

# Post-Thrombotic Syndrome: Assessing Medical City Weatherford Resident Physicians' Knowledge in Diagnosis, Treatment, and Prevention



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## Background

- While going through our internal medicine residency, the authors came across cases of post-thrombotic syndrome that challenged our assumptions and knowledge base about this disease process.
- Post-thrombotic syndrome (PTS) is a relatively understudied sequelae of deep vein thrombosis (DVT)<sup>1,2,3</sup>.
- Since PTS is understudied, the goal of our project was to educate resident physicians on the full scope of PTS including epidemiology, clinical features, diagnosis, and treatment through a single-session one-hour oral presentation.
- We measured resident knowledge through a survey administered before and after the presentation. We expected that the oral presentation will lead to an increase of percentage correct of questions of at least 20% from pre-survey to post-survey.

## Methods

- This project took place at Medical City Weatherford, specifically within the Graduate Medical Education department. It was targeted at a total of 34 resident physicians within the internal medicine and preliminary medicine programs and included residents of all post-graduate years.
- First, the authors created a one-hour oral presentation based on available literature on post-thrombotic syndrome. Using knowledge gained from literature, a seven-question multiple choice test was created and administered during the residents' didactics session at Medical City Weatherford as a pre-survey (Table 1).
- One week later, the first author gave a one-hour oral presentation to the residents regarding PTS during didactics, and the test was again conducted as a post-survey (Table 1).
- The results were graded based on questions answered correctly by percentage of the participants, and the change in the percentage correct between surveys.

## Results

- A total of 27 participants completed the pre-survey, and a total of 29 participants watched the presentation and completed the post-survey.
- In the pre-survey, the percentage of participants that answered the question correctly varied from a low of 22.22% to a high of 77.78% (Table 2). In the post-survey, the percentage of participants that answered correctly ranged from 65.52% to 89.66% (Table 2).
- For all questions, there was a numerical improvement in percentage correct, with one question showing numerical improvement of 11.88% and all other questions showing numerical improvement by 40% or more (Table 2). Numerically, as a group there was improvement in the percentage of resident physicians that provided the correct responses after the presentation (Table 2).

Table 1: Pre- and Post-Survey Questions	Answer Choices (correct in bold)
1. Which of the following has not been linked to the pathophysiology of post-thrombotic syndrome?	A: Valvular incompetence <b>B: Bacteremia</b> C: Obstruction of venous outflow D: Increased levels of inflammatory cytokines
2. Which BMI range is a risk factor for developing post-thrombotic syndrome?	A: BMI 30 to 35 B: BMI 25 to 30 C: BMI 20 to 25 <b>D: BMI 35 and up</b>
3. Which of the following is true regarding risk factors for developing post-thrombotic syndrome?	A: Older age is not a risk factor for developing PTS B: An acute DVT in the popliteal vein increases risk for developing PTS <b>C: Thrombophilia does not appear to increase the risk of developing PTS</b> D: Asymptomatic DVT increases risk for developing PTS.
4. Which of the following is true regarding DVT anticoagulation and post-thrombotic syndrome?	A: Supratherapeutic INR increases risk of developing PTS <b>B: Development of PTS is much greater in patients who do not maintain adequate anticoagulation during initial treatment of DVT</b> C: DOACs are associated with increased incidence of post-thrombotic syndrome. D: Patients who received thrombolysis in treatment of DVT have increased risk of PTS.
5. Which of the following is not true regarding clinical signs and symptoms of post-thrombotic syndrome?	A: Can be intermittent or persistent B: Can appear weeks to months after DVT or can appear without interruption following an acute event C: Symptoms mimic chronic venous disease (extremity pain, heaviness, venous dilation, edema, pigmentation, trophic skin changes, venous ulcers) <b>D: Symptoms mimic peripheral arterial disease (shiny, hairless, decreased pulses, claudication)</b>
6. The clinical severity of post-thrombotic syndrome is measured during which score?	<b>A: Villalta score</b> B: CHADS2VASC2 score C: APACHE-II scale D: BISAP score
7. What is the cornerstone of managing post-thrombotic syndrome?	A: Moisturizers and topical corticosteroids B: Endovascular interventions for venous obstruction and outflow <b>C: Compression stockings</b> D: I don't know

Table 2: Percentage of Resident Physicians' Who Answered Correctly

Question	Pre-survey percentage who answered correctly (N = 27)	Post-survey percentage who answered correctly (N = 29)	Change in Percentage of Resident Physicians Who Answered Correctly
Question 1	29.63%	79.31%	+ 49.68%
Question 2	77.78%	89.66%	+ 11.88%
Question 3	22.22%	65.52%	+ 43.30%
Question 4	46.15%	86.21%	+ 40.06%
Question 5	33.33%	65.52%	+ 32.19%
Question 6	22.22%	86.21%	+ 63.99%
Question 7	22.22%	68.97%	+ 46.75%
Overall Percentage Correct	36.22%	77.34%	

## Discussion

- We saw an improvement in percentage of questions answered correctly after our educational presentation on post-thrombotic syndrome was given to the resident physicians at Medical City Weatherford.
- We feel this may demonstrate a gap in knowledge regarding this disease process and were able to work towards closing that gap by teaching about this syndrome.
- The data above was able to demonstrate collective growth of the resident physicians that participated.
- Of note, limitations of this quality project include sample size, lack of statistical analysis, lack of demonstration of individual growth, and the fact that data was only collected from one internal medicine and preliminary medicine program.
- The field would benefit from data being collected on residents from different specialties including family medicine, vascular surgery, and those physicians specializing in wound care.
- In addition, assessing the knowledge of this at a regional and national level may benefit the resident physicians training in the specialties that care for patients with PTS.

## Conclusion

- We set out to assess the knowledge of post-thrombotic syndrome in our fellow resident physicians, teach them about the syndrome, and assess the collective improvement after the presentation. We were successful in demonstrating a collective improvement in their knowledge base. We as the authors feel like we have gained a deeper understanding of post-thrombotic syndrome and plan to use the knowledge we have gained in our future practice and for the benefit of our patients.

## References

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