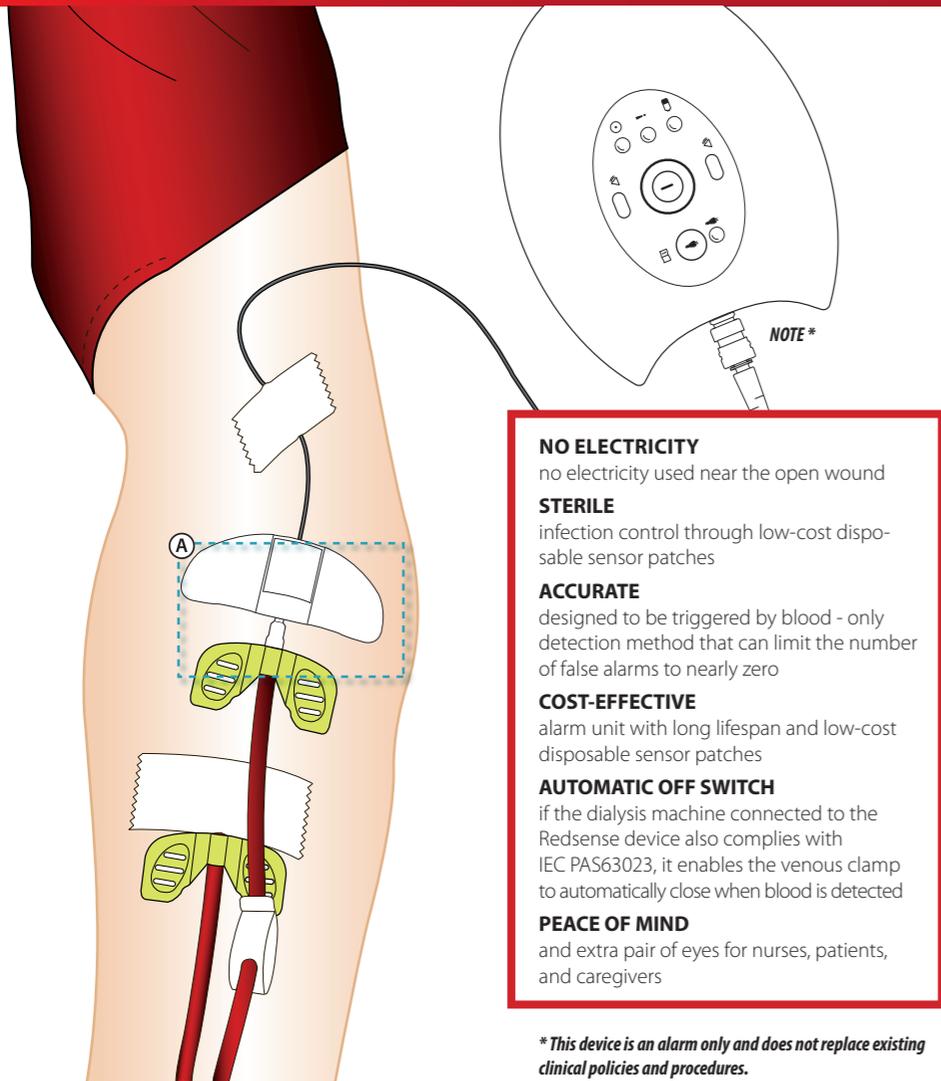


## DEVELOPED WITH YOU, FOR YOU

## In the spotlight

## Redsense Venous Needle Sensor



- NO ELECTRICITY**  
no electricity used near the open wound
- STERILE**  
infection control through low-cost disposable sensor patches
- ACCURATE**  
designed to be triggered by blood - only detection method that can limit the number of false alarms to nearly zero
- COST-EFFECTIVE**  
alarm unit with long lifespan and low-cost disposable sensor patches
- AUTOMATIC OFF SWITCH**  
if the dialysis machine connected to the Redsense device also complies with IEC PAS63023, it enables the venous clamp to automatically close when blood is detected
- PEACE OF MIND**  
and extra pair of eyes for nurses, patients, and caregivers

*\*This device is an alarm only and does not replace existing clinical policies and procedures.*

Cleveland Clinic provides both inpatient and outpatient hemodialysis for high-acuity patients with a higher than average risk for Venous Needle Dislodgement (VND). In February 2010 a quality improvement project was introduced to reduce VND rates. In the prior 3 months, internal data review showed 3 undetected VND episodes (2 class IV hemorrhages), incidence of 1 VND per 538 HD treatments.

The project introduced Redsense blood detection device alongside the standard policies and procedures for cleaning, disinfecting, and securing the venous access wound and the venous needles. Zero undetected VND episodes were recorded between February 15 and December 30 2010. The overall occurrence dropped from 13 in 2009 to 4 in 2010, incidence of 1 VND per 1750 HD treatments. Redsense helped in achieving a relative risk reduction of 70% in the Cleveland Clinic.<sup>4</sup>

text used with permission

#### References

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## Contact Redsense Medical

[www.redsensemedical.com](http://www.redsensemedical.com)

Redsense Medical AB (Publ.)  
Gyllenhammarsväg 26  
302 92 Halmstad, Sweden  
+46 35 10 60 30  
[info@redsensemedical.com](mailto:info@redsensemedical.com)

Sebastien Bollue  
Director Commercial Operations  
Direct: +46 722 488 090  
[sebastien.bollue@redsensemedical.com](mailto:sebastien.bollue@redsensemedical.com)



*Let Redsense help  
keep an eye on your  
venous needles*

**- Reduce risk and cost**

[www.redsensemedical.com](http://www.redsensemedical.com)

### Testimonial

*"The first clinically tested monitoring system to effectively sound the alarm on venous needle dislodgement." - Jarl Ahlmén MD PhD-*

## HELP SAVE LIVES

Venous needle dislodgement poses a threat to every hemodialysis patient during every treatment. Massive blood loss may occur before the notoriously unreliable venous pressure alarms detect changes of pressure within the dialysis machine. An average size patient can lose up to 50% of their total blood volume within 5 minutes of a venous needle dislodgement.<sup>1</sup>

*21 patients die due to VND every week*

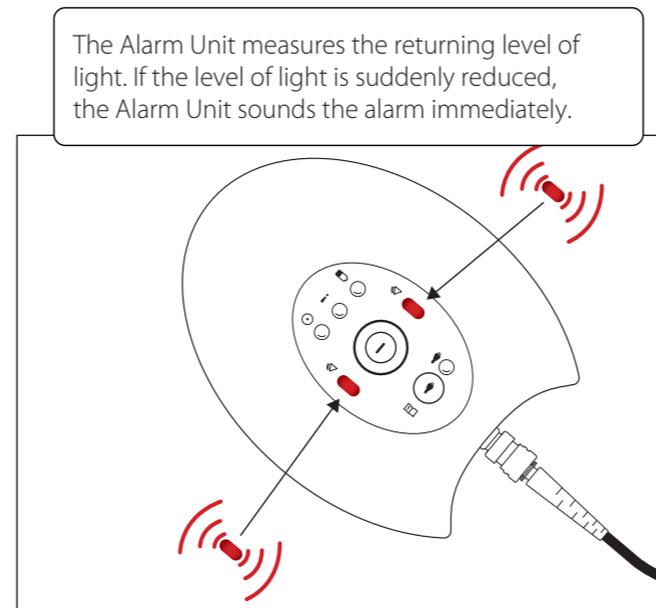
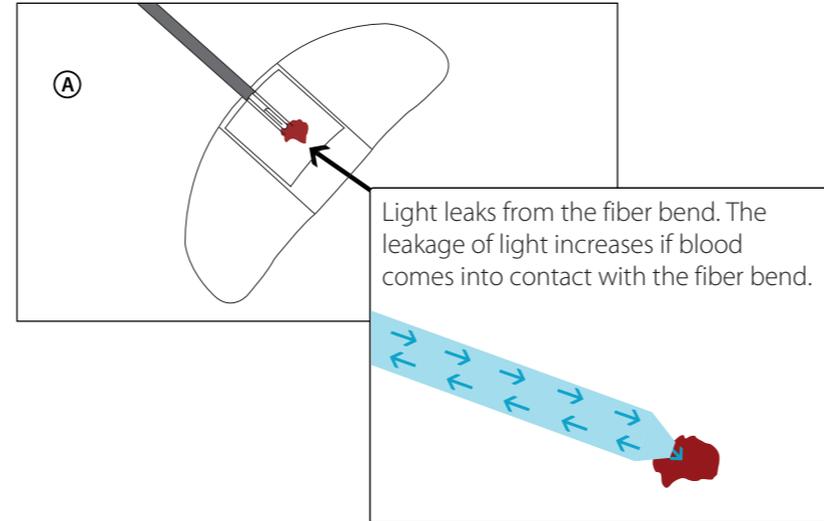
*21 patients are seriously injured every day due to VND* <sup>\*2</sup>

# 21 | 21 | 2100

*2100 needles are dislodged every day*

**No one is immune to the risk of VND**  
Any facility • Any nurse • Any patient

## Advanced technology embedded in an easy to use patch



## REDUCE COST

*Avoid Unnecessary Risk by Saving Cost in Healthcare*

### Healthcare Savings

Reduce the risk and reduce costs, the use of Redsense can save millions.

### Cost savings, the use of Redsense can save millions:

- » Estimating the cost of Redsense 2,2-3,2 € per treatment (3 patients per device).
- » By using Redsense on 20% of the HD patients healthcare savings over >90M € can be made annually.

### Cost for a VND incident:<sup>3</sup> VND minor

Limiting intervention to blood transfusion and extra EPO dose which all can be carried out at the dialysis clinic and an extra day for observation:

Blood transfusion	580 €
Extra EPO	465 €
Extra day in hospital*	1 800 €

**Total** 2 850 €

### Serious event with hospitalization:

Regular hospitalization for blood loss anemia (4 days) 102 000 €

1 day of anemia therapy includes EPO, blood transfusion, iron and possibly plasma expanders or albumin\*\* 25 500 € / day

Emergency Room (ER) 13 500 €

Intensive Care Unit (ICU), hospitalization (1 day) 9 000 € to 18 000 €

**Thus cost range from:** 102 000 € to 135 000 € and up

\* Based on Ahlmén study about 40% of the VND's need blood transfusion and two extra days in the hospital<sup>7</sup>

\*\* Example: A patient in the ER for 4 h received oxygen at 2 L/min, blood drawn for routine panel, an abdominal CT scan; the bill was 14 820 €

