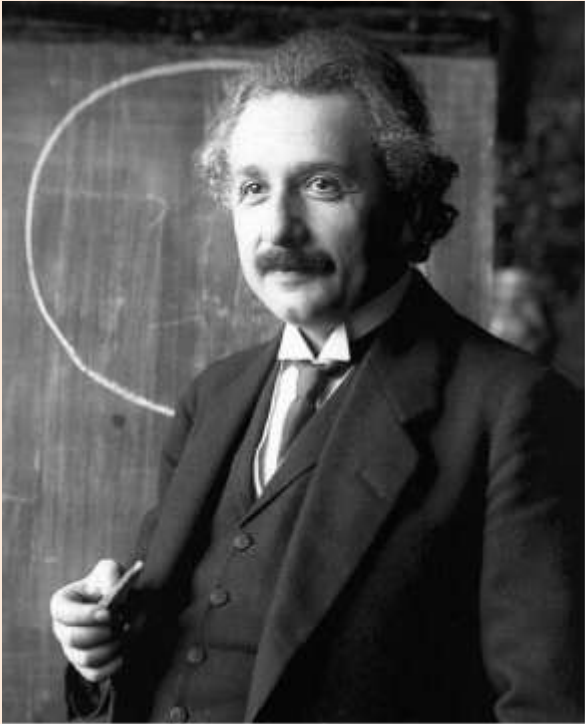


# Communications and Shared Decision Making in HF management

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# Physics



$C = 299,792,458 \text{ m/s}$

## Neutrinos

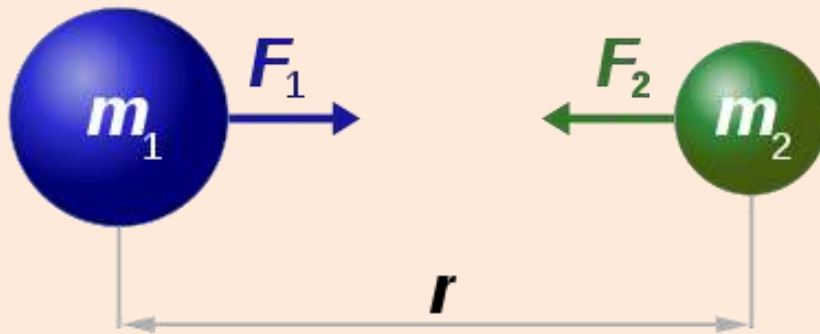
65 billion/sec/cm<sup>2</sup>

299,799,952 m/s

faster than light!

# Gravity

(also related to C)



$$F_1 = F_2 = G \frac{m_1 \times m_2}{r^2}$$

$$G = 6.674 \times 10^{-11} \text{ m}^3/\text{kg}/\text{s}^2$$

$$r = 10,225,069 \text{ feet}$$

$$3,098,506 \text{ meters}$$



# Is gravity reliable?

- Error from 2<sup>nd</sup> to 7<sup>th</sup> floor 0.0782%
- Error from Speed of Light 0.0025%
- Total error in weigh 0.081%
- ...or 2.2 oz in a 170 lb patient

“call if weight increases more than 3 lb in 48 hours”

# HF Assessment

- **How much excess water?**
- **What is the Cardiac Index?**
- **What is the filling pressure?**
- **What is the GFR?**

# Assessing Water

- **Clinical Assessment**
  - **Venous pressure**
  - **Rales**
  - **Ascites**
  - **Edema**
  - **Loss of appetite**
  - **weight**

# Assessing CI

- **Blood pressure**
- **Heart Rate**
- **Skin Perfusion**
- **Serum Creatinine**
- **Urine Output**
- **Mental Function**
- **Exercise Capacity**
- **Fatigue**

# Assessing Filling Pressure

- **Dyspnea**
- **Rales**
- **S3**
- **Exercise Capacity**

# Self Assessment

ITS MY HEALTHFILE

Sign Out

Wednesday December 15, 2004  
10: 16 PM

- Message Board
- Send Info
- Chart Review
- Trends
- Meds
- Labs
- Messages
- Education

## SEND INFORMATION

<b>Date of the Measurements</b>	Month December	Day 15	Year 2004	<b>Time of the Measurements</b>	Hour 10	Minute 00	AM/PM PM
<b>Your Weight</b>	162			<b>Your Pulse</b>	67		
<b>Your Systolic Pressure</b>	127			<b>Steps per Day</b>	0		
<b>Your Diastolic Pressure</b>	79						

Have you noticed any changes in:

- Exercise Tolerance
- Breathing Comfort
- Nighttime Breathing
- Swelling of Feet
- Palpitations

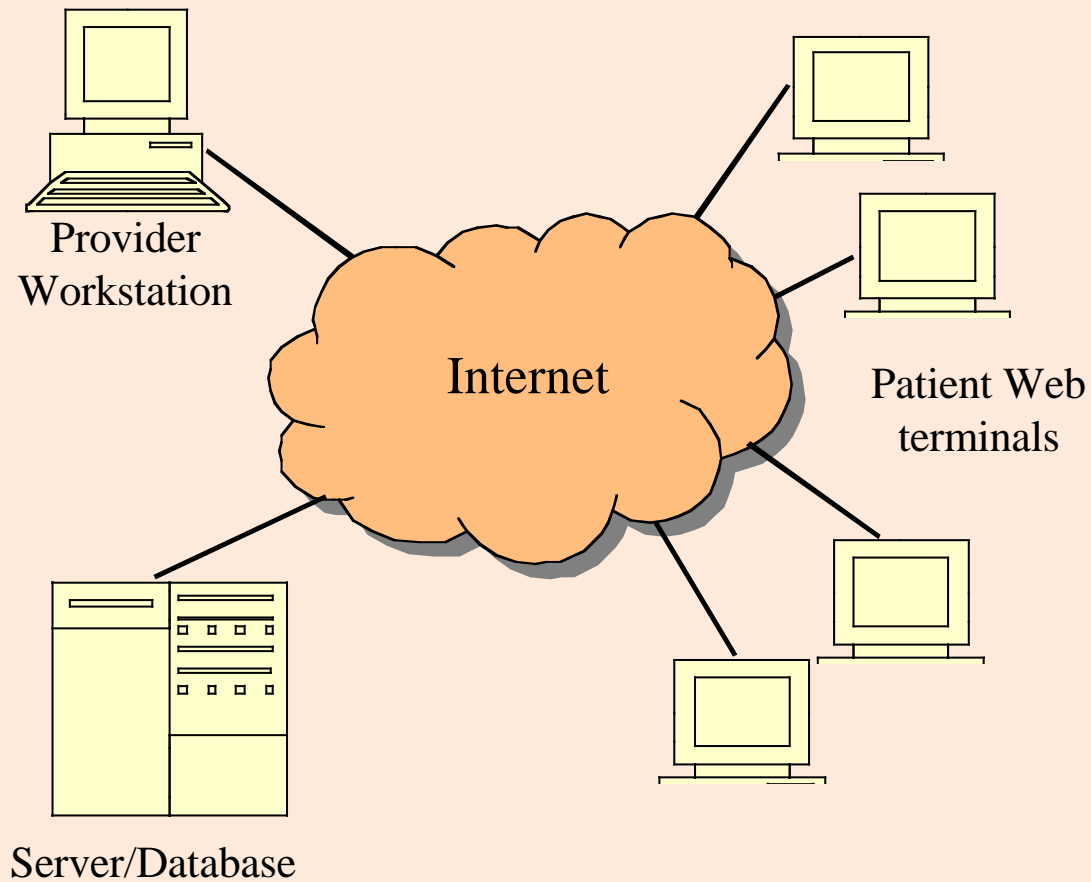
Include a message:

Add Info

Information Sent During this Login Session

Date	Time	Weight	Pulse	Blood Pressure	Steps per Day	Symptoms	Message	
12/15/2004	10:00 PM	162	67	127/79	0	0	no	Edit

# Self Reporting



	<b>Control (n=24)</b>	<b>Telemedicine (n=24)</b>
<b>Initial Clinical Status</b>		
BMI	32 ± 13	30 ± 7
Sys. Blood Pressure	119 ± 18	98 ± 7
Dias. Blood Pressure	70 ± 7	62 ± 3
Ejection Fraction (%)	27 ± 16	24 ± 18
<b>NYHA</b>		
Class II	43%	42%
Class III	52%	58%
Class IV	5%	0%
<b>CMP Etiology</b>		
Ischemic	43%	39%
Dilated	38%	56%
Others	19%	5%

## **Symptom reports**

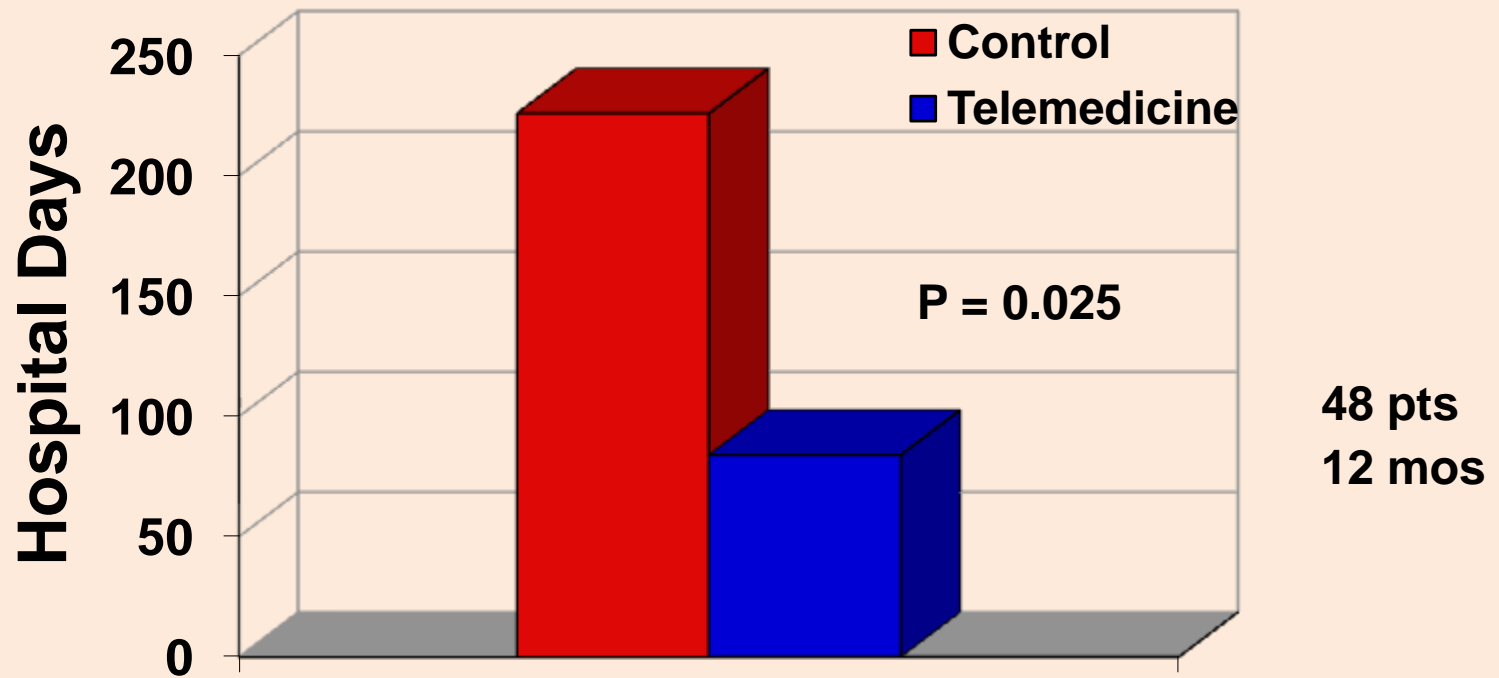
- 50% reported dyspnea on exertion
- 6% reported paroxysmal nocturnal dyspnea
- 39% reported exercise intolerance
- 22% reported edema
- 11% reported palpitations

# Messages

	Total	#/week	Ave/pt/wk
Patient messages	1887	36	1.5
Text + data	721	14	0.6
Data only	1166	22	0.9
Provider messages	1887	36	1.5
Generic message	1250	24	1.0
Tailored message	637	12	0.5

	Control (n=24)	Telemedicine (n=24)
Clinic phone calls	193	143
Scheduled clinic visits	94	78
Unscheduled clinic visits	13	13
ED visits	10	3*
Hospitalizations	40	23*

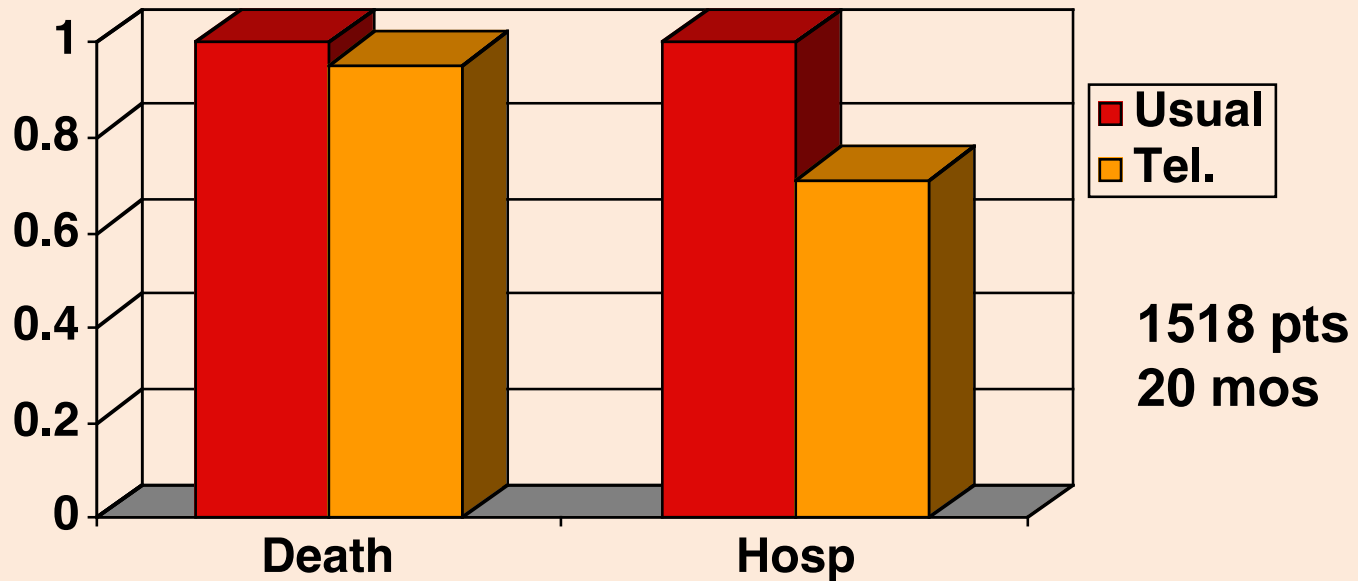
\* P < 0.025



Kashem, A, Droogan, MT, Santamore WP, Wald JW, Bove AA. Journal of Cardiac Failure 2008; 14:121-126

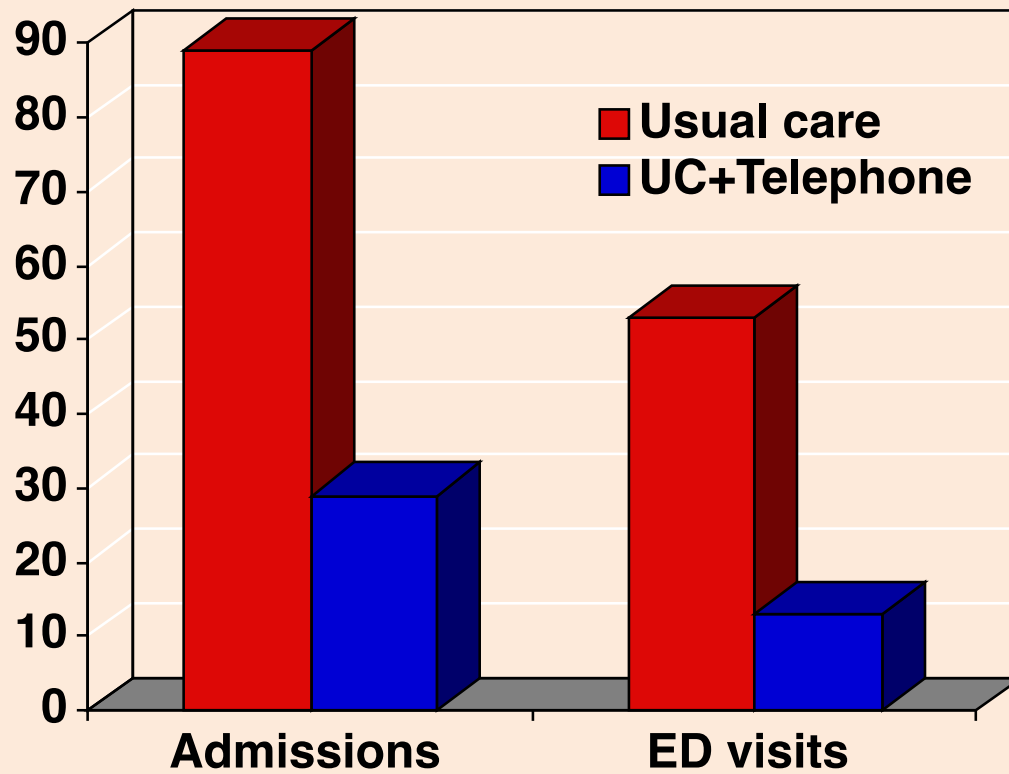
# Telephone

## Usual Care vs. Telephone Intervention



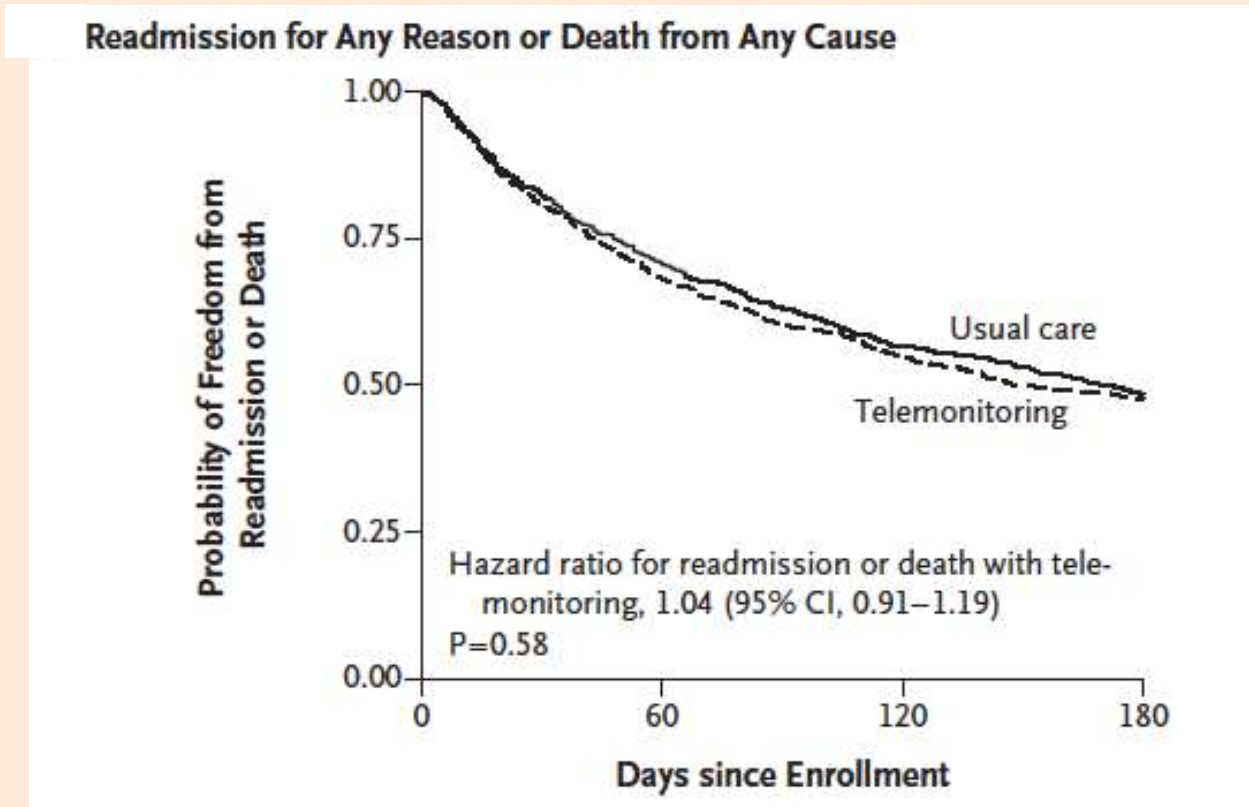
Grancelli H, Varini S, Ferrante D, Schwartzman R, Zambrano C, Soifer S, Nul D, Doval H; GESICA Investigators. J Card Fail. 2003 Jun;9(3):172-9.

# Telephone



**47 pts**  
**20 mos**

# Automated Telephone



1653 patients  
6 months

# Concepts

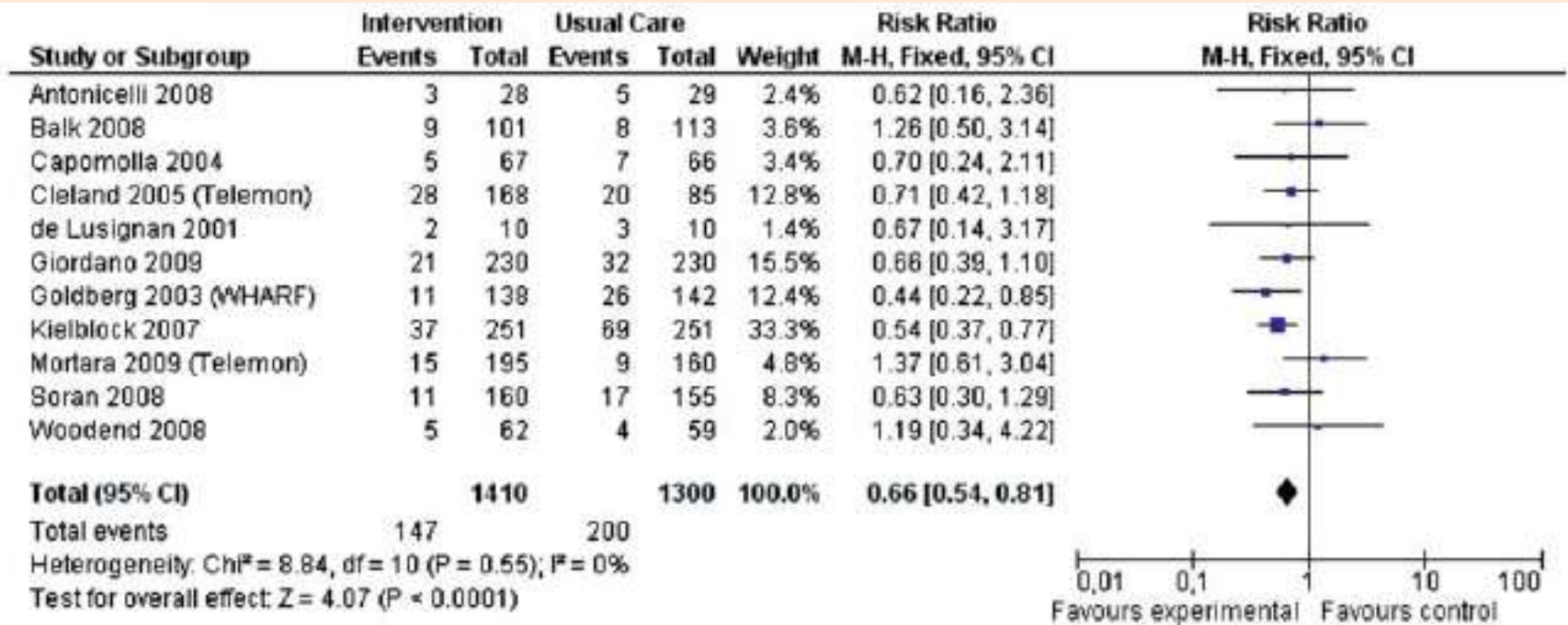
“Telemonitoring needs to focus on patients’ self-care instead of reporting data. Given the progressive nature of chronic heart failure and the need for extensive management of the illness, **it is important that professionals and patients develop a partnership** to achieve commonly agreed-on goals.”

# Concepts

“...well-designed home telemonitoring programs that used more advanced forms of technology to support patient education and health care for patients with congestive heart failure have been shown to be successful in reducing unnecessary hospitalizations. These systems require daily, real-time monitoring of physiological data, direct patient feedback and coaching, and a **high level of patient–clinician interaction** to achieve positive results.”

Everett W. N Engl J Med 2011;364;11

# Telemonitoring and all cause Mortality



# Conclusions

- Self Assessment works if based on accepted physiologic principles
- Any reporting system will not work without linking the patient with a trained provider
- Patient provider interaction does work but depends on frequent communication and a reasonable degree of health literacy

# Conclusions

- Costs can be minimized with use of a well designed communication system that incorporates patient self assessment, frequent provider-patient interaction and a health literate patient.

