

# Master of Clinical Science

Venous Thromboembolism (VTE) Risk Assessment and Prophylaxis: A Comprehensive Systematic Review of the Facilitators and Barriers to Healthcare Worker Compliance with Clinical Practice Guidelines in the acute care setting

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Date: January 24<sup>th</sup> 2013



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## **Abstract**

**Background:** Even though guidelines for venous thromboembolism (VTE) risk assessment and prophylaxis are available, patients with identifiable risk factors admitted to acute hospitals are not receiving appropriate prophylaxis. The incidence of VTE in hospitalised patients is higher than that of people living in the community who have similar demographics. Knowledge of barriers to clinician compliance with clinical practice guidelines and facilitators to improve compliance will aid appropriate use of VTE clinical practice guidelines.

**Objectives:** The objective of this review was to identify the barriers and facilitators to healthcare professional compliance with clinical practice guidelines for VTE assessment and prophylaxis.

### **Inclusion criteria**

**Types of participants:** Studies were considered for inclusion regardless of the designation of the healthcare professional involved in the acute care setting.

**Focus of the review:** The focus of the review was compliance with VTE clinical practice guidelines and identified facilitators and barriers to clinical use of these guidelines in the acute care setting.

**Types of studies:** Any experimental, observational studies or qualitative research studies evaluating healthcare professional compliance with clinical practice guidelines were considered for inclusion in this review.

**Types of outcomes:** The outcomes of interest were percentage of compliance with VTE guidelines and identified barriers and facilitators to that compliance.

**Search strategy:** A comprehensive, three-step search strategy was conducted for studies published from May 2003 to November 2011 due to a previous systematic review that overlaps this one, and aimed to identify both published and unpublished studies in the English language across six major databases (PubMed/MEDLINE, CINAHL, EMBASE, Scopus, ProQuest & MedNar).

**Methodological quality:** Retrieved papers were assessed by two independent reviewers prior to inclusion in the review using standardised critical appraisal instruments from the Joanna Briggs Institute. The critical appraisal tools used were MASTARI for the quantitative studies and QARI for the qualitative studies. There were no disagreements between the two reviewers.

**Data collection:** Both quantitative and qualitative data was extracted from included papers using the standardised data extraction tools MASTARI and QARI from the Joanna Briggs Institute.

**Data synthesis:** Quantitative data was pooled using narrative summary due to heterogeneity in the ways in which data was reported, using quasi-experimental pre and post studies, cohort study and descriptive/case series. Qualitative data was pooled using Joanna Briggs Institute QARI data synthesis

tool.

**Results:** In total, twenty studies were included in the review, eighteen quantitative and two qualitative with methodological quality ranging from low to high using the Joanna Briggs Institute appraisal tools MASTARI and QARI.

The lowest and highest reported compliance in the quantitative studies at baseline ranged from 6.25% to 70.4% and compliance post intervention ranged from 36% to 100%. Six of the twenty studies included multiple healthcare professionals in the study and of these only one compared the percentage of compliance between the groups. That study acknowledged that due to the variation of improvement between mechanical and pharmacological prophylaxis, and since nursing staff were responsible for mechanical and medical staff for pharmacological that the intervention was more effective for medical staff.

Nine main categories of barriers and nine main categories of facilitators to VTE guideline compliance were identified. Similar barriers and facilitators were highlighted by the quantitative and qualitative studies. The studies all had components of education as an intervention and this review found that passive dissemination or a single mode of intervention was not sufficient to affect and sustain change in clinical practice. The main barriers identified were 'lack of attention' and lack of awareness', with the main facilitator being 'education'.

**Conclusions:** This review identified eighteen quantitative studies and two qualitative studies that assessed compliance with VTE clinical practice guidelines, and identified barriers and facilitators to that compliance. The studies showed that many different forms of intervention can improve compliance with clinical practice guidelines. Interventions can be developed for the specific audience and setting they are being used for, keeping in mind that not all interventions are appropriate for all areas, such as computer applications not being suitable where system capacity is lacking.

**Implications for practice:** Healthcare professionals need to be aware of VTE clinical practice guidelines and improve patient outcomes by using them in the hospital setting. There are a number of interventions that can improve guideline compliance keeping in mind the barriers and adjusting practice to minimise them.

**Implications for research:** Venous thromboembolism compliance within rural hospital settings has not been determined, however as inequalities have been identified in other areas of healthcare between urban and rural regions this would be a logical area to research. Furthermore, the sustainability and cost effectiveness of VTE compliance programs should also be examined.



## Student Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution to Sherryl Gaston and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission for any other degree or diploma in any university or any other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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## List of Abbreviations

ACCP	American College of Chest Physicians
AHRQ	Agency for Healthcare Research and Quality
AOR	Adjusted Odds Ratio
CI	Confidence Interval
COPE	Computerized prescriber order entry
DVT	Deep Vein Thrombosis
EBP	Evidence-based practice
EOV	Educational outreach visit
JBI	The Joanna Briggs Institute
LDUH	Low-dose unfractionated heparin
LMWH	Low molecular weight heparin
LOS	Length of Stay
MAStARI	Meta Analysis of Statistics Assessment and Review Instrument
NHMRC	National Health and Medical Research Council
NICE	National Institute for Clinical Excellence
NOTARI	Narrative, Opinion and Text Assessment and Review Instrument
NS	Not significant
PA	Physician Assistant
PE	Pulmonary Embolism
QARI	Qualitative Assessment and Review Instrument
RAM	Risk assessment model
SEBMO	Standardised evidence-based medical orders
SMPU	Safe medication Practice Unit
UK	United Kingdom
USA	United States of America
VTE	Venous Thromboembolism