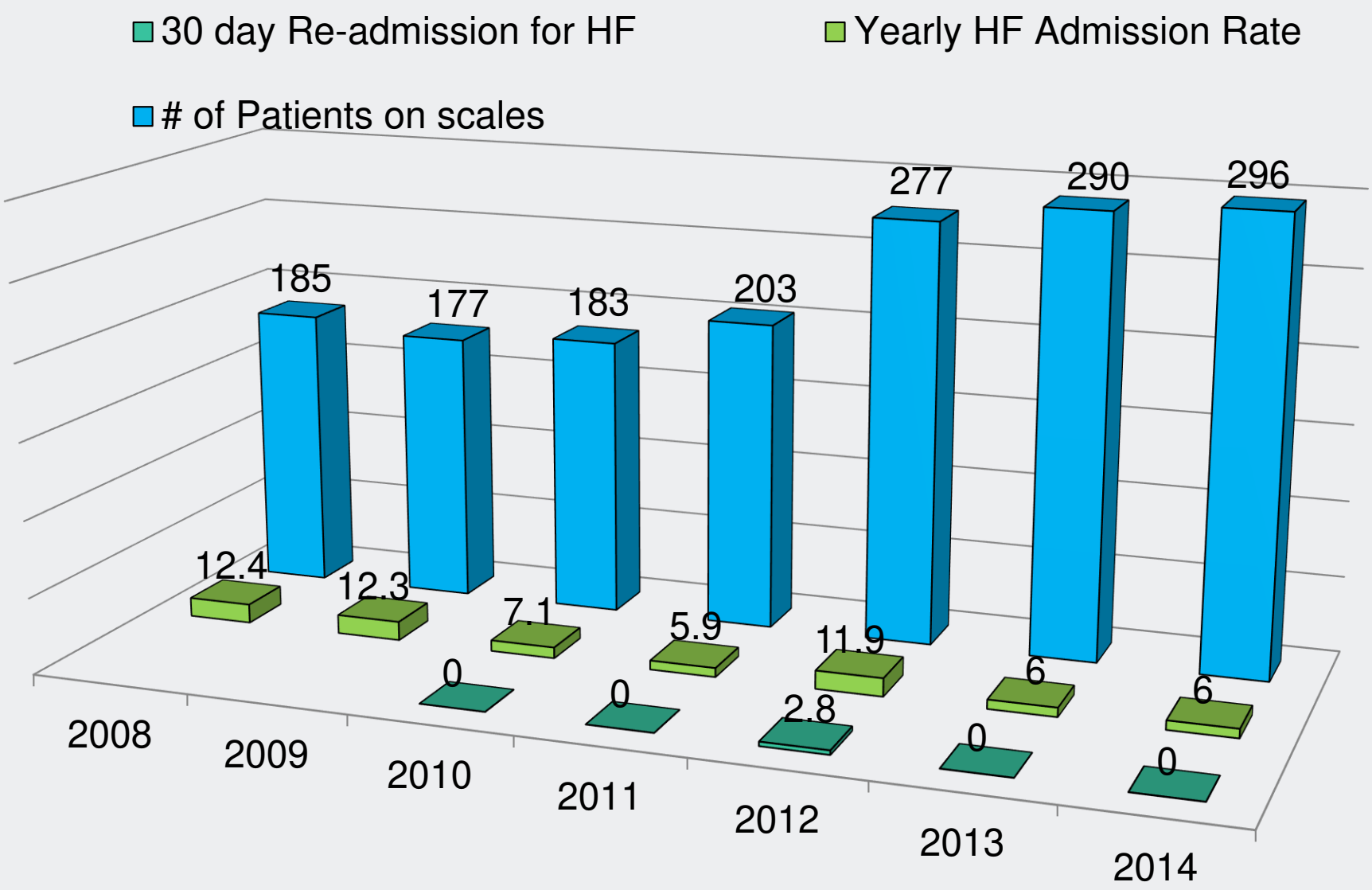

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Essentia East HF Program Data
Fiscal Year ending 6/30/2018

HF Program Patients	2,198
HF Admissions (195 patients had 278)	12.6%
All Cause 30 Day Readmissions (38 patients)	13.7%
HF 30 Day Readmissions (23 patients)	8.3%

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Essentia East HF Program Data
Last 12 months ending 3/31/2019

HF Program Patients	2,397
HF Admissions (218 patients had 288)	12.0%
All Cause 30 Day Readmissions (47 patients)	16.3%
HF 30 Day Readmissions (20 patients)	6.9%

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Essentia HF Program Tele-Scale Patients
Last 12 months ending 3/31/2019

HF Program Patients On Tele-Scales (8%) (Sickest of Sick)	191
HF Admissions (48 patients had 73)	25.0%
All Cause 30 Day Readmissions (10 patients)	13.7%
HF 30 Day Readmissions (7 patients)	9.6%

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E-health Next Steps

- Reimbursement for Tele-Monitoring
- Pilot with SNF
- Increase Cardiology Access
- Increase HF Program Access

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Take Home Points

- Model of Program
- Access
- Quality – Equally over entire system
- Decrease Admissions/Readmissions/Mortality

I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel.

Maya Angelou

Essentia Health

Thank you!!

Questions??

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