

<b>eCQM Title</b>	<b>Hospital Harm - Postoperative Venous Thromboembolism</b>		
<b>eCQM Identifier (Measure Authoring Tool)</b>	1061	<b>eCQM Version Number</b>	Draft 0.0.000
<b>NQF Number</b>	Not Applicable	<b>GUID</b>	7e887cc3-8e90-401c-bb55-ba4c562cb03c
<b>Measurement Period</b>	January 1, 20XX through December 31, 20XX		
<b>Measure Steward</b>	Centers for Medicare & Medicaid Services (CMS)		
<b>Measure Developer</b>	IMPAQ International		
<b>Endorsed By</b>	None		
<b>Description</b>	<p>The proportion of inpatient hospitalizations for patients 18 years of age or older at admission, who have at least one surgical procedure during the encounter, and who suffer the harm of a postoperative venous thromboembolism (VTE) during the encounter.</p> <p>A postoperative venous thromboembolism (VTE) is defined as a pulmonary embolism (PE) or deep vein thrombosis (DVT) during the encounter for postoperative patients, with VTE not present on admission (NPOA).</p> <p>Limited proprietary coding is contained in the Measure specifications for user convenience. Users of proprietary code sets should obtain all necessary licenses from the owners of the code sets. IMPAQ disclaims all liability for use or accuracy of any third party codes contained in the specifications.</p>		
<b>Copyright</b>	<p>LOINC(R) copyright 2004-2020 Regenstrief Institute, Inc. This material contains SNOMED Clinical Terms(R) (SNOMED CT[R]) copyright 2004-2020 International Health Terminology Standards Development Organisation. ICD-10 copyright 2020 World Health Organization. All Rights Reserved.</p> <p>This measure and specifications are subject to further revisions.</p>		
<b>Disclaimer</b>	<p>This performance measure is not a clinical guideline and does not establish a standard of medical care, and has not been tested for all potential applications.</p> <p>THE MEASURES AND SPECIFICATIONS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND.</p> <p>Due to technical limitations, registered trademarks are indicated by (R) or [R] and unregistered trademarks are indicated by (TM) or [TM].</p>		
<b>Measure Scoring</b>	Proportion		
<b>Measure Type</b>	Outcome		
<b>Stratification</b>	None		
<b>Risk Adjustment</b>	None		
<b>Rate Aggregation</b>	None		
<b>Rationale</b>	<p>In-hospital postoperative venous thromboembolism (VTE) is associated with poor clinical outcomes including fatal pulmonary embolism (PE), post-thrombotic syndrome in the leg, and anticoagulation related bleeding (Bysshe et al., 2017).</p> <p>Despite a reported 17% reduction in the incidence of postoperative VTE between 2014 to 2017, the rate of postoperative VTE in hospitals remains high in the United States (Agency for Healthcare Research and Quality, 2017), leaving opportunity to further reduce the occurrence of these events. The American College of Chest Physicians (ACCP) estimates the cumulative untreated 35-day postoperative risk of VTE is 4.3% (PE 1.5%, deep vein thrombosis (DVT) 2.8%) after major orthopedic surgery (Falck-Ytter et al., 2012). The ACCP estimates this risk decreased to 1.8% (PE 0.55%, DVT 1.25%) when patients were treated with low molecular weight heparin (Falck-Ytter et al., 2012). Moreover, one study found, that Medicare's implementation of a policy to not reimburse hospitals for cases of hospital acquired PE or DVT was associated with a 35% lower incidence of these adverse events (Gidwani et al., 2015). These findings suggest that 1) there remains room for improvement, and 2) a reimbursement policy that penalizes poor patient safety outcomes can be a significant driver in reducing the incidence of hospital-acquired VTE.</p> <p>Adoption of this measure has the potential to improve the quality of care for surgical patients and, therefore, advance the quality of care in patient safety, which is a priority area identified by the National Quality Strategy (Agency for Healthcare Research and Quality, 2017). While this measure is an adapted version of an existing measure for perioperative VTE (PSI 12), re-specification as an eCQM would fill a gap in measurement for the all-payer population.</p>		
<b>Clinical Recommendation Statement</b>	<p>This measure identifies acute postoperative VTE events diagnosed and treated in the hospital. Rates of postoperative VTE can be considered an indicator of the quality of care provided by a hospital, and this measure will help to identify hospitals that have persistently high rates. This measure could incentivize hospitals to reduce the incidence of postoperative VTE and enable them to more reliably assess harm reduction efforts and modify their quality improvement efforts in near real-time.</p>		
<b>Improvement Notation</b>	A lower proportion indicates better quality.		
<b>Reference</b>	Reference Type: CITATION		

	Reference Text: 'Maynard G. Preventing Hospital-Associated Venous Thromboembolism: A Guide for Effective Quality Improvement. 2nd ed. Rockville, MD: Agency for Healthcare Research and Quality; 2016. <a href="https://www.ahrq.gov/patient-safety/resources/vtguide/appc.html">https://www.ahrq.gov/patient-safety/resources/vtguide/appc.html</a> .'
<b>Reference</b>	Reference Type: CITATION
	Reference Text: 'O'Donnell M, Weitz JI. Thromboprophylaxis in surgical patients. <i>Can J Surg.</i> 2003;46(2):129-135.'
<b>Reference</b>	Reference Type: CITATION
	Reference Text: 'Agency for Healthcare Research and Quality. National Scorecard on Hospital-Acquired conditions Updated Baseline Rates and Preliminary Results 2014-2017.'
<b>Reference</b>	Reference Type: CITATION
	Reference Text: 'Bysshe T, Yue Gao M, Krysta Heaney-Huls M, et al. Draft Final Report Estimating the Additional Hospital Inpatient Cost and Mortality Associated with Selected Hospital Acquired Conditions.; 2017. <a href="http://www.ahrq.gov">www.ahrq.gov</a> .'
<b>Reference</b>	Reference Type: CITATION
	Reference Text: 'Carey K, Stefos T. Measuring the cost of hospital adverse patient safety events. <i>Health Econ.</i> 2011;20:1417-1430. doi:10.1002/hec.1680'
<b>Reference</b>	Reference Type: CITATION
	Reference Text: 'Rogers SO, Kilaru RK, Hosokawa P, Henderson WG, Zinner MJ, Khuri SF. Multivariable Predictors of Postoperative Venous Thromboembolic Events after General and Vascular Surgery: Results from the Patient Safety in Surgery Study. <i>J Am Coll Surg.</i> 2007;204(6):1211-1221. doi:10.1016/j.jamcollsurg.2007.02.072.'
<b>Reference</b>	Reference Type: CITATION
	Reference Text: 'Caprini JA. Thrombosis risk assessment as a guide to quality patient care. <i>Disease-a-Month.</i> 2005;51:70-78. doi:10.1016/j.disamonth.2005.02.003.'
<b>Reference</b>	Reference Type: CITATION
	Reference Text: 'Gould MK, Garcia DA, Wren SM, et al. Prevention of VTE in nonorthopedic surgical patients. Antithrombotic therapy and prevention of thrombosis, 9th ed: American College of Chest Physicians evidence-based clinical practice guidelines. <i>Chest.</i> 2012;141(2):e227S-e277S. doi:10.1378/chest.11-2297.'
<b>Reference</b>	Reference Type: CITATION
	Reference Text: 'Falck-Ytter Y, Francis CW, Johanson NA, et al. Prevention of VTE in orthopedic surgery patients. Antithrombotic therapy and prevention of thrombosis, 9th ed: American College of Chest Physicians evidence-based clinical practice guidelines. <i>Chest.</i> 2012;141(2):e278S-e325S. doi:10.1378/chest.11-2404.'
<b>Reference</b>	Reference Type: CITATION
	Reference Text: 'Kearon C, Akl EA, Ornelas J, et al. Antithrombotic Therapy for VTE Disease. <i>Chest.</i> 2016;149(2):315-352. doi:10.1016/j.chest.2015.11.026.'
<b>Reference</b>	Reference Type: CITATION
	Reference Text: 'Anderson DR, Morgano GP, Bennett C, et al. American Society of Hematology 2019 guidelines for management of venous thromboembolism: Prevention of venous thromboembolism in surgical hospitalized patients. <i>Blood Adv.</i> 2019;3(23):3898-3944. doi:10.1182/bloodadvances.2019000975.'
<b>Reference</b>	Reference Type: CITATION
	Reference Text: 'Konstantinides S V., Meyer G, Bueno H, et al. 2019 ESC Guidelines for the diagnosis and management of acute pulmonary embolism developed in collaboration with the European respiratory society (ERS). <i>Eur Heart J.</i> 2020;41(4):543-603. doi:10.1093/eurheartj/ehz405.'
<b>Reference</b>	Reference Type: CITATION
	Reference Text: 'Excellence NI for H and C. Venous Thromboembolism in over 16s: Reducing the Risk of Hospital-Acquired Deep Vein Thrombosis or Pulmonary Embolism.; 2018. <a href="https://www.nice.org.uk/guidance/ng89/resources/venous-thromboembolism-in-over-16s-reducing-the-risk-of-hospitalacquired-deep-vein-thrombosis-or-pulmonary-embolism-pdf-1837703092165">https://www.nice.org.uk/guidance/ng89/resources/venous-thromboembolism-in-over-16s-reducing-the-risk-of-hospitalacquired-deep-vein-thrombosis-or-pulmonary-embolism-pdf-1837703092165</a> .'
<b>Reference</b>	Reference Type: CITATION
	Reference Text: 'Kahn SR, Diendéré G, Morrison DR, et al. Effectiveness of interventions for the implementation of thromboprophylaxis in hospitalised patients at risk of venous thromboembolism: An updated abridged Cochrane systematic review and meta-analysis of randomised controlled trials. <i>BMJ Open.</i> 2019;9:e024444. doi:10.1136/bmjopen-2018-024444.'
<b>Reference</b>	Reference Type: CITATION
	Reference Text: 'Agency for Healthcare Research and Quality. Patient Safety Indicator 12 (PSI 12) Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate. 2019. <a href="https://www.qualityindicators.ahrq.gov/Downloads/Modules/PSI/V2019/TechSpecs/PSI_12_Periooperative_Pulmonary_Embolism_or_Deep_Vein_Thrombosis_Rate.pdf">https://www.qualityindicators.ahrq.gov/Downloads/Modules/PSI/V2019/TechSpecs/PSI_12_Periooperative_Pulmonary_Embolism_or_Deep_Vein_Thrombosis_Rate.pdf</a> .'
<b>Reference</b>	Reference Type: CITATION

	<p>Reference Text: 'Geerts WH, Bergqvist D, Pineo GF, et al. Prevention of venous thromboembolism: American College of Chest Physicians evidence-based clinical practice guidelines (8th edition). Chest. 2008;133(6):381S-453S. doi:10.1378/chest.08-0656.'</p> <p>Reference Type: CITATION</p>
<b>Reference</b>	<p>Reference Text: 'Avorn J, Winkelmayr WC. Comparing the costs, risks, and benefits of competing strategies for the primary prevention of venous thromboembolism. Circulation. 2004;110(Suppl IV):IV 25-IV32. doi:10.1161/01.CIR.0000150642.10916.ea.'</p> <p>Reference Type: CITATION</p>
<b>Reference</b>	<p>Reference Text: 'Sadeghi B, Romano PS, Maynard G, et al. Mechanical and suboptimal pharmacologic prophylaxis and delayed mobilization but not morbid obesity are associated with venous thromboembolism after total knee arthroplasty: A case-control study. J Hosp Med. 2012;7(9):665-671. doi:10.1002/jhm.1962.'</p> <p>Reference Type: CITATION</p>
<b>Reference</b>	<p>Reference Text: 'Chandrasekaran S, Ariaretnam SK, Tsung J, Dickison D. Early mobilization after total knee replacement reduces the incidence of deep venous thrombosis. ANZ J Surg. 2009;79:526-529. doi:10.1111/j.1445-2197.2009.04982.x.'</p> <p>Reference Type: CITATION</p>
<b>Reference</b>	<p>Reference Text: 'Pearse EO, Caldwell BF, Lockwood RJ, Hollard J. Early mobilisation after conventional knee replacement may reduce the risk of post-operative venous thromboembolism. J Bone Jt Surg - Ser B. 2007;89-B (3):316-322. doi:10.1302/0301-620X.89B3.18196.'</p> <p>Reference Type: CITATION</p>
<b>Reference</b>	<p>Reference Text: 'CDC. Diagnosis and Treatment of Venous Thromboembolism. <a href="https://www.cdc.gov/ncbddd/dvt/diagnosis-treatment.html#:~:text=Duplex%20ultrasonography%20is%20an%20imaging,when%20a%20clot%20breaks%20up.">https://www.cdc.gov/ncbddd/dvt/diagnosis-treatment.html#:~:text=Duplex ultrasonography is an imaging,when a clot breaks up.</a> Published 2020.'</p> <p>Reference Type: CITATION</p>
<b>Reference</b>	<p>Reference Text: 'Lim W, Le Gal G, Bates SM, et al. American Society of Hematology 2018 guidelines for management of venous thromboembolism: Diagnosis of venous thromboembolism. Blood Adv. 2018;2(22):3226-3256. doi:10.1182/bloodadvances.2018024828.'</p> <p>Reference Type: CITATION</p>
<b>Reference</b>	<p>Reference Text: 'Ortel TL, Neumann I, Ageno W, et al. American Society of Hematology 2020 guidelines for management of venous thromboembolism: treatment of deep vein thrombosis and pulmonary embolism. Blood Adv. 2020;4(19):4693-4738. doi:10.1182/bloodadvances.2020001830.'</p> <p>Reference Type: CITATION</p>
<b>Reference</b>	<p>Reference Text: 'Marashi SM. Venous thromboembolism (VTE) harm measurement and risk assessment in real-time using electronic health records (EHR). 2018. <a href="https://digitalcommons.wayne.edu/oa_dissertations/1946/">https://digitalcommons.wayne.edu/oa_dissertations/1946/.</a></p> <p>Reference Type: CITATION</p>
<b>Reference</b>	<p>Reference Text: 'The Joint Commission. VTE-6 Hospital Acquired Potentially-Preventable Venous Thromboembolism. <a href="https://manual.jointcommission.org/releases/TJC2020A/MIF0163.html">https://manual.jointcommission.org/releases/TJC2020A/MIF0163.html.</a></p> <p>Reference Type: CITATION</p>
<b>Reference</b>	<p>Reference Text: 'Saving Lives and Saving Money: Hospital-Acquired Conditions Update. Rockville, MD; 2016. <a href="https://www.ahrq.gov/hai/pfp/2014-final.html">https://www.ahrq.gov/hai/pfp/2014-final.html.</a></p> <p>Reference Type: CITATION</p>
<b>Reference</b>	<p>Reference Text: 'Gidwani R, Bhattacharya J. CMS Reimbursement Reform and the Incidence of Hospital-Acquired Pulmonary Embolism or Deep Vein Thrombosis. J Gen Intern Med. 2015;30(5):588-596. doi:10.1007/s11606-014-3087-3'</p> <p>Reference Type: CITATION</p>
<b>Reference</b>	<p>Reference Text: 'Agency for Healthcare Research and Quality. About the National Quality Strategy. <a href="https://www.ahrq.gov/workingforquality/about/index.html">https://www.ahrq.gov/workingforquality/about/index.html.</a> Published 2017. Accessed July 23, 2020.'</p> <p>Reference Type: CITATION</p>
<b>Reference</b>	<p>Reference Text: 'White RH, Keenan CR. Effects of race and ethnicity on the incidence of venous thromboembolism. Thromb Res. 2009;123(SUPPL. 4). doi:10.1016/S0049-3848(09)70136-7.'</p>
<b>Definition</b>	<p>Inpatient hospitalizations: Includes time in the emergency department or observation when these encounters are within an hour of the inpatient admission.</p> <p>A postoperative venous thromboembolism (VTE) is defined as a pulmonary embolism (PE) or deep vein thrombosis (DVT) during the encounter for postoperative patients, with VTE not present on admission (NPOA).</p>
<b>Guidance</b>	
<b>Transmission Format</b>	TBD

<b>Initial Population</b>	Inpatient hospitalizations where the patient is 18 years of age or older at the start of the encounter, and at least one surgical procedure was performed during the encounter.
<b>Denominator</b>	Equals Initial Population
<b>Denominator Exclusions</b>	Inpatient hospitalizations for patients with venous thromboembolism (VTE) present on admission. Inpatient hospitalizations for patients with obstetrical conditions.
<b>Numerator</b>	Inpatient hospitalizations for patients with a postoperative venous thromboembolism (VTE).
<b>Numerator Exclusions</b>	None
<b>Denominator Exceptions</b>	None
<b>Supplemental Data Elements</b>	For every patient evaluated by this measure also identify payer, race, ethnicity and gender

<b>Measure Set</b>
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