

# Disclosures

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# Integrating Innovative Technologies into the Restructuring of HF and Device Services Post-COVID: Optimising Care for HF and Device patients

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# Introduction



**Patient with HF**



**Cardiac Device**



Aligning HF and CIED care pathways to optimise care for patients

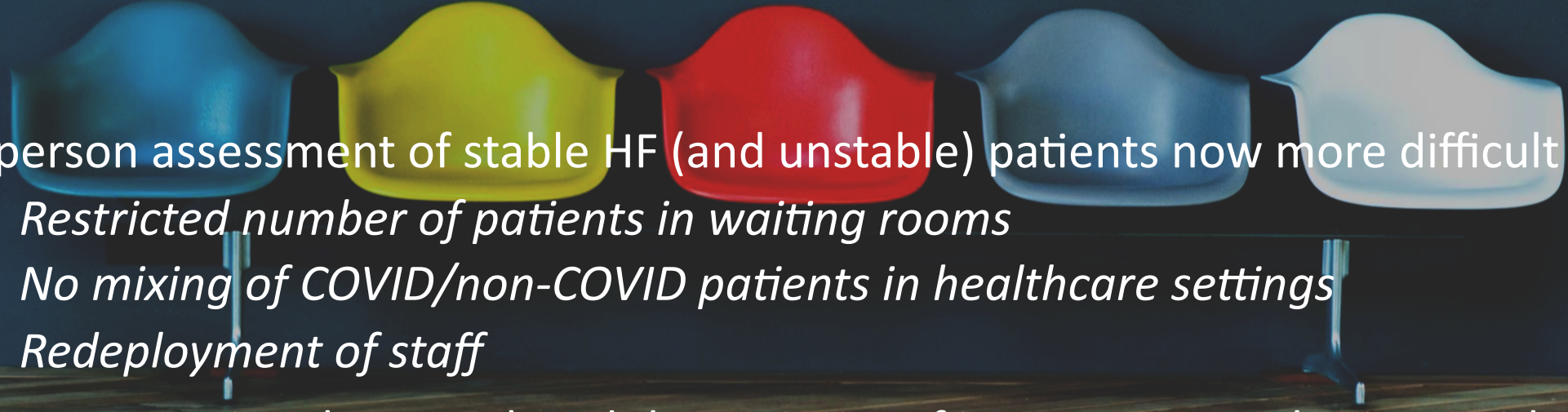
# Background

- COVID has radically changed the way that we deliver health care, and for patients with HF and devices its legacy is expected to be long-lasting.
  - *Widespread adoption of RFU across all device types (including low-power devices)*
  - *Accelerated adoption of **alert-based monitoring** to complement the RFU of patients*
- HF patients with CIEDs are a distinct patient group
  - *require **close monitoring and frequent management** aimed at avoiding or managing periods of disease instability- a particular challenge during COVID.*



# Problem

## Restructuring of heart failure services since COVID-19

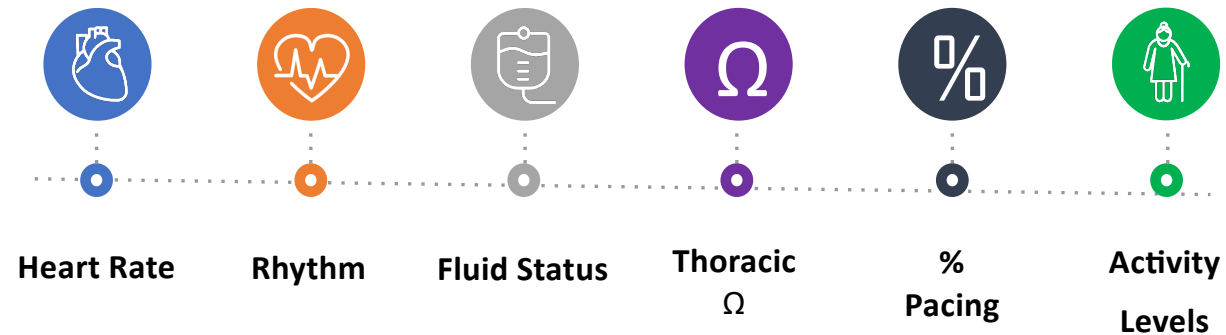
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- In person assessment of stable HF (and unstable) patients now more difficult to deliver
    - *Restricted number of patients in waiting rooms*
    - *No mixing of COVID/non-COVID patients in healthcare settings*
    - *Redeployment of staff*
  - Many HF services have replaced the majority of in person consultations with phone call-based assessments
    - *Imprecision with over-the-phone virtual assessment*
    - *Lack of clinical data that is ordinarily assessed during in-person assessments*

# A Potential Solution

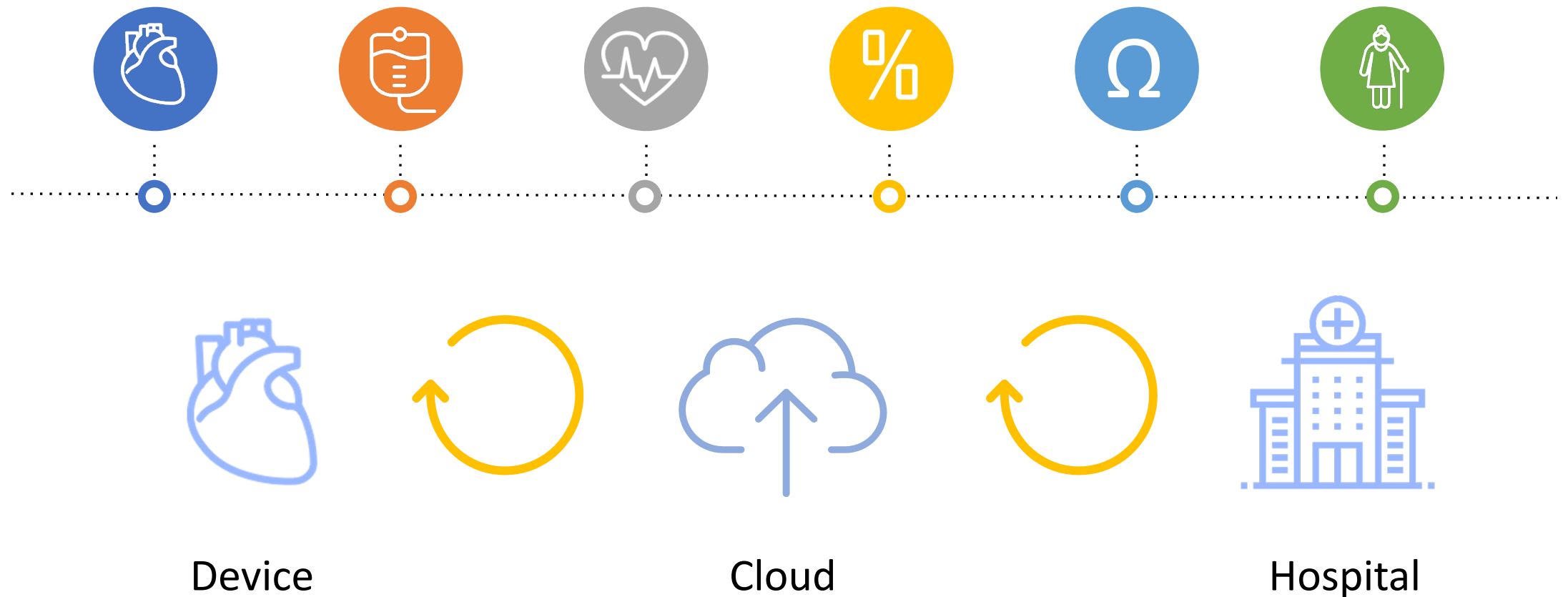
## Triage-HF Plus Remote Monitoring Care Pathway

- The challenges posed by COVID-19 have prompted us to think differently about how we deliver care for patients
  - Device FU transitions to RFU, but what about HF care?
- NICE guidelines advocate comprehensive review of patients to include assessment of functional class (symptoms), fluid status, cardiac rhythm, renal function and a review of medication
  - *At least 6 monthly for stable HF patients, more frequent for those who are unstable or recently decompensated*

- Modern CIEDs include enough sensors to closely replicate most in-person measurements– but currently this rich data source is under-utilised.

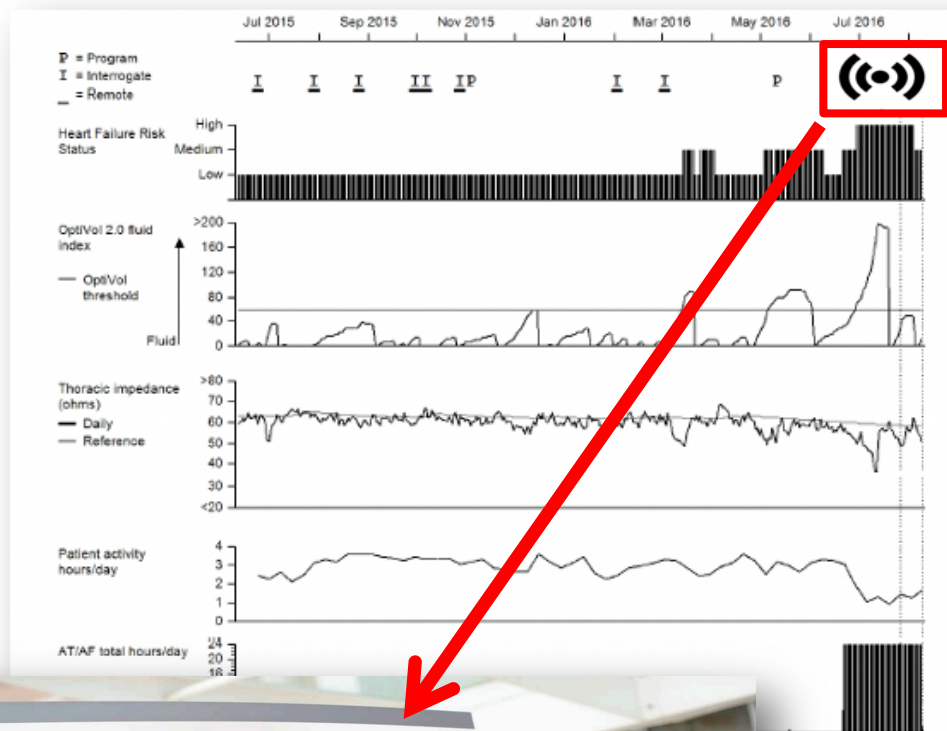


# Pairing devices with remote patient monitoring enables information to flow unimpeded

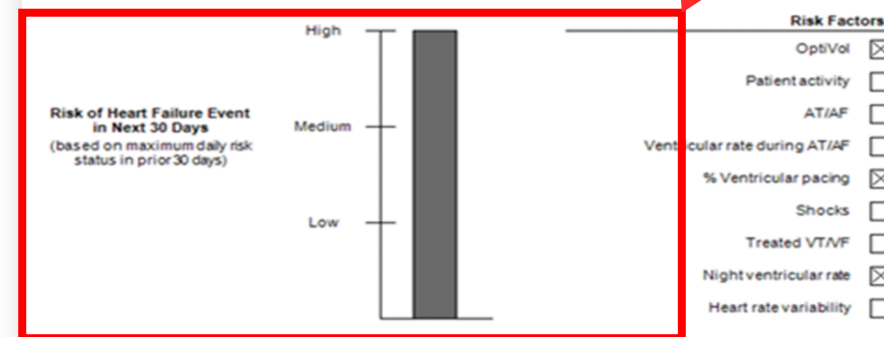
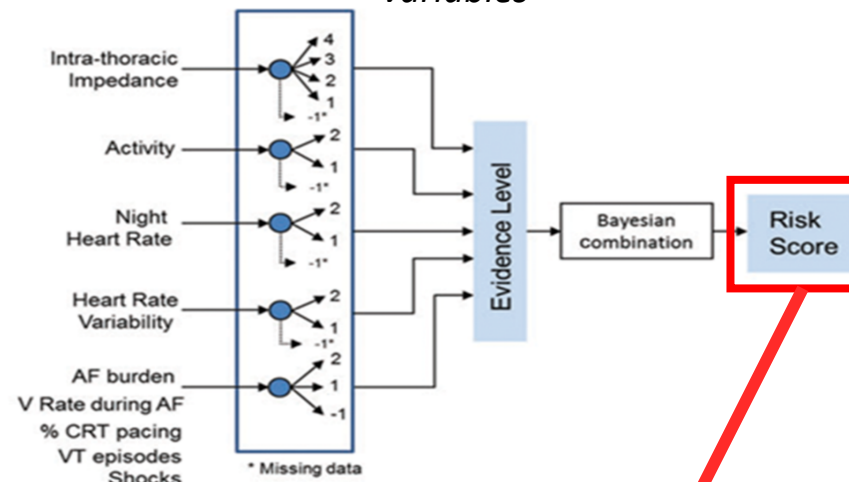




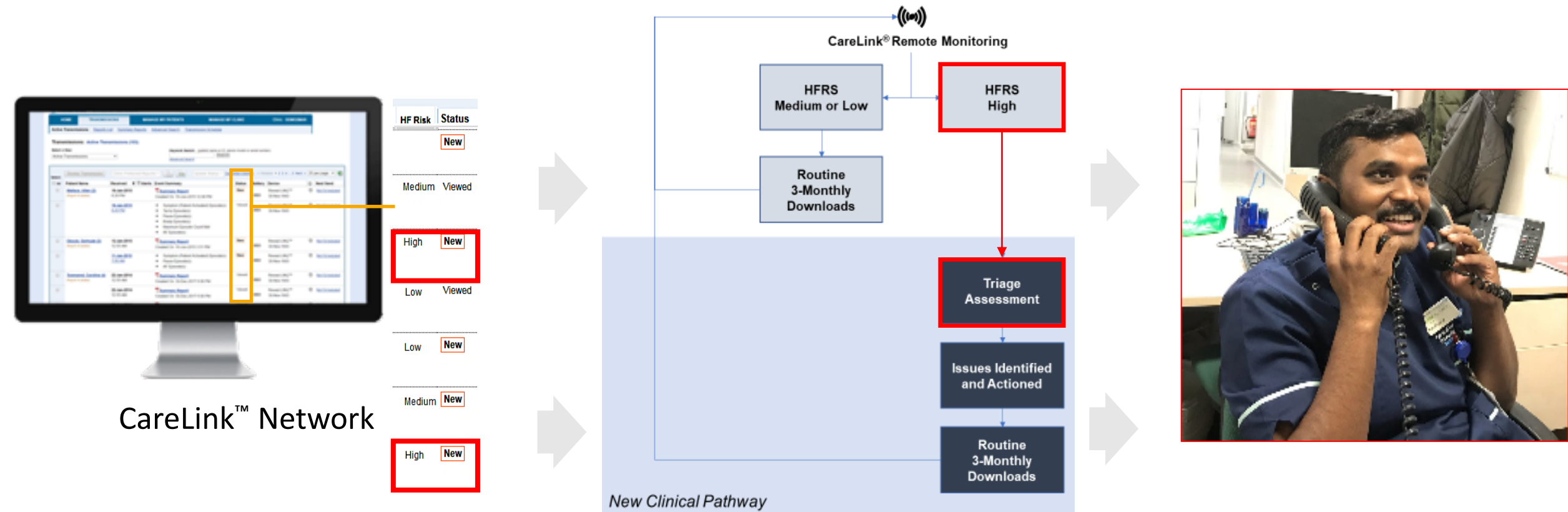
# Triage-Heart Failure Risk Status (HFRS) Algorithm



## Daily HF related diagnostic variables



# Triage-HF plus remote monitoring clinical care pathway

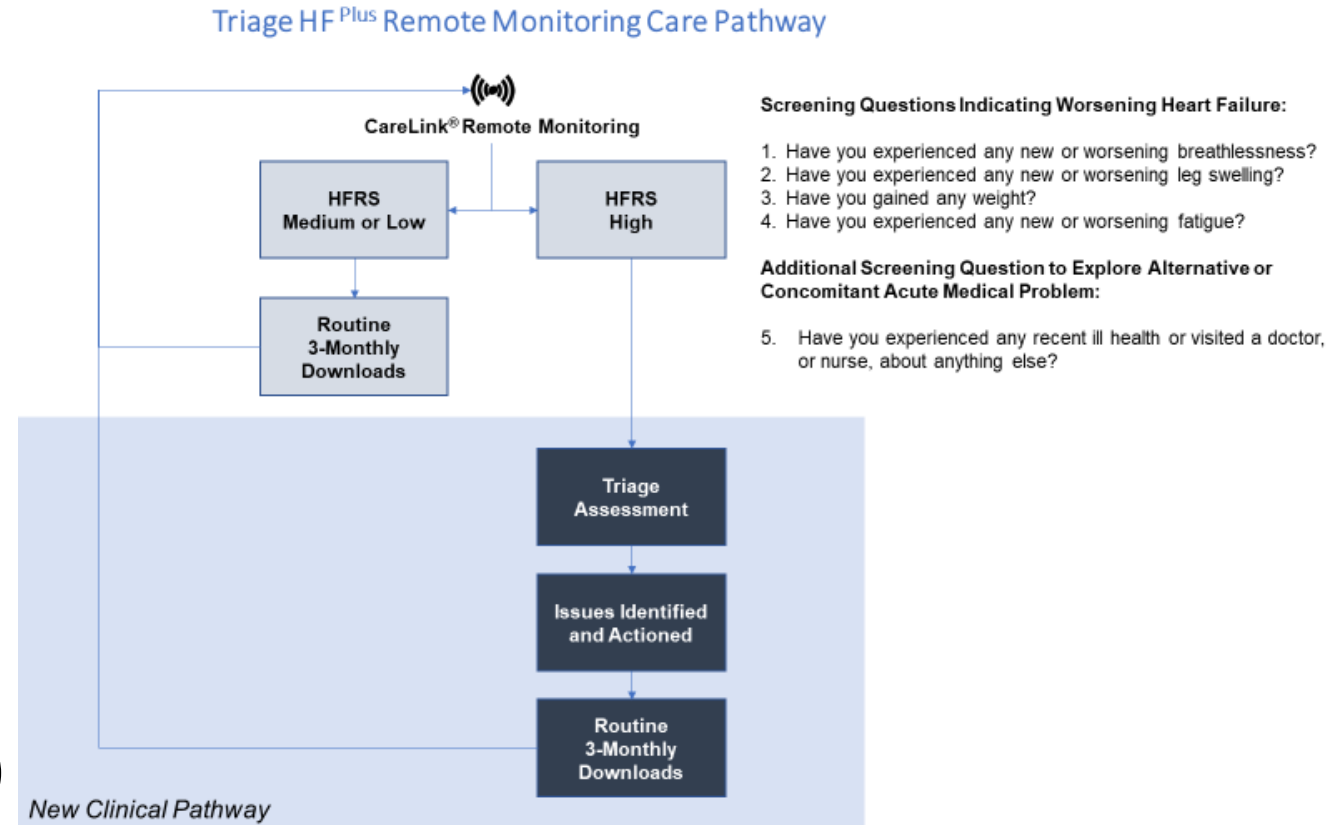


- Est. c.2016
- Nurse-led
- Patient centric
- Transformed the way we deliver care. c.1,000 patients enrolled

# Case Presentation

## Triage-HF Plus Remote Monitoring Care Pathway

- A 69-yr-old man with a history of severe LV dysfunction
  - cardiac resynchronisation therapy defibrillator (CRT-D)
  - NYHA III
  - on optimal medical therapy (triple therapy)
  - Furosemide 40mg OD
- In 2019 the patient was enrolled into an innovative clinical pathway (Triage-HF Plus)
- Any “High” Triage-HFRS transmission triggers a phone-call based consultation with the hospital HF team

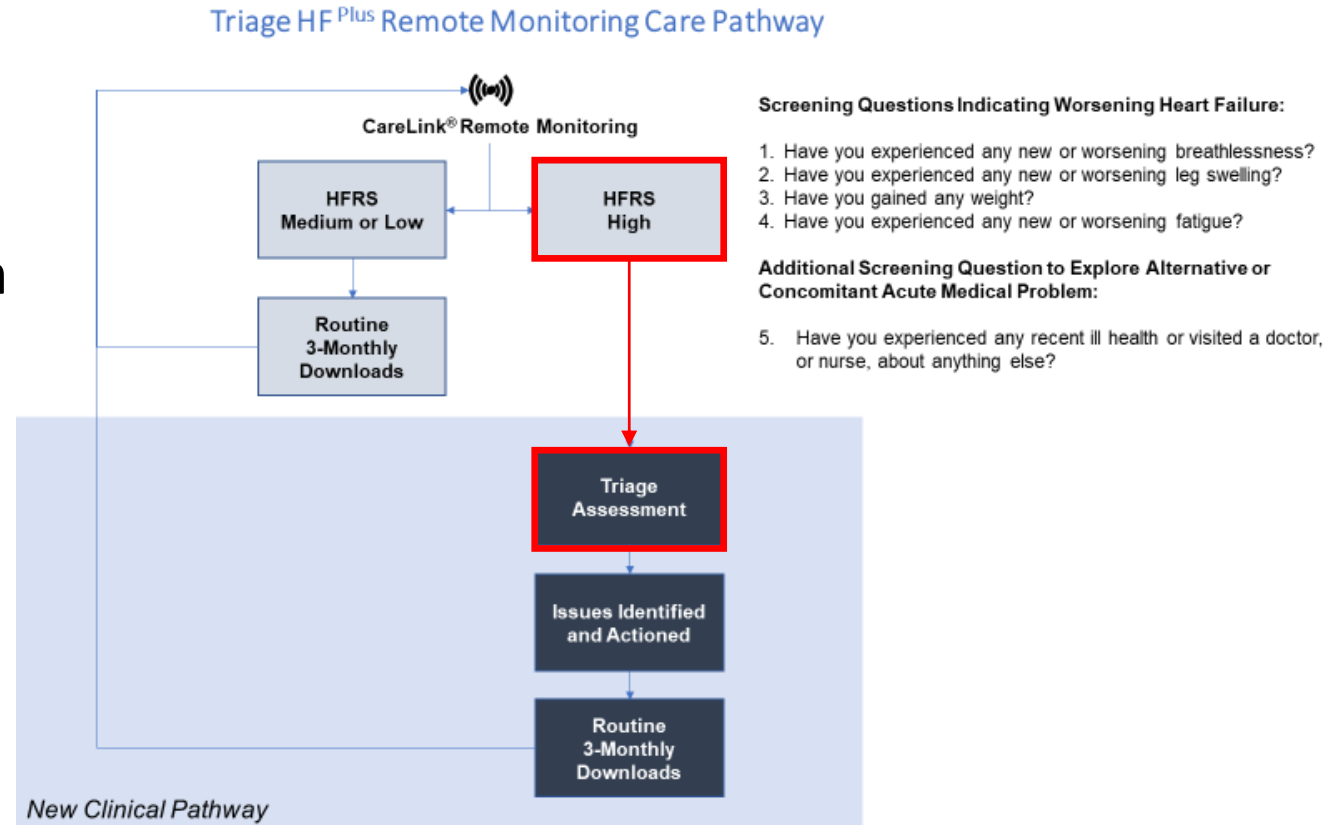


**Figure 1. Organisational Outline and Basic Interview/Screening Questions for Triage-HFRS Status.** High Triage-HFRS prompts a telephone triage assessment by a HF nurse (light blue box). In case of symptoms consistent with worsening HF, actions consistent with clinical guidelines are undertaken.

# Case Presentation

## Triage-HF Plus Remote Monitoring Care Pathway

- In February 2020, device-based physiological measurements signaled a clinical change, culminating in a High Triage-HFRS remote transmission on March 4
- During phone-call-based assessment the patient reported worsening functional status, increasing shortness of breath and peripheral oedema



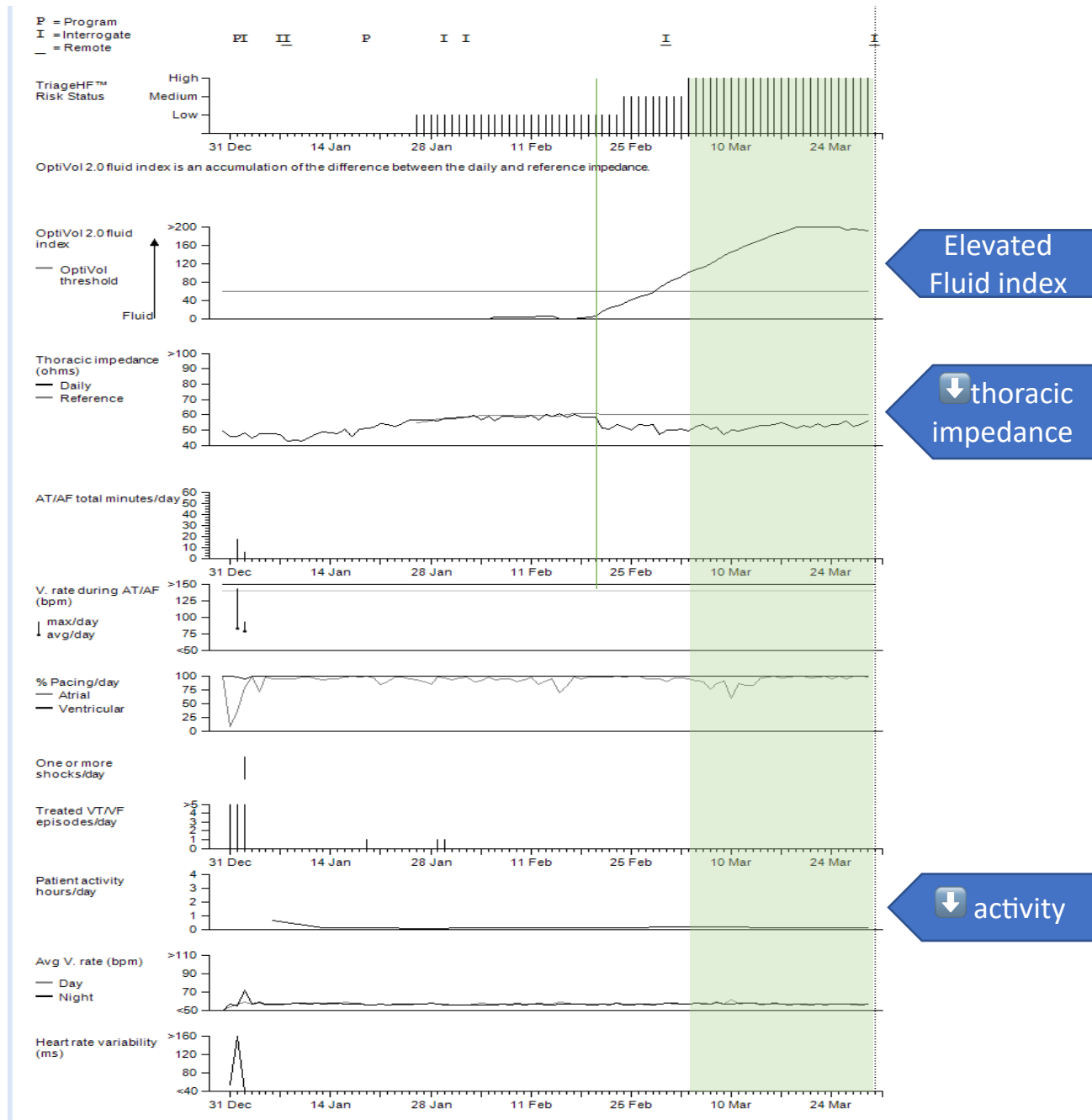
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# Case Presentation

## Triage-HF Plus

## Remote Monitoring Care Pathway

- Review of transmitted CIED health-related data showed changes starting around February 20, culminating in transition to a “High” Triage-HFRS a few weeks later (March 4)
- Markers of volume overload, correlating with shortness of breath and worsening functional status, were observed
- Physical activity levels are chronically low
- Diuretic was increased (Furosemide 80mg OD) and given IV iron to address iron deficiency

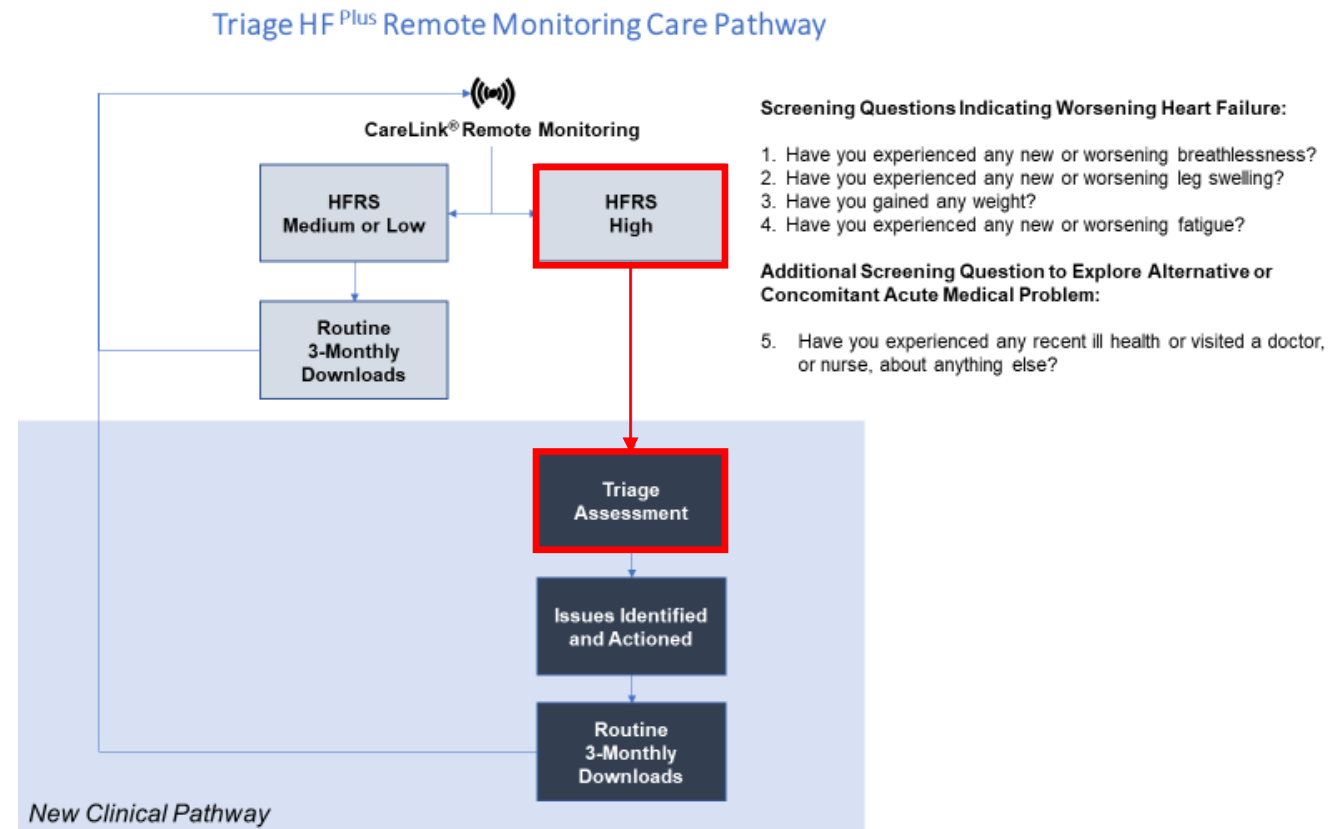




# Case Presentation: REMOTE MONITORING, MANAGEMENT AND FOLLOW-UP

## Triage-HF Plus Remote Monitoring Care Pathway

- An 82-yr-old man with severe LV dysfunction (NYHA III), on optimal medical therapy & with a CRT-D was enrolled in the Triage-HF Plus remote monitoring clinical pathway.
- In February 2020, device-based physiological measurements signaled a clinical change, culminating in a High Triage-HFRS remote transmission on March 11 (Mid –COVID)
- Over-the-phone assessment identified the patient to have increased shortness of breath consistent with worsening HF status.

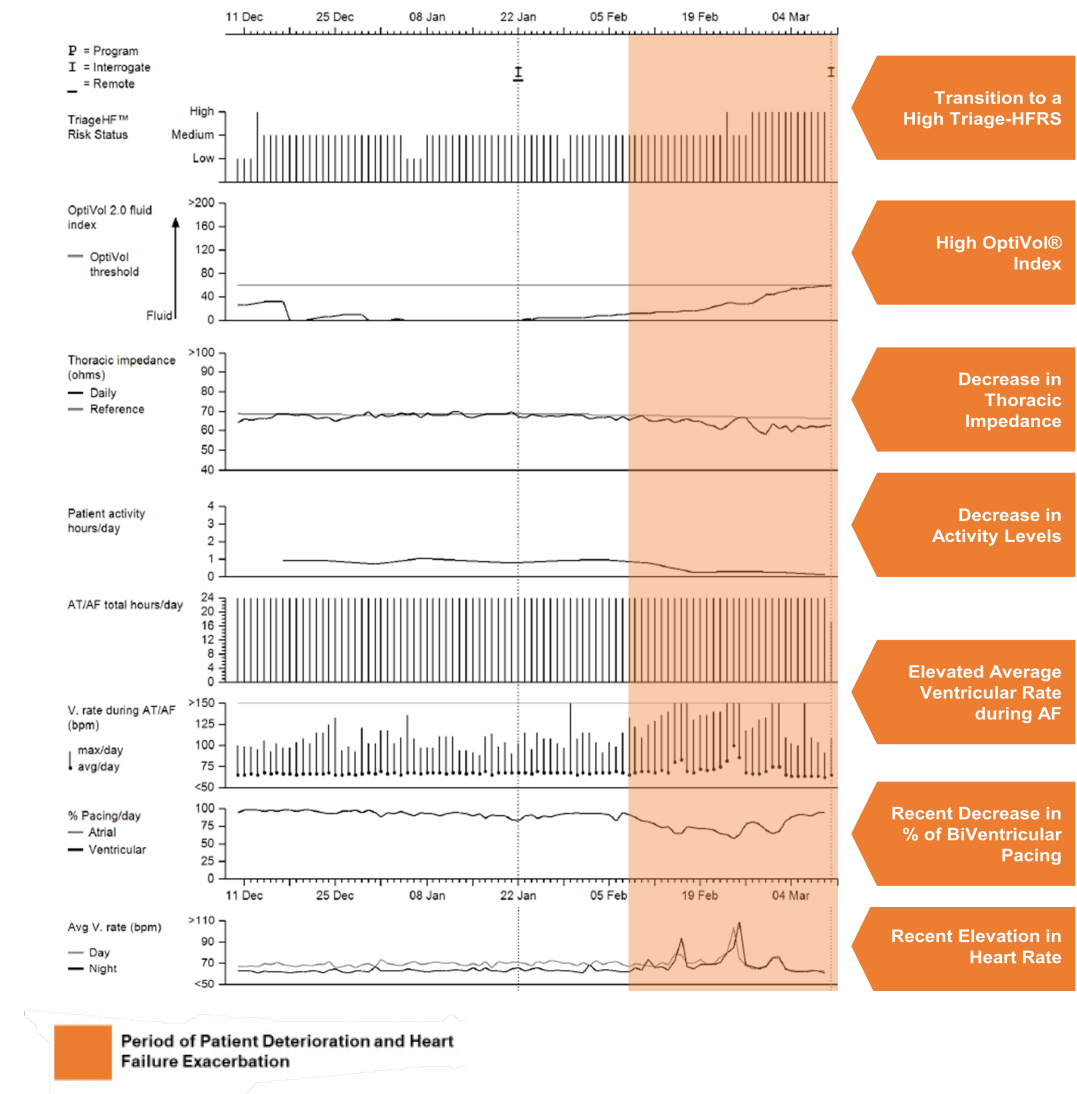


**Figure 1. Organisational Outline and Basic Interview/Screening Questions for Triage-HFRS Status.** High Triage-HFRS prompts a telephone triage assessment by a HF nurse (light blue box). In case of symptoms consistent with worsening HF, actions consistent with clinical guidelines are undertaken.

# Case Presentation

## Triage-HF Plus Remote Monitoring Care Pathway

- Review of transmitted CIED data showed changes starting around February 7 (Fig. 2, orange), culminating in transition to a “High” Triage-HFRS a few weeks later.
- Markers of excessive fluid, reduced patient activity, suboptimal ventricular rate-control and biventricular pacing  $\leq 75\%$ , correlating with his worsening functional status, were observed.



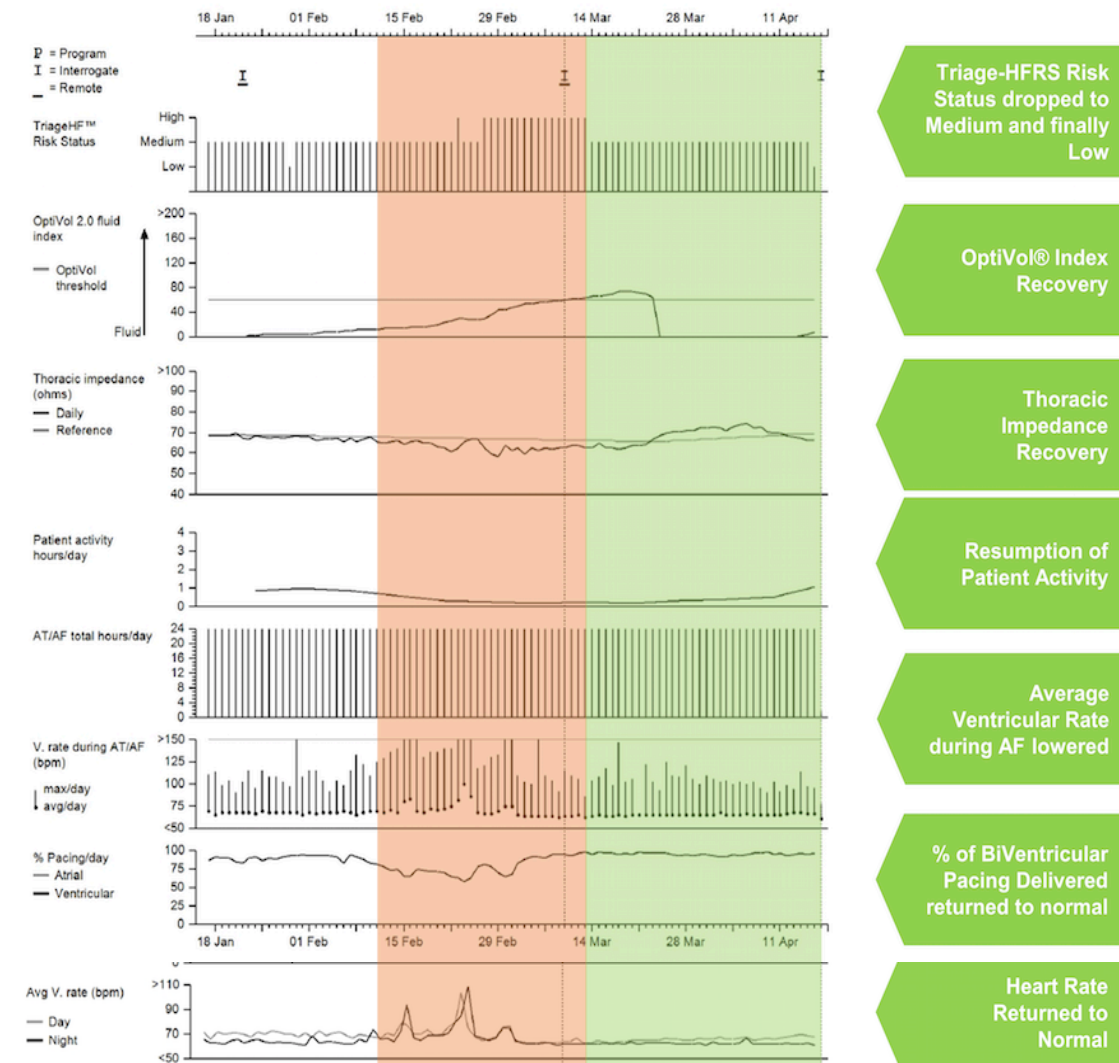
# Case Presentation

## Triage-HF Plus Remote Monitoring Care Pathway

- As the patient reported symptoms in keeping with worsening HF, and a diuretic was initially prescribed.
- The prescription was issued remotely by the community pharmacist & home-delivered, avoiding face-to-face review and delivered care in an entirely remote manner.
- Follow-up over-the-phone assessment two-weeks later confirmed an improvement.
- In keeping with the improved symptomatic status, repeat remote transmission undertaken on April 18 demonstrated that the patient's HFRS transitioned to a Medium-risk state (Fig. 3).

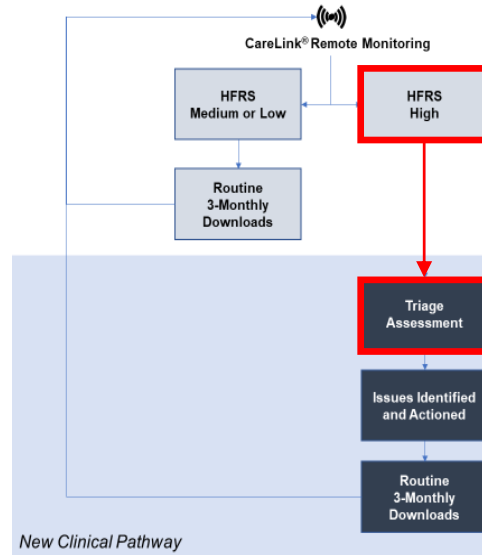
**Figure 3. Follow-up HF Remote Monitoring Management Report.**

This repeat remote transmission illustrates relative improvements in multiple physiological parameters. Transition to Medium-risk state occurred on March 14 and was maintained thereafter.



# Learning Points

- During the COVID-19 pandemic, many HF services are defaulting to telephone assessments in place of usual in-person appointments.
- Many of the things we used to do are difficult in a pandemic, difficult over the phone
  - Telephone assessments alone are limited by the relative paucity of available clinical data
- Modern CIEDs contain enough sensors to be able to replicate most in-person assessments

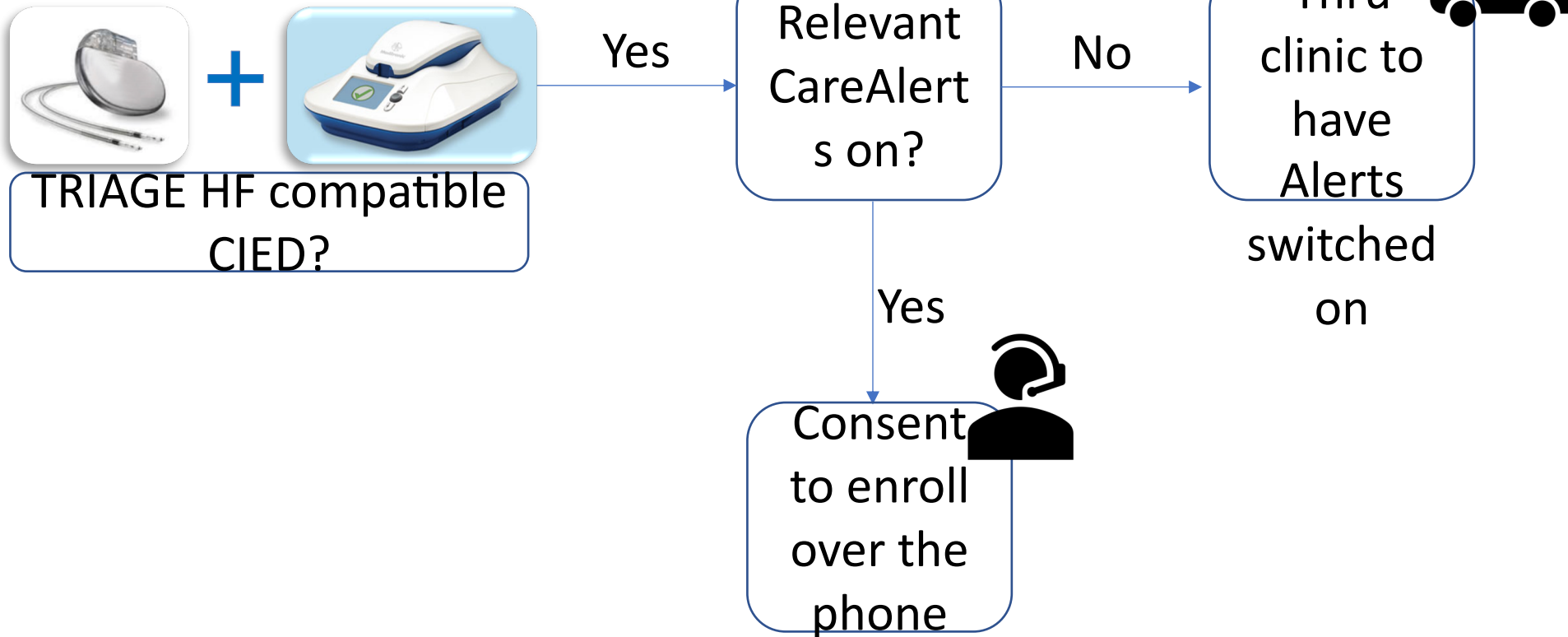


- Contemporary CIEDs facilitate the ability to remotely monitor patients by providing rich physiological data that can help identify patients at elevated risk of decompensation using automated device-generated alerts.



- The rich real-time physiological data provided by CIEDs can also be used to complement virtual phone-call based assessment.

# COVID-Secure: Virtual enrolment of new patients



Thank you for your attention



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