

# Prevention and screening of VTE in SCI patients at Thomas Jefferson University Hospital

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## BACKGROUND

Venous thromboembolic events (VTE) such as pulmonary embolism (PE) is a major cause of mortality in spinal cord injury (SCI) patients. Nonetheless, since 2003, PE has moved from the 3rd to 6th leading cause of death in the first year of injury as a result of standardized thromboprophylactic measures. Therefore, 2016 guidelines by the Consortium for Spinal Cord Medicine encourage immediate mechanical prophylaxis and low molecular weight heparin (LMWH) within 72h of presentation in the acute setting unless contraindicated. Intermittent screening using duplex ultrasound (DUS) in SCI patients has however not been shown to decrease the occurrence of PE therefore routine DUS screening is not recommended for asymptomatic DVT.

## OBJECTIVES

Currently no protocol exists for thromboprophylaxis (TPx) and screening in SCI patients at TJUH. As such, often patients are either not started on TPx or are started on an inappropriate regimen depending on admitting team preference. In addition, patients often receive an admission DUS then weekly thereafter as a screening mechanism for DVT even if asymptomatic.

Our goal is to determine the effectiveness of our current method for initiating pharmacological TPx as well as efficacy and cost of our current screening method compared to national guidelines by addressing these questions:

- What is the occurrence of VTE in SCI patients at TJUH?
- What screening tools are utilized (clinical exam, DUS)?
- How often is recommended LMWH initiated? Does this vary with care team?
- Is TPx initiated within 72h and, if not, why (ie, anticipated surgery, bleeding risk, intracranial hemorrhage)?
- How often are SCI patients screened? How often are clinically insignificant DVTs diagnosed?
- What are the costs associated with the current screening method at TJUH?

## PLAN

We will perform a chart review to determine the number of patients admitted to TJUH with SCI during 2015-present. We will perform a retrospective analysis of these patients which will include occurrence of VTE, TPx used and time of initiation, documented reason for delayed initiation, and number of DUS screens performed during admission. We will perform a cost analysis to determine annual cost of routine inpatient DUS screens in SCI patients. Prospectively, we will determine the difference in cost after initiating 2016 guidelines for DUS screening (Figure 1). From this data, we will determine, which barriers prevent correct and timely initiation of TPx and use this information to guide admission and daily ordering of TPx.

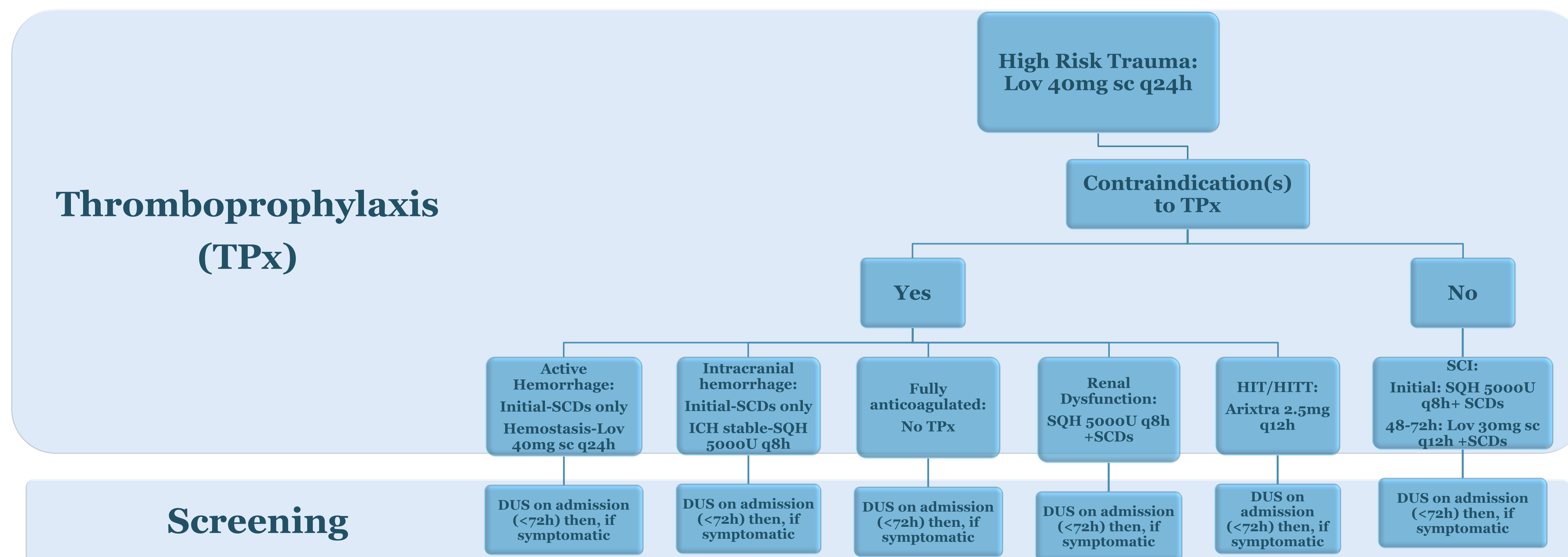
## ANTICIPATED RESULTS

We anticipate variability in initiation of TPx due to pending surgical intervention, concern for bleeding risk, and presence of concurrent injuries. Other expected cause(s) for untimely ordering of TPx includes the care team upon admission. Lastly, we anticipate a trend toward decreased costs after implementing a standardized protocol for TPx initiation and for screening guidelines.

## FUTURE DIRECTION

The data obtained will help guide order sets specific for SCI patients allowing only LMWH as an option for TPx or a documented reason for not ordering. In patients not on prophylaxis, we would implement an automatic alert for ordering DUS after 72 hours. Through daily note templates, we will construct an automatic smart phrase that allows current VTE status to auto-populate each day. The goal is to enhance knowledge of VTE status for SCI patients among all members of the healthcare team and to promote understanding of current guidelines to help prevent unnecessary therapies from over-screening.

Figure 1: Proposed VTE prevention protocol in SCI patients based on 2016 Guidelines



Lov, lovenox; sc, subcutaneous; SCD, sequential compression device; ICH, intracranial hemorrhage; SQH, subcutaneous heparin; HIT, heparin induced thrombocytopenia; HITT, HIT with thrombosis