

Sensible Medical Vest Experience at Rochester Regional Health System

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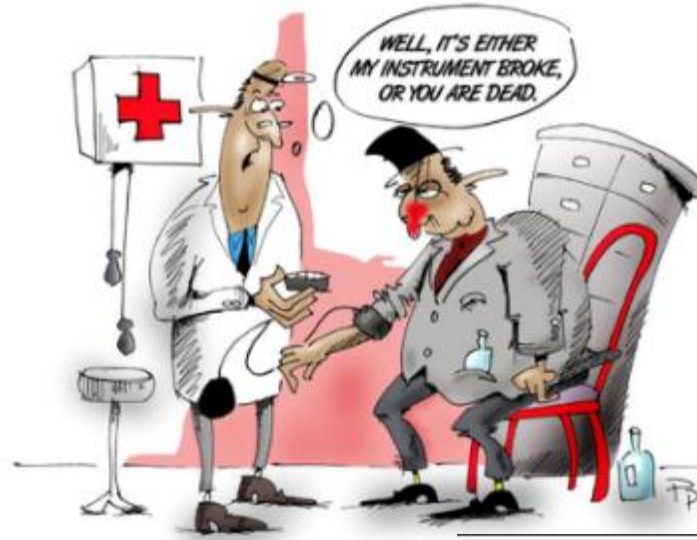


ROCHESTER
REGIONAL HEALTH

Welcome!

- System Overview of Rochester Regional Health System
- Scope of the Problem
- Introduction of the Sensible Medical Vest at RRHS
- Review of our Data and Case Review
- Future Directions

Why do we need such a device?



Why did Rochester Regional Health System Invest in the Vest?

Large Quaternary Care hospital with high volume and high complexity

10th busiest ER in the country

>1200 unique CHF admissions a year

>1000 open heart cases a year

>400 structural heart cases a year (and growing)

....

And only 1 me!



- Our readmission rate for heart failure was >25%
- We were struggling to identify high risk patients
- We did a small audit of one month of readmissions and found
 - The majority of patients were going home on the same dose or less diuretics when they arrived
 - CHF meds were being held at time of discharge (usually due to low bp and/or renal dysfunction)
 - Inconsistent resources being utilized (visiting nurse service, telemedicine, chf follow up)

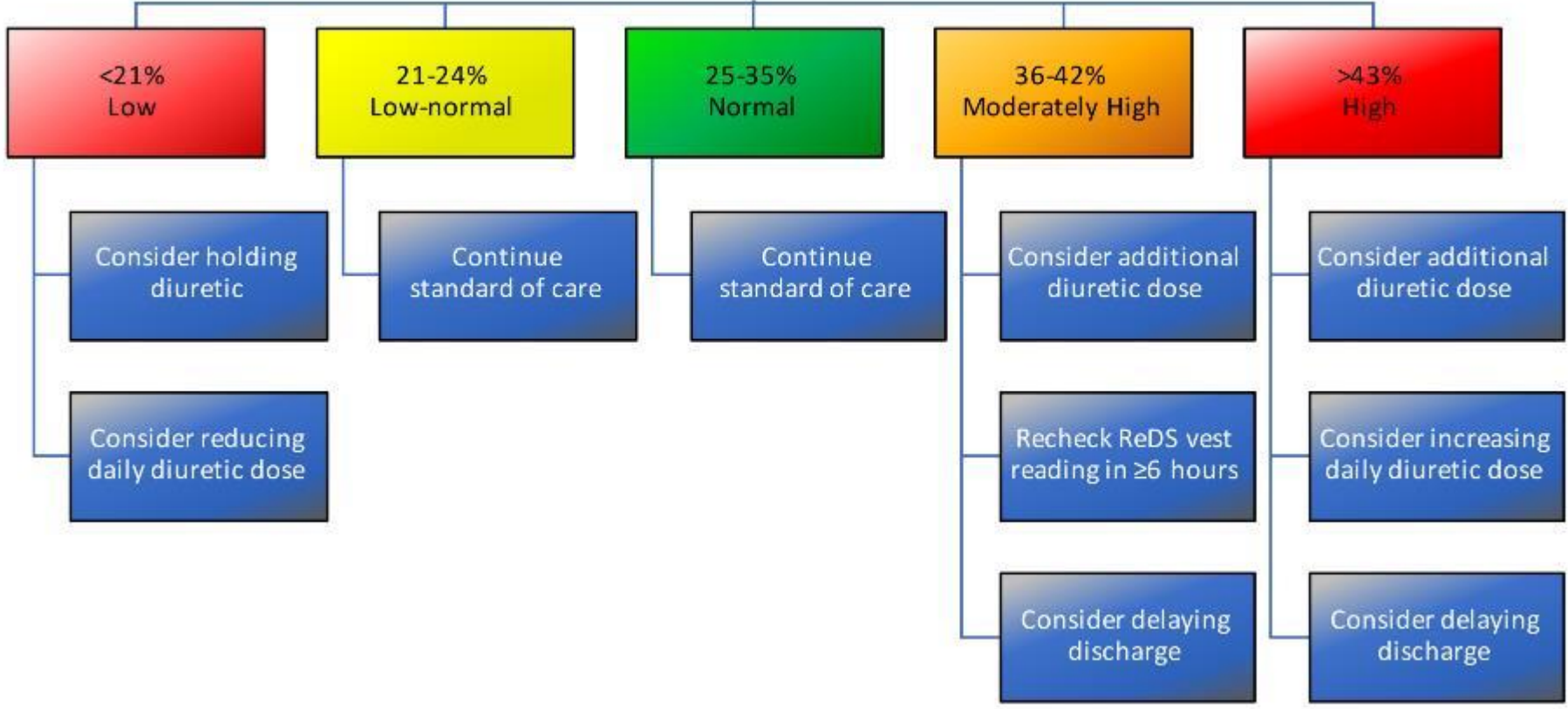
Enter the VEST!



The Roll Out

- We decided to trial a single vest on our cardiac telemetry unit that saw the highest number of heart failure admissions
 - Training for all RN and NA staff on the unit
 - In-service with all the hospitalists and residents regarding the use of the vest and how to utilize the data it provided
 - Implemented a simple algorithm for treatment of “the number”
 - Empowered nurses to perform vest on any patient deemed appropriate
 - (CHF team “placed the order” for any patient)
 - And then we tracked our data!
- **Goal was to obtain a reading within 24 hours of discharge!**

The Algorithm



Case

- Mr. D.
- 58 yo male, ICM, COPD, DM, CKD Stage 3, mostly compliant, but slight changes in diuretic leads to worsening AKI
- Presented with nt-pro-BNP 5486 (when dry/stable, runs 3-3500)
- Baseline creatinine 1.7, on admission 2.1
- Other pertinent labs: Na 131, BUN 37, Hgb 11.1, K 4.5
- Meds: Sacubitril/Valsartan 49/51 q12, Carvedilol 12.5 q12, Aldactone 25 daily, Lasix 40 mg bid
- 4th admission in past 6 months, was just discharged 2 weeks ago

Hospital course

- Responds initially to diuretics, started on IV Lasix 40 bid
- CHF service consulted on Day 3 when Creatinine bumps to 2.3
 - Overnight team received RN call around 530 am with labs→
 - Instructed to hold diuretics and give patient 500 mL bolus
- We see patient, still has +1-2 edema, though lungs sound relatively clear on exam, neck veins are hard to discern, patient still feels lousy
- Team was going to discharge him had creatinine not increased

What should we do?

- A) Continue to hold Lasix and give IVF over course of day @ 75 mL/hr and monitor closely for overload
- B) Hold diuretic, but hold IVF and let patient “equilibrate”
- C) Hold diuretic and RAAS blockade due to worsening renal failure
- D) Disregard hospitalist service and order 80 mg IV Lasix and let the nephrologists deal with this
- E) Obtain an empiric data point on which we can make an educated guess how to proceed

How should we obtain this data?

- A) Draw a nt-pro-BNP
- B) Swan the patient to assess the wedge pressure
- C) Weigh the patient and compare to his “dry weight”
- D) Ask Nephrology what they think
- E) Ask one of our nurse champions to obtain a Sensible Medical Vest reading

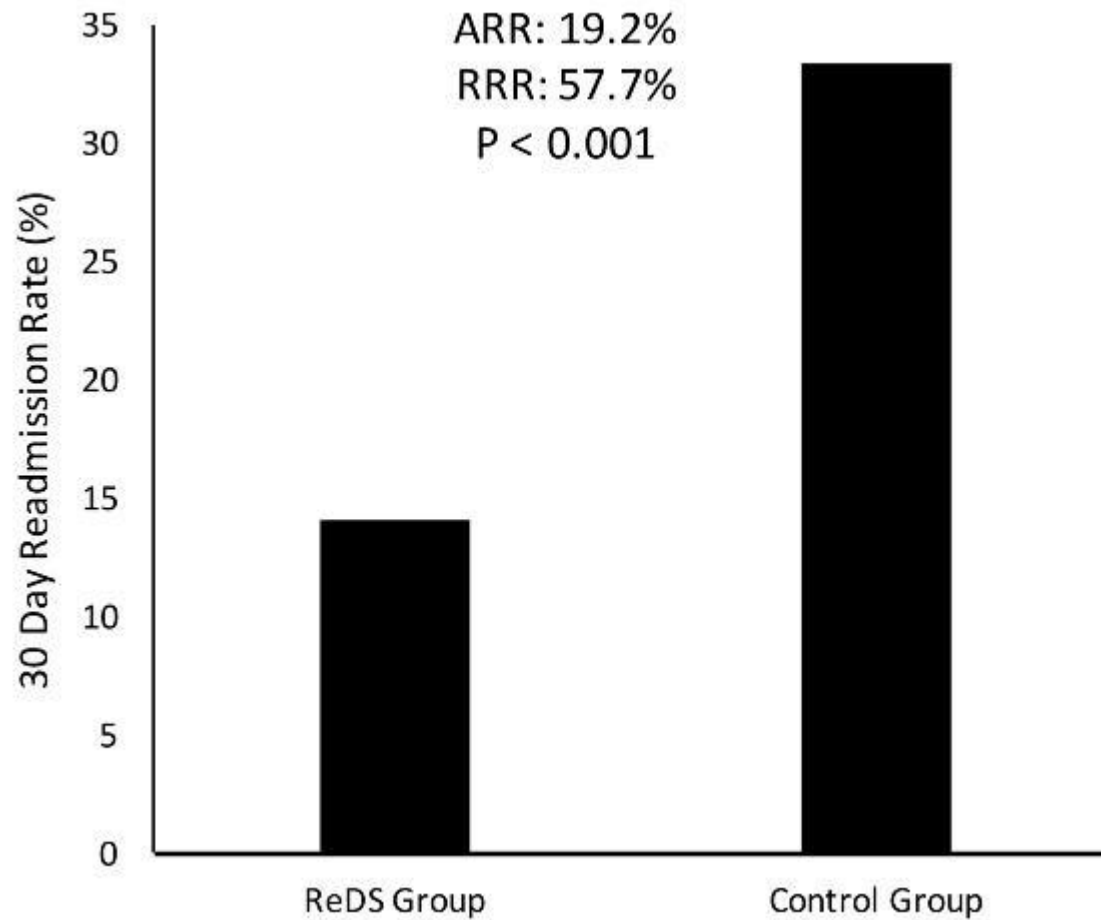
We obtain a Vest reading

It's 40%!!!

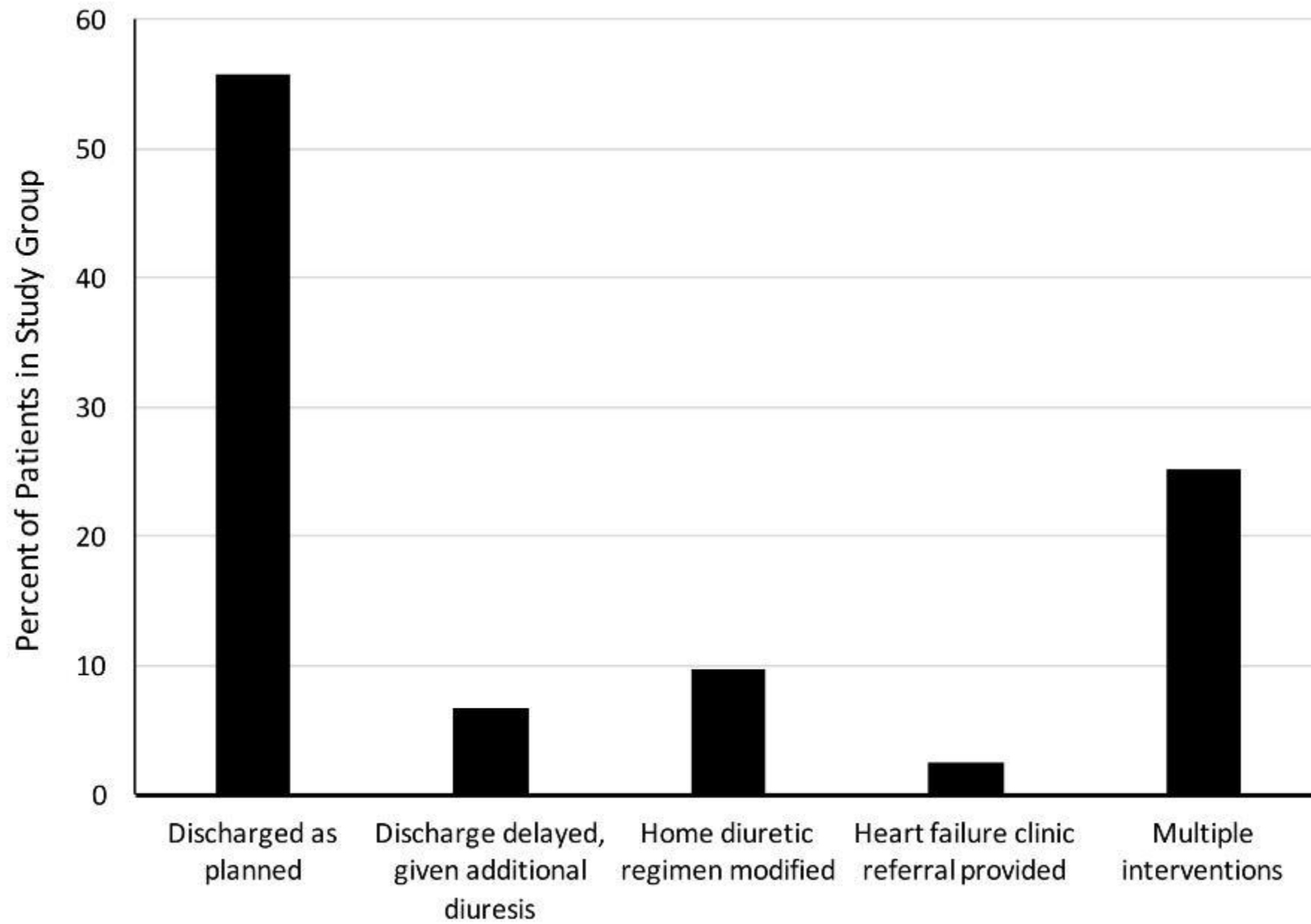
Hospital/Post Hospital Course

- We give the patient 80 mg IV furosemide and watch urine output closely, increase his dosing to TID, and ask for repeat Vest in am
- Patient responds well, diuresis >2.5 liters overnight
- The Next day his reading is 31%, Creatinine down to 1.9
- We watch him one more day to ensure stable, Vest reading is 30%, Creatinine 1.8
- We send him home on Torsemide 80 mg daily, give him a prescription for IV Lasix prn and visiting nurse service
- We see him in office a week later, repeat vest reading, 28%!
- He has received 2 IV Lasix “shots” at home, and has been out of hospital for 4 months now!

Data from our Telemetry unit



The ReDS group represents all patients screened with the ReDS vest following exclusions, a total of 163 patients. Within this group, 114 patients were identified to have had heart failure admissions preceding implementation of the ReDS vest protocol in previous 12 months. This latter group was used as a control arm for comparison of 30-day readmission rate. Results showed significant reduction in readmission rate in the ReDS group compared to the control group (14.1% vs. 33.3%, respectively; $p < 0.001$, ARR 19.2%, RRR 57.7%, NNT 5.2).



Role on our telemetry units

- It is now our 5th vital sign
- In addition to HR, BP, RR and Sat, we obtain vest reading on every patient within 24 hours of discharge
- Patients are actually leaving hospital “dry” and feeling good.
- Much more aggressive with titration of our chf medications if numbers remain elevated, and we start thinking advanced therapy options or at least a right heart cath if we are unable to consistently obtain normal vest readings

We had incredible success with our Vest

- So our hospital decided to buy a few more...
- Vests are now routinely used on:
 - Both cardiac units
 - ER/observation unit (coming soon)
 - Home visiting nurse service
 - Our heart failure clinic/office
- More data to come, HFSA 2019?

- It has also allowed us to risk stratify our patients a great deal better
- Normal readings allow us to safely discharge patients or hand off to general cardiology service
- Consistently high readings helps identify patients that require additional resources
 - IV Lasix at home, or weekly office visits
 - E-health at home enrollment
 - Plugged in with our RN and/or APP staff for additional teaching, vital sign visits, cardiac rehab program, etc.
 - Heart Failure follow up

Our Future

- We are about to roll out the Vest in our observation unit
- Our goal will be to identify high risk patients, take immediate steps to stabilize and then transition immediately to our heart failure clinic
- Patients with normal readings can be discharged immediately with 72 hour follow up
- Patients with high readings get immediate high dose IV Lasix and repeat reading within 6 hours, if normal, discharge and follow up within 72 hours
- Patients with high reading at 6 hour mark will be admitted and heart failure service immediately consulted for management

Thank You

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- Check out our poster #244 with more of our data and experience