

# Venous thromboembolism risk assessment and prophylaxis prescribing within an electronic medication chart

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## Introduction

Venous thromboembolism (VTE) is a leading preventable cause of disability and death worldwide.

Hospitalisation is a known major risk factor for developing VTE, however appropriate VTE prevention measures have been shown to reduce the incidence of VTE by up to 70%.<sup>1</sup>

In March 2023, Cabrini Health implemented a mandatory override system that requires both the documentation of a VTE risk assessment and VTE prophylaxis to be prescribed within the electronic medication management (eMM) software.

## Aim

To determine the rates of timely VTE risk assessment and VTE prophylaxis prescribing compliance according to local protocol in patients admitted to Cabrini Health before and after the implementation of the electronic alert system.

## Method

Audits of patient medical records were conducted for all patients admitted to Cabrini Malvern for more than 24 hours, before and after implementation of the electronic alert system.

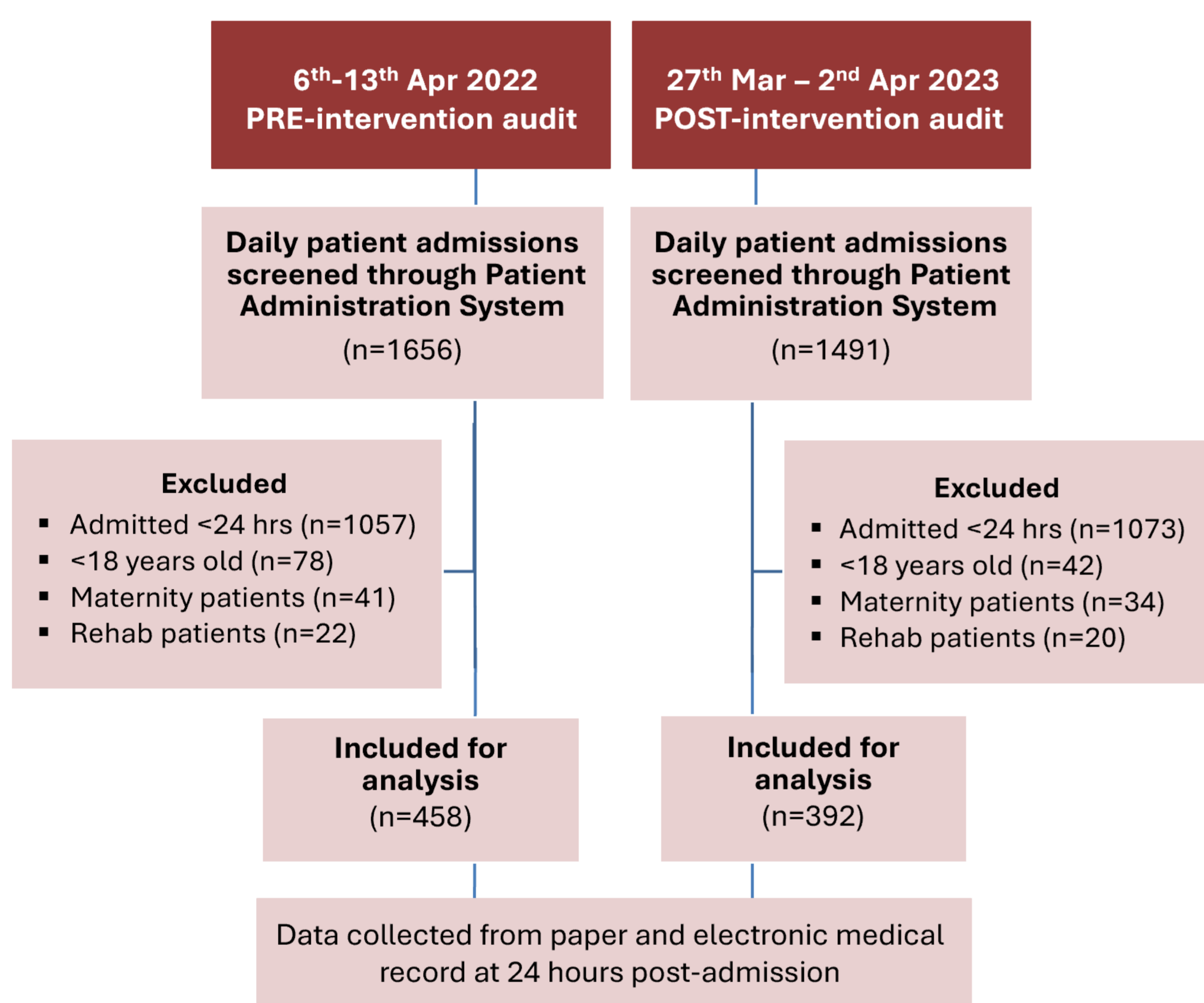


Figure 1. Audit methodology

	2022 (n = 458)		2023 (n = 392)	
<b>Gender</b>				
Male	197	43.0%	183	46.7%
<b>Age</b>				
18 to 49	91	19.9%	53	13.5%
50 to 64	78	17.0%	74	18.9%
65 to 74	104	22.7%	79	20.2%
75 or older	185	40.4%	186	47.4%
<b>Medical</b>	182	39.7%	185	47.2%
<b>Surgical</b>	276	60.3%	207	52.8%
Minor Surgical Risk	106		71	
Moderate Surgical Risk	121		89	
Major Surgical Risk	49		47	
<b>TOTAL</b>	<b>458</b>		<b>392</b>	

Table 1. Patient Demographics

## Results

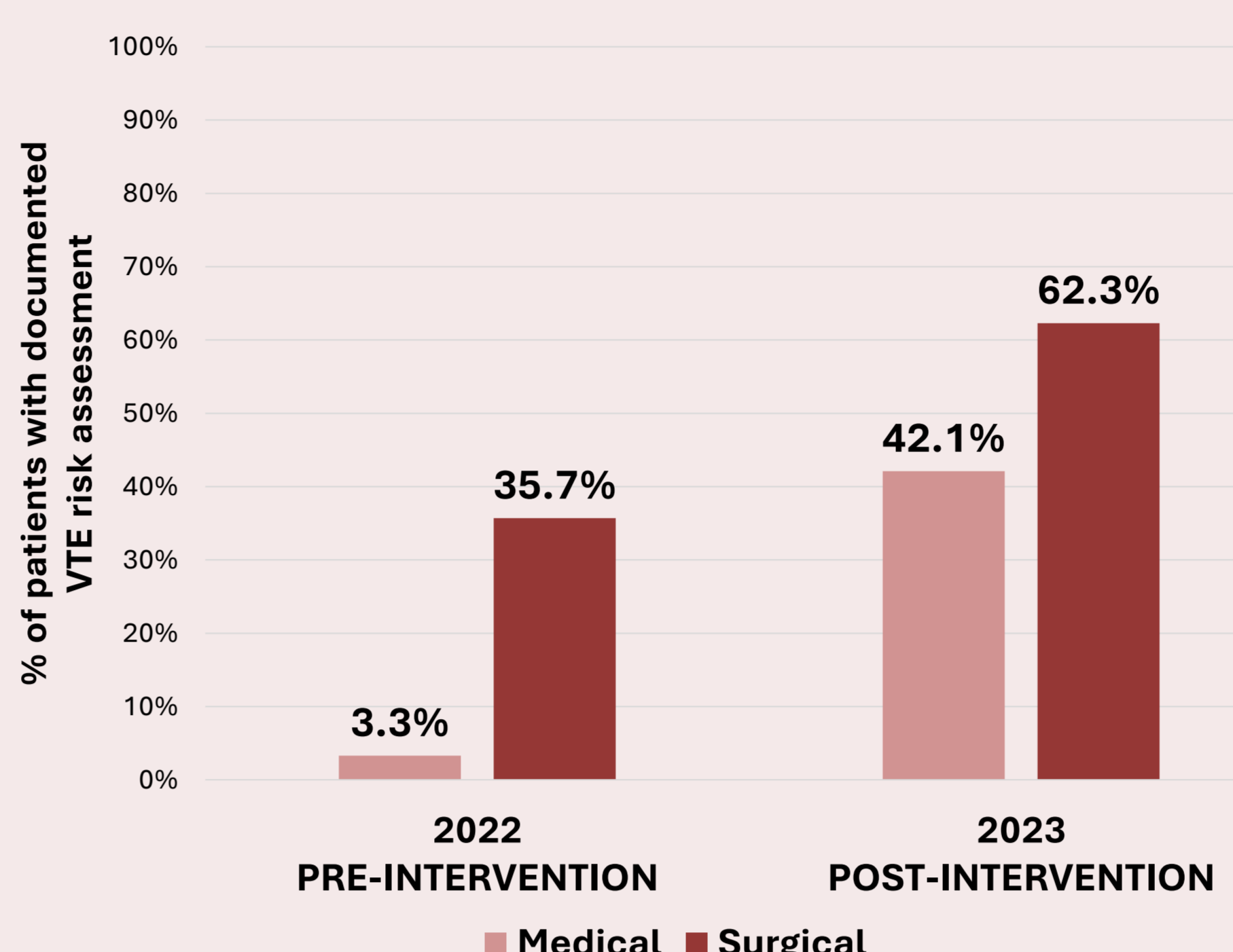


Figure 2. Rates of VTE risk assessment documentation

**29.9% increase in VTE risk assessment documentation**

38.8% for medical patients  
26.6% for surgical patients  
( $p < 0.001$ )

Having a documented VTE risk assessment was shown to improve rates of guideline-compliant VTE prophylaxis prescribing by **19.7%**  
( $p = 0.001$ )

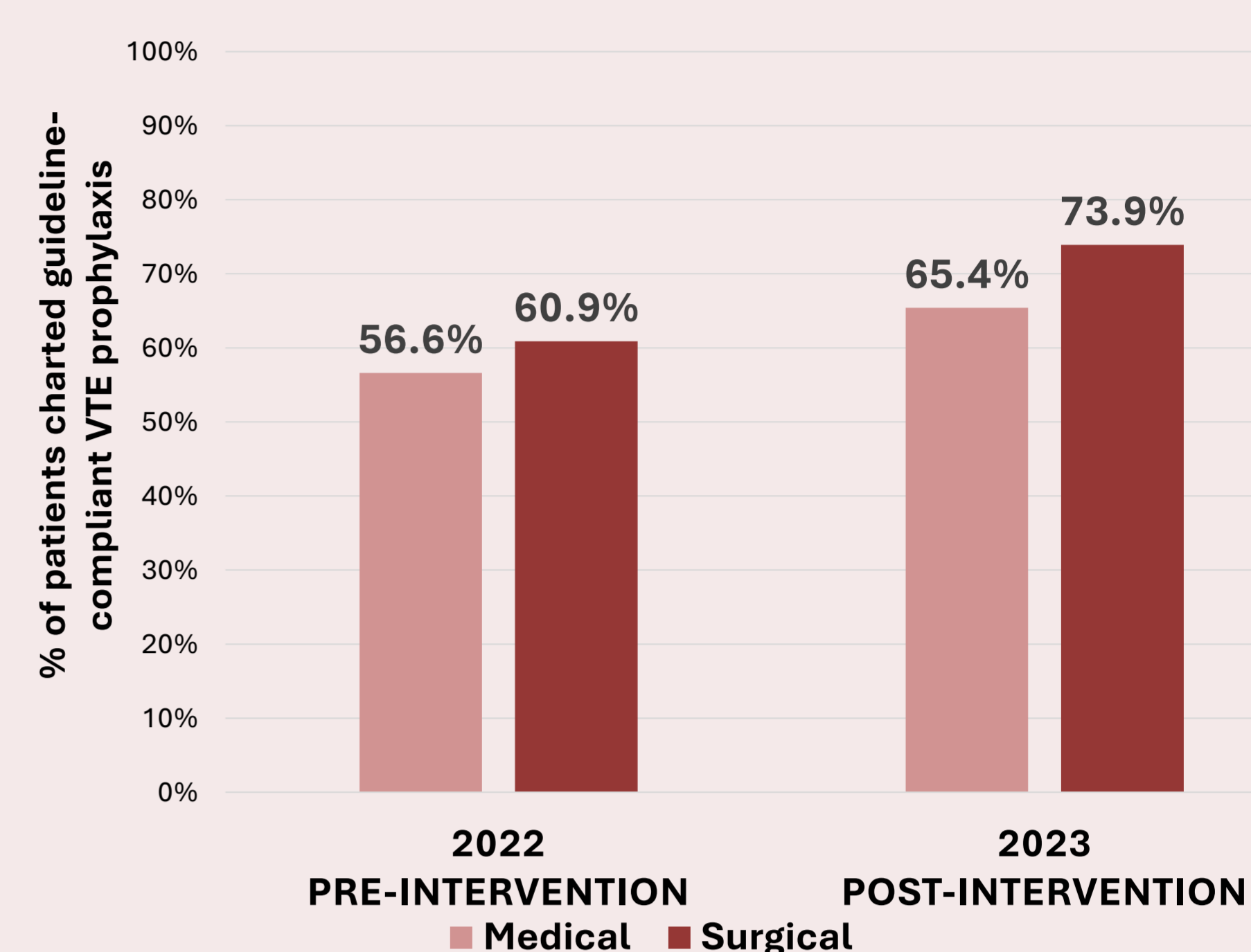


Figure 3. Rates of guideline-compliant VTE prophylaxis prescribing

**10.7% increase in guideline-compliant VTE prophylaxis prescribing**

8.8% for medical patients  
13% for surgical patients  
( $p = 0.001$ )

## Discussion

Prior studies investigating the utility of e-alert systems for improving VTE prophylaxis rates have shown mixed results. One study reported a 17.2% increase in appropriate VTE prophylaxis among inpatients following implementation of an e-alert system within the electronic medical record, comparable to our study findings.<sup>2</sup> In contrast, a randomised controlled study found that e-alert systems did not improve guideline-compliant VTE prophylaxis prescribing, suggesting further studies may be needed to determine whether these changes are maintained over time.<sup>3</sup>

These studies suggested barriers to compliant VTE prophylaxis prescribing include the non-specific, 'blanket' nature of electronic alerts causing alert fatigue, as well as physicians viewing alerts as interruptive and dismissing them to avoid workflow disruption.

Within this study, **reasons for non-compliant VTE prophylaxis prescribing** included:

- VTE prophylaxis being omitted entirely
- Delay in commencement post-op VTE prophylaxis (surgical patients)
- Unindicated dose reduction of prophylactic low molecular weight heparin (LMWH)

### Implications

The e-alert system effectively increased appropriate VTE prevention measures, however room for improvement has been identified. Additional strategies are needed to optimise VTE risk assessment and prophylaxis prescribing rates.

### Limitations

- Results may not be applicable to other sites as data was collected from a single tertiary site
- Cannot extrapolate findings to long-term effects of electronic alert systems
- Prone to misclassification bias due to potential for incomplete documentation of relevant data in medical records

## Conclusion

Local implementation of an electronic alert system demonstrated significant improvements in guideline-adherent VTE prophylaxis prescribing practice, however further studies are required to determine whether these improvements are maintained in the long-term.

Further research into the application of electronic alert systems in other clinical areas should be considered.

## References

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- Spirk et al. J Thromb Haemost. 2017, 15, 2138-2146