Management of CardioMEMS Patients: A Nursing Perspective

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THE GROWING PROBLEM OF HEART FAILURE

Heart failure is a serious disease with major implications in the United States.

EVERY HEART FAILURE HOSPITALIZATION INCREASES YOUR PATIENT’S RISK FOR DEATH\(^1\)

6.2 MILLION
people have heart failure\(^2\)

1 IN 9 DEATHS
each year from heart failure\(^3\)

$30.7 BILLION
annual cost of heart failure\(^4\)

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4. CDC. Heart Failure Fact Sheet.
CURRENT HF MANAGEMENT: HOW WELL DO CURRENT TOOLS KEEP PATIENTS STABLE AND OUT OF THE HOSPITAL?

90% of HF hospitalizations due to symptoms of pulmonary congestion

AT DISCHARGE
Post-hoc analysis of 463 acute decompensated HF patients from DOSE-HF and CARRESS-HF

40% moderate to severe congestion
60% absent or mild congestion

AT 60-DAY FOLLOW-UP

41% of previously decongested patients had severe or partial re-congestion

GOAL OF HEART FAILURE MANAGEMENT:
SLOW DISEASE PROGRESSION BY PREVENTING DECOMPENSATION

EACH EVENT ACCELERATES DOWNWARD SPIRAL OF MYOCARDIAL FUNCTION
With each subsequent HF-related admission, the patient leaves the hospital with a further decrease in cardiac function.

THE GOAL:
Maintain fluid volume to avoid acute decompensation and hospitalization

HF HOSPITALIZATION is a valid endpoint for measuring decompensation

CURRENT HF MANAGEMENT:
How can we get ahead of symptoms associated with acute decompensation?

PROACTIVE AND ACTIONABLE
Real-time remote monitoring shows changes in PA pressure, an early indicator of worsening heart failure.

The PA sensor is inserted via right heart catheterization.

Patient takes daily sensor reading from the comfort of their home.

Data wirelessly transmitted to Merlin.net, a secure website that easily presents PA pressure data to inform proactive treatment modifications.

Clinician reviews data and contacts patient, as necessary.
PATIENT SELECTION

Indicated for patients with NYHA Class III HF symptoms who have had a Heart Failure Hospitalization within the last 12 months.

Contraindicated in patients who are unable to take DAPT for one-month post implant

In addition, patients with the following may not be appropriate:

• Unable to make med changes over the phone
• Active infection
• Recurrent PE/DVT
• Dialysis
• Congenital HD or mechanical right heart valves
• Known coagulation disorders
• CRT implant in last 3 months
• Chest circumference >35
• COMPLIANCE
PRE-IMPLANT EDUCATION

• Introduce education in the in-patient setting when able
• Heart failure education
• How the device works
• What is expected post implant (daily readings, medication changes over the phone, follow up labs)
• Goal: improve quality of life, reduce HF hospitalizations and clinic visits
• How the device is implanted
TARGET LOCATION FOR CARDIOMEMS SENSOR
POST IMPLANT EDUCATION

• Importance of daily readings
• Continued HF education
• Low sodium diet/fluid restriction adherence
• Medication optimization
• PAD “goal” and PAD “Thresholds”
• PAD trends
DETERMINING TREATMENT PLAN POST-CARDIOMEMS IMPLANT

PAD is used as surrogate for the PCWP.
• Is there a PAD-PCWP gradient?

Review Implant RHC Hemodynamics
• Is there evidence of intravascular volume?
• Is PH present?

Renal Function

Blood Pressure
GDMT Optimization Post Implant

PA Systolic
PA Diastolic
PA Mean
Linear (PA Diastolic)
PAD Trend after Farxiga Start
EXERCISE
INDUCED
PULMONARY
HYPERTENSION
ANOTHER BENEFIT OF CARDIOMEMS: Arrythmia Detection

Bigeminy PVCs
Afib

Afib

Aflutter
CHAMPION TRIAL

TRIAL PURPOSE
Evaluate the safety and efficacy of the CardioMEMS™ HF System in reducing heart failure related hospitalizations in NYHA Class III patients

TRIAL DESIGN

PART 1: RANDOMIZED ACCESS


PART 2: OPEN ACCESS

Total Duration: 21 Months
Patients managed with PA pressure data had a significant relative risk reduction as compared to the control group.
CHAMPION TRIAL SUB-ANALYSIS:
Patients With Pulmonary Hypertension

PURPOSE
Evaluate the effect of PA pressure monitoring in HF patients with comorbid pulmonary hypertension (PHTN, mean PA pressure > 25mmHg, n = 314).

51% reduction
in HF hospitalizations for HF patients with PHTN who were managed with PA pressure compared to SOC.

30% reduction
in HF hospitalizations for PHTN patients with TPG > 15 who were managed with PA pressure compared to SOC.

Reduction in HF hospitalizations for HF patients with comorbid pulmonary hypertension.

HEART FAILURE HOSPITALIZATION REDUCTION

U.S. Post-Approval Study

Heart Failure Hospitalization Rate (events/phy/year)

- 1-yr Pre-implant: 1.25
- 1-yr Post-implant: 0.54

57% reduction

0.43 (0.39, 0.47)
P < 0.0001
SIGNIFICANT REDUCTION IN HF HOSPITALIZATIONS REGARDLESS OF EJECTION FRACTION

CONCLUSION

• CardioMEMS has proven to decrease HF hospitalizations
• CardioMEMS is a TRENDING TOOL—Don’t treat daily change
• Remember symptoms often occur later. Weights, symptoms not reliable
• Remote monitoring is the future!
REFERENCES

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