What could your HF patients’ trends tell you?

Condition improving:
- Increased thoracic impedance
- Increased patient activity
- Increased heart rate variability
- Maximized BiV pacing
- Decreased ven. heart rate during atrial burden
- Decreased ven. heart rate at rest and increased separation of ven. HR during day and night

Condition worsening:
- Increased atrial burden
- Increased ven. heart rate during atrial burden
- Increased PVC/hour
- Increased ven. heart rate at rest and reduced separation of ven. HR during day and night
- Increased ven. atr. Arrhythmia episodes and therapy
- Decrease in BiV pacing
- Decreased heart rate variability
- Decreased patient activity
- Decreased thoracic impedance

References:

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Atrial burden*
- Underappreciated AT episodes may be an important trigger for acute pulmonary congestion/volume overload.
- Atrial tachyarrhythmia episodes are often asymptomatic, and symptoms commonly attributed to AF are poorly associated with atrial tachyarrhythmias.
- AT/AF episodes lasting longer than one day are independently associated with embolic events.

Ven. heart rate during atrial burden
- Poor rate control with atrial tachyarrhythmias is associated with earlier time to first hospitalization.
- Poor rate control is the leading reason for inappropriate ICD shocks and reduced CRT pacing.

CRT pacing
- Reduced CRT pacing is associated with a higher risk of HF hospitalization and all-cause mortality.
- Low CRT pacing (<92%) is an indicator for a worsening HF condition.

Mean ven. heart rate
- Improved chronic heart rate profile reflects response to CRT therapy.
- Day and night resting heart rates increase, and the difference between them narrows with worsening HF.

Mean PVC/h*
- Frequent (>30/h) ventricular extrasystoles (PVC/h) are a significant predictor of cardiovascular events.
- Presence of frequent PVC/h and low heart rate variability is a predictor for sudden cardiac death.
- High frequency of PVC/h points to a worsening HF condition.

TI
- Increase in intrathoracic fluid can correlate with downward thoracic impedance trends.

Patient activity
- Activity level measured by an implantable cardiac device may decrease significantly in the days leading up to a HF hospitalization.
- Increased activity levels measured by an implantable device may correlate with an improvement in the patient’s HF status.

Heart rate variability
- Low HRV (<50 ms) is associated with increased risk for HF hospitalizations and mortality. Conversely, patients with HRV (≥100 ms) are at significantly lower risk.
- Decreasing HRV was observed up to three weeks in advance of a HF hospitalization utilizing an implantable device.

Mean heart rate
- In 70% of the rehospitalization events, the retrospective analysis of transmitted data via Home Monitoring® revealed an increase in mean heart rate at rest and in mean heart rate over 24 h within seven days preceding hospitalization.

Mean PVC/h
- Frequency of PVC/h and low heart rate variability is a predictor for sudden cardiac death.
- High frequency of PVC/h points to a worsening HF condition.

Note: Only the mean ven. heart rate during atrial burden parameter is programmable.