

## Purpose and Rationale

- Urine sodium (UNa) testing provides clinicians with information about a patient's natriuretic response to loop diuretics, which can then inform diuretic dosing and adjustment in patients with acute heart failure (AHF).<sup>1-6</sup>
- The purpose of this evidence-based practice (EBP) project is to implement and evaluate spot UNa testing in AHF patients on telemetry units and to evaluate patient outcomes and nursing knowledge, attitudes, and behaviors associated with this practice change.

## EBP Model

- This Iowa Model of Evidence-Based Practice<sup>7</sup> and Iowa Implementation for Sustainability Framework was used to guide project activities.

## Synthesis of Evidence

- Congestion is a hallmark symptom of AHF, with the majority of patients presenting with associated symptoms such as shortness of breath, weight gain, and edema.<sup>8-10</sup>
- Diuretics, especially loop diuretics, are a mainstay in AHF treatment, as they promote natriuresis (increased sodium excretion by the kidneys).<sup>8-10</sup>
- Measures of decongestion, such as weight trending and intake/output monitoring, can be time consuming and inaccurate.<sup>9, 10</sup>
- Spot UNa testing can provide information about a patient's response to a loop diuretic within hours of loop diuretic administration.<sup>10, 11</sup>
- UNa levels above 70 mmol/dL is associated with increased urine output, greater weight loss, reduced length of stay, reduced readmission rates, and lower mortality without increase in acute kidney injury.<sup>1-6, 10-14</sup>
- The European Society of Cardiology<sup>10</sup> encourages use of UNa to guide diuresis in AHF, while the American Heart Association<sup>9</sup> recommends using UNa in conjunction with other clinical indicators of decongestion.

## Practice Change

- A new order panel was developed to improve ease of ordering spot UNa checks for AHF patients. The order panel contains:
  - An order for an intravenous (IV) loop diuretic bolus and/or infusion.
  - An order for the UNa sample, with instructions for nurses as to when to obtain the sample.
  - Instructions for nursing as to when to notify the provider (UNa < 70 mmol).

## Implementation Strategies

- The Iowa Implementation and Sustainability Framework<sup>7</sup> was used to guide project roll-out.

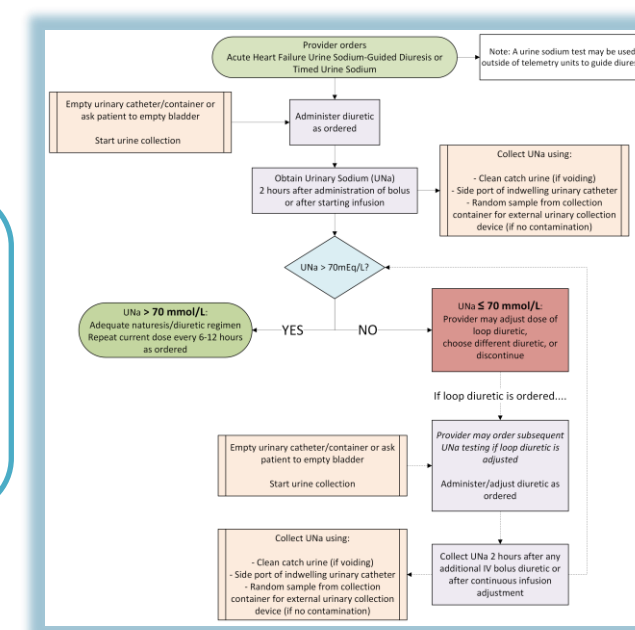
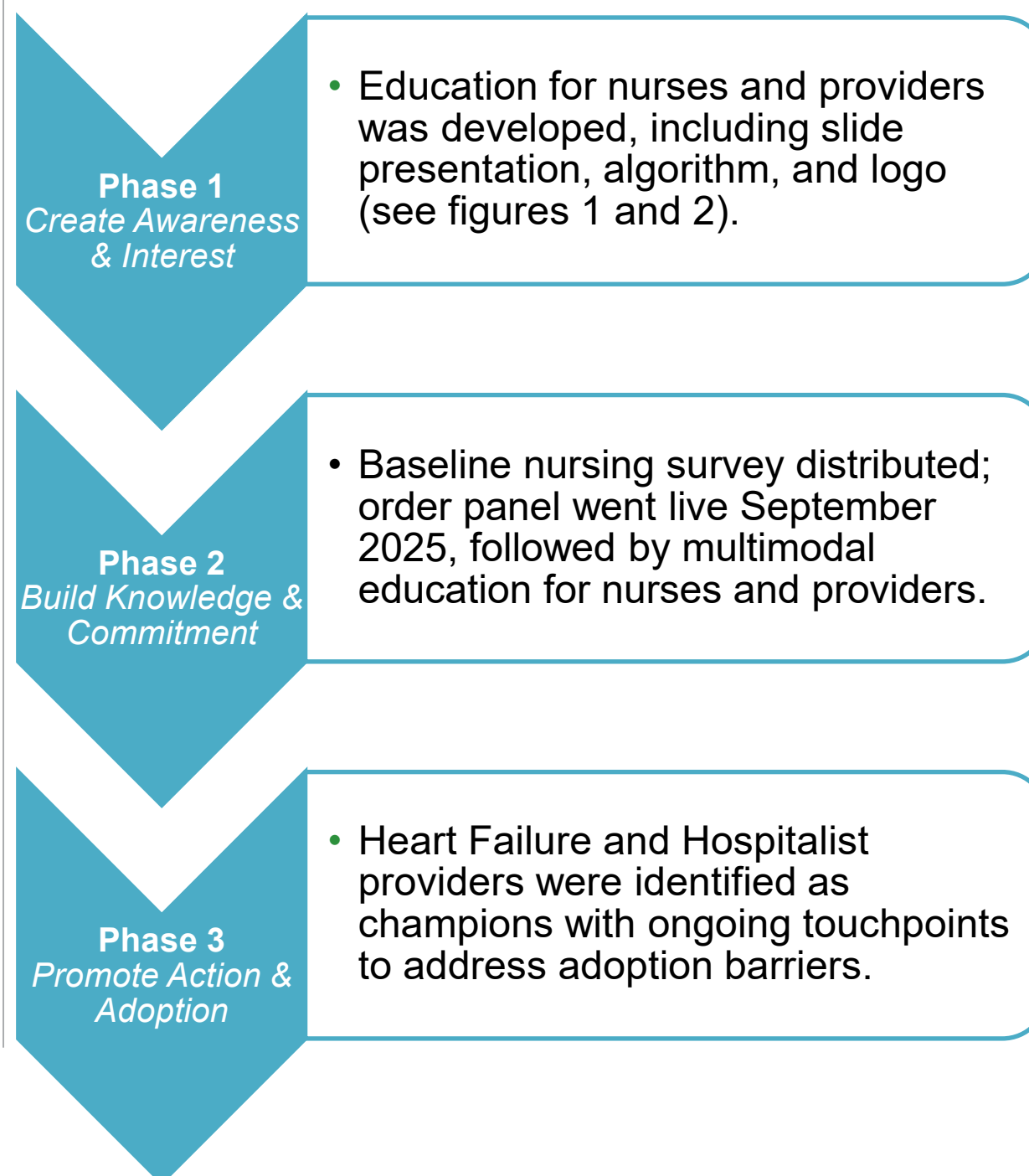


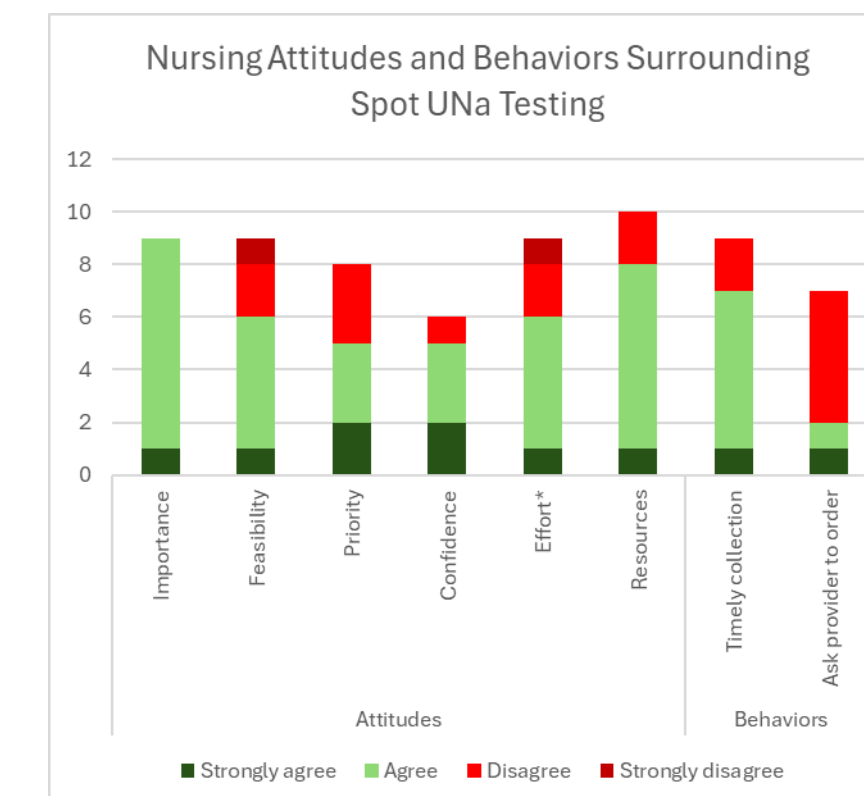
Figure 1. Algorithm for UNa and Associated Nursing Actions



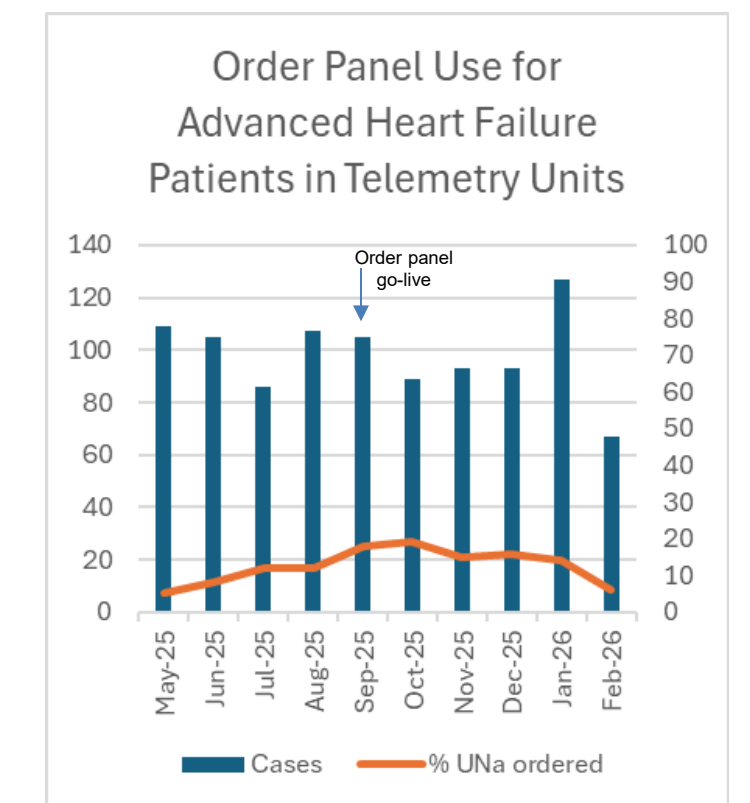
Figure 2. Logo for Nursing Education

## Evaluation

- Telemetry nurses (n=260) were surveyed before go-live and quarterly thereafter; 3-month responses were limited (n=10)
  - Nurses reported that panel was used rarely at baseline and 3 months
  - Knowledge of reportable UNa values increased (62% to 80%)
  - Attitude and behavior responses were generally favorable
- Order panel use on telemetry units for advanced heart failure patients was also collected.



\*negative response indicates low effort (positive attitude)



## Conclusions

- Spot UNa testing following loop diuretic administration may be an effective tool in evaluating patient response.
- UNa order panel and as needed spot UNa testing appears to be in the early phases of adoption.
- Engagement of key stakeholders early in the design process is effective in ensuring that practice changes are acceptable and feasible.

## References

- References, related literature, and contact information may be found using this QR code

