

## SHORT COMMUNICATION

# Is D-dimer Test Cost Effective and Time Sensitive for Diagnosis of Venous Thromboembolism in Emergency Department?

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### SUMMARY

**Background:** A D-dimer assay can be used to reduce unnecessary imaging when ruling out venous thromboembolism (VTE) in the Emergency Department (ED), thus potentially reducing patient visit times and costs.

**Methods:** This was a cross-sectional retrospective data analysis of an academic medical center ED visits between January 1 and June 30, 2019. ED visit length and VTE diagnostic cost were compared for visits with and without a D-dimer assay. The total sample size was 106 adult ED patients who were not at high risk of VTE and, of these, 27 encounters included D-dimer testing and 79 encounters did not. Outcomes were measured using independent samples *t*-tests to compare ED visit length and VTE diagnostic cost for ED visits with and without D-dimer tests.

**Results:** D-dimer testing had a moderate effect upon ED visit length, but it did not correspond to differences in ED visit length or VTE diagnostic cost.

**Conclusions:** D-dimer testing was not statistically significant in improving the ED visit length or the VTE diagnostic cost compared to imaging studies for suspected VTE cases in the ED.

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## Supplementary Data

Table S1. VTE ICD 10 codes submitted to hospital for raw data report.

Code	Diagnosis Description
I82401	Acute embolism and thrombosis of unspecified deep veins of right lower extremity
I82402	Acute embolism and thrombosis of unspecified deep veins of left lower extremity
I82403	Acute embolism and thrombosis of unspecified deep veins of lower extremity, bilateral
I82409	Acute embolism and thrombosis of unspecified deep veins of unspecified lower extremity
I82411	Acute embolism and thrombosis of right femoral vein
I82412	Acute embolism and thrombosis of left femoral vein
I82413	Acute embolism and thrombosis of femoral vein, bilateral
I82419	Acute embolism and thrombosis of unspecified femoral vein
I82421	Acute embolism and thrombosis of right iliac vein
I82422	Acute embolism and thrombosis of left iliac vein
I82423	Acute embolism and thrombosis of iliac vein, bilateral
I82429	Acute embolism and thrombosis of unspecified iliac vein
I82431	Acute embolism and thrombosis of right popliteal vein
I82432	Acute embolism and thrombosis of left popliteal vein
I82433	Acute embolism and thrombosis of popliteal vein, bilateral
I82439	Acute embolism and thrombosis of unspecified popliteal vein
I82441	Acute embolism and thrombosis of right tibial vein
I82442	Acute embolism and thrombosis of left tibial vein
I82443	Acute embolism and thrombosis of tibial vein, bilateral
I82449	Acute embolism and thrombosis of unspecified tibial vein
I82491	Acute embolism and thrombosis of other specified deep vein of right lower extremity
I82492	Acute embolism and thrombosis of other specified deep vein of left lower extremity
I82493	Acute embolism and thrombosis of other specified deep vein of lower extremity, bilateral
I82499	Acute embolism and thrombosis of other specified deep vein of unspecified lower extremity
I824Y1	Acute embolism and thrombosis of unspecified deep veins of right proximal lower extremity
I824Y2	Acute embolism and thrombosis of unspecified deep veins of left proximal lower extremity
I824Y3	Acute embolism and thrombosis of unspecified deep veins of proximal lower extremity, bilateral
I824Y9	Acute embolism and thrombosis of unspecified deep veins of unspecified proximal lower extremity
I824Z1	Acute embolism and thrombosis of unspecified deep veins of right distal lower extremity
I824Z2	Acute embolism and thrombosis of unspecified deep veins of left distal lower extremity
I824Z3	Acute embolism and thrombosis of unspecified deep veins of distal lower extremity, bilateral
I824Z9	Acute embolism and thrombosis of unspecified deep veins of unspecified distal lower extremity
I82601	Acute embolism and thrombosis of unspecified veins of right upper extremity
I82602	Acute embolism and thrombosis of unspecified veins of left upper extremity
I82603	Acute embolism and thrombosis of unspecified veins of upper extremity, bilateral
I82609	Acute embolism and thrombosis of unspecified veins of unspecified upper extremity
I82611	Acute embolism and thrombosis of superficial veins of right upper extremity
I82612	Acute embolism and thrombosis of superficial veins of left upper extremity
I82613	Acute embolism and thrombosis of superficial veins of upper extremity, bilateral
I82619	Acute embolism and thrombosis of superficial veins of unspecified upper extremity
I82621	Acute embolism and thrombosis of deep veins of right upper extremity
I82622	Acute embolism and thrombosis of deep veins of left upper extremity
I82623	Acute embolism and thrombosis of deep veins of upper extremity, bilateral
I82629	Acute embolism and thrombosis of deep veins of unspecified upper extremity
I82A11	Acute embolism and thrombosis of right axillary vein
I82A12	Acute embolism and thrombosis of left axillary vein
I82A13	Acute embolism and thrombosis of axillary vein, bilateral
I82A19	Acute embolism and thrombosis of unspecified axillary vein
I82B11	Acute embolism and thrombosis of right subclavian vein
I82B12	Acute embolism and thrombosis of left subclavian vein
I82B13	Acute embolism and thrombosis of subclavian vein, bilateral
I82B19	Acute embolism and thrombosis of unspecified subclavian vein
I82210	Acute embolism and thrombosis of superior vena cava
I82220	Acute embolism and thrombosis of inferior vena cava

Insignificance of D-dimer Testing in the ED

**Table S2. ED visit lengths and VTE diagnostic costs for UTMB ED visits with D-dimer testing.**

<b>Record Number</b>	<b>D-dimer Visit (minutes)</b>	<b>D-dimer Cost (U.S. dollars)</b>
23	226	2,281
26	292	72
29	453	72
42	446	3,127
65	257	72
74	450	2,292
118	244	2,292
120	395	72
136	258	1,920
146	298	72
166	245	810
184	314	72
186	423	2,281
225	382	1,920
238	466	72
292	352	3,030
304	566	72
306	347	2,653
349	193	810
496	455	433
501	200	72
535	388	2,281
540	678	1,920
576	351	72
583	364	1,920
669	344	72
935	227	72

**Table S3. ED visit lengths and VTE diagnostic costs for UTMB ED visits with no D-dimer testing.**

<b>Record Number</b>	<b>Imaging Visit (minutes)</b>	<b>Imaging Cost (U.S. dollars)</b>
7	656	1,978
9	163	738
16	89	361
21	433	4,317
25	259	2,586
34	195	1,848
35	167	1,099
36	384	738
52	867	361
55	302	361
69	279	2,958
70	306	901
81	166	361
82	406	738
91	163	738
96	238	361
99	105	2,586
100	152	361
102	353	361
110	255	361
115	452	1,617
119	183	2,220
121	291	361
130	114	361
131	272	738
132	147	361
138	325	361
151	182	361
154	236	361
158	196	361
167	321	738
174	173	361
175	191	361
177	160	361
185	276	738
188	196	361
191	557	361
192	682	2,220
205	645	738
220	311	361
232	889	361
240	385	361
243	601	361
248	544	2,220
250	147	361

Insignificance of D-dimer Testing in the ED

**Table S3. ED visit lengths and VTE diagnostic costs for UTMB ED visits with no D-dimer testing (continued).**

Record Number	Imaging Visit (minutes)	Imaging Cost (U.S. dollars)
252	123	361
258	304	361
262	198	361
264	634	2,220
269	40	738
299	144	361
316	239	738
368	205	361
383	196	738
384	164	361
387	313	361
389	279	361
409	274	361
416	202	1,848
422	229	1,848
434	196	738
446	304	2,586
457	184	361
480	399	738
485	283	361
515	231	361
528	373	3,311
530	370	1,848
556	236	1,458
563	479	1,848
569	176	361
599	185	361
603	143	361
665	315	361
724	316	361
824	668	738
886	366	4,903
903	321	738
922	322	738