The Use of a Novel Non-Pneumatic Compression Device to Decrease the Incidence of Venous Thromboembolism (VTE) in a High-Risk Ortho/Neuro/Spine Unit

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Background

Healthcare-Associated VTE (HA-VTE) is a significant, deadly, costly, and growing public health problem, with the average estimated cost being $17,367 per occurance.[3,5] Providing proper VTE prevention to positively impact patient outcomes, patients need to receive at least 18 hours of prophylaxis per day per the CHEST guidelines.[4]

The standard of care IPC tubes and cords are a trip/fall hazard and confine patients to the bed. Furthermore, they remove the ability for the patient to mobilize.

To understand the problem deeper, an IPC compliance and mobility Spot Check report was conducted over a 12-hour period. The results showed 8H 38M was the average daily compliance (wear time) and 82% of the time patients were immobile (i.e. in bed or uprooted).

Purpose

- To decrease the incidence of Venous Thromboembolism (VTE) events in a 30 bed Ortho/Neuro/Spine (ONS) Unit
- To increase patient wear time (compliance) to VTE prophylaxis with a novel non-pneumatic compression device

Methods

- Dedicated room-based hardware in each room for accessibility and optimized workflow. Devices were applied in the PACU
- Conducted *Spot Checks* with our vendor each month collecting SCD orders to determine which patients qualified for data collection
- Patients that qualified for data collection had a length of stay (LOS) of at least 3 days and a minimum 24 hour data-set available. Patients were also asked for feedback on the novel compression device

Tables & Figures

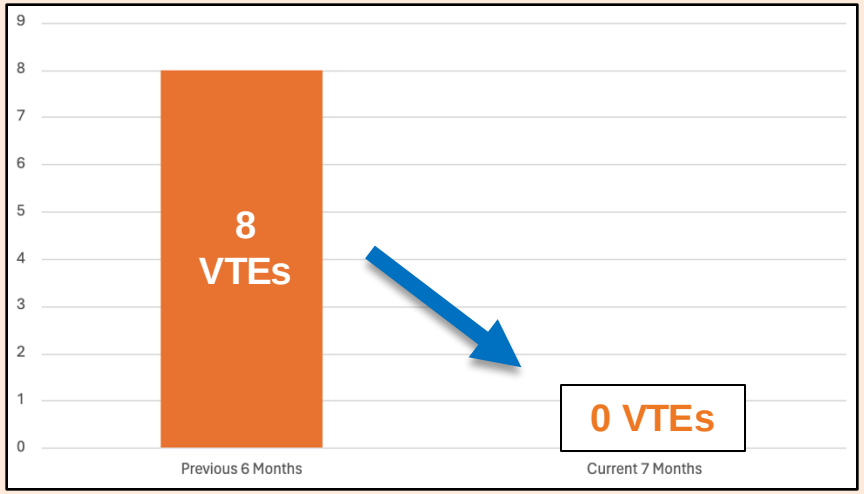

Table 1: Number of VTE Events

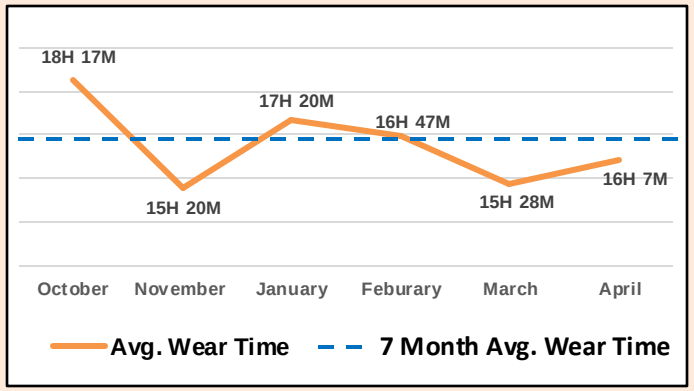

Table 2: Monthly Average Wear Time

Figure 1: Recovery Force Health Movement and Compressions System
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Data/Results

- The average prophylaxis after implementing the novel non-pneumatic compression device was 16 hours and 32 minutes over a seven-month duration ***(Table 2).*** Starting application in the PACU was an asset to increasing compliance.
- The number of VTE events decreased from 8 VTEs to 0 VTEs post-implementation ***(Table 1)***
- The six-month cost-avoidance for the ONS unit is projected to be $138,936, annualized at $277,872 per the *AHRQ* average cost of a VTE[5]
- Increased patient and staff satisfaction stating the devices were more comfortable, less noisy, promoted early mobilization and didn't disturb their sleep; overall decreasing patient refusals

Conclusions

Improving patient comfort, independence and satisfaction utilizing a cordless, tubeless novel non-pneumatic compression device led to increased compliance to VTE prophylaxis, eliminated the incidence of VTEs, and improved overall patient safety. The device provides real-time application feedback, leading to consistently correct application to provide optimal compression therapy. This device allowed patients to receive VTE prophylaxis and mobilize at the same time (i.e. dangle at the side of the bed, get to the chair, walk).

Further studies are warranted to quantify the impact ambulation metrics tracked by this non-pneumatic compression device could have on increasing mobility and reducing length of stay in the hospital setting.

References

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