Congestive Heart Failure (CHF)
Telemedicine/Telemonitoring

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Objectives

• Congestive Heart Failure (CHF) background, prevalence, and current treatment
• Current uses for telemonitoring of patients with CHF
• Clinical relevance on telemonitoring for patients with CHF
Prevalence

- 5.7 million Americans
- 23 million worldwide
- 300,000 deaths annually
- Risk Factors: coronary heart disease, heart attack, high blood pressure, diabetes, smoking, high fat diet, sedentary lifestyle, obesity
Symptoms

• Fatigue
• Swelling in extremities
• Shortness of breath
• Orthopnea
• Weight gain
Diagnostics

• ECG
• Echocardiogram
• MRI
• Stress Tests
• Blood Tests - BNP
Common Treatment for CHF

• ACE Inhibitors ("pril"), Beta-Blockers ("olol"), Diuretics
• Reduction sodium intake
• Increase physical activity
Telemedicine & Telemonitoring Advances

• Nebraska Psychiatric Institute - 1955.
  ○ Used a closed-Circuit TV to monitor patients.
• Has evolved as a field to address access to care issues for a wide range of specialities.
• Today, telemedicine is categorized in 3 groups:
  ○ Real-time video
  ○ Store & Forward
  ○ Home monitoring
Advantages of Telemedicine

• Improves health service delivery in medically underserved areas in both rural and urban settings.
• Enables remote interactions among providers and between providers and patients.
• Allows patient's the opportunity to save money.
Impact of Home-Based, Supervised Exercise on CHF

• The study investigates the effects of a 12 month home-based exercise program had on perceived functional capacity, physical activity, and knowledge of CHF in elderly people.

• The researchers report that home-based supervised exercise of CHF is feasible; and at the 12 month follow-up, the intervention group has a statistical significant difference in standing index when compared to the control group.

• No statistical significant difference otherwise, but patients reported improvements in perceived functional capacity, positively rated the supervised exercise program, & additional contact with the provider.
Telemonitoring Across Post-Acute Care Continuum

• Patients (~81 y.o.) with mild to severe HF were monitored with wireless sensors for continuous monitoring as well as auscultation at both SNF and at home

• HF physicians were available by appointment for video consultations once the patient was home

• Telemonitoring lead to a clinically significant drop in rehospitalization rates (29% lower; 17% to 24%)

• 7 of 8 patients who were rehospitalized had severe HF symptoms
Effect of Care Management and Telehealth: A Longitudinal Analysis Using Medicare

- Patient's (~77 y.o.) with congestive heart failure were enrolled in the Health Buddy Program (HBP) which integrated a telehealth system with care management.
- Mortality, inpatient admissions, hospitals days, and emergency department visits were measured.
- The HBP lead to 15% lower risk-adjusted all-cause mortality and reductions in the number of quarterly inpatient admissions.
- No relationship was found between HBP and ER use or number of hospital days for participants who were hospitalized.
The Health Benefits of a 12-Week Home-Based Interval Training Cardiac Rehabilitation Program in Patients With Heart Failure

• 40 pts with HF split into control and exercise group
• Exercise intervals were individualized per patient
  – Alternating high intensity work with active rest
  – Strengthening exercises
  – Portable HR monitors, pedometers, periodic calls from medical professional
• Significant improvements in...
  – Aerobic power, endurance capacity, ventilatory threshold, quality of life
Effect of Telemonitoring on Re-Admission in Patients with Congestive Heart Failure

• Systematic review posing the question: "In adult patients with CHF, what is the effect of home telemonitoring compared to usual care on all-cause hospital re-admission within 30 days of discharge?"

• Telemonitoring may reduce the possibility of re-admission

• The inclusion of this practice for a CHF protocol still needs more research on the consistency of effectiveness.
Clinical Takeway

• Telemonitoring can improve many areas of treatment of HF by physical therapists
  – Improved functional disease related measures
  – Decreased costs
  – Increased compliance
  – Improved self-esteem
References


