

## Poster sessions

time of diagnosis or very shortly afterwards. Two thirds of these (69.5%) were discharged on LMWH but the remainder (30.5%) were discharged on warfarin. Perhaps unsurprisingly, a similar percentage of the consultant physicians who completed the internet-based survey said they would prescribe LMWH, although a sizeable proportion continue to prescribe warfarin.

**Conclusion** NICE guidance is largely being adhered to but a proportion of clinicians continue to prescribe warfarin despite there being good evidence that LMWH is associated with a reduced risk of VTE recurrence in this group.<sup>2</sup> Further investigation is needed to determine whether this pattern of prescribing is prevalent throughout the UK, and why the guidance is being ignored in our Trust.

## REFERENCES

1. National Institute for Health and Care Excellence (2012). Venous thromboembolic diseases: the management of venous thromboembolic diseases and the role of thrombophilia testing [CG144]. London: National Institute for Health and Care Excellence.
2. Lee AY *et al.* Low-molecular-weight heparin versus a coumarin for the prevention of recurrent venous thromboembolism in patients with cancer. *N Engl J Med* 2003;349:146–153.

**P151 V-DIMERS STUDY - VALUE OF D-DIMERS IN ESTIMATING RISK OF SIGNIFICANT PULMONARY EMBOLISM AND DEEP VEIN THROMBOSIS**

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**Hypothesis** The risk of Venous Thromboembolism (VTE) including Pulmonary Embolism (PE) increases proportionately with the level of d-dimers.

**Introduction** The risk of PE/VTE is low when the values of d-dimers are below the reference range (1) (<500 ng/ml in our hospital). There is no clear evidence to suggest that risk of VTE increases proportionately with rising levels of d-dimers. We studied the correlation between the various values of d-dimers and the associated risk of having a PE/VTE.

**Methods** Data was collected retrospectively from March 2011 to Feb 2012. For the study we divided the patients into 3 risk groups based on d-dimers. Group 1: 500–1000; Group 2: 1000–5000; Group 3: >5000. Each group was analysed by separate individual. Data was collected by selecting only those patients who had definitive scan to investigate for PE/VTE **Results**

See Table When d-dimers are >5000, the risk of PE/VTE is significantly elevated when compared to <5000. (p value <0.0005)

When the d-dimers are > 5000, it's a good predictor of central PE (p value <0.0005) or Proximal DVT (p value <0.0005).

**Results**

**Abstract P151 Table 1.**

	Total Cases	Positive VTE	PE		DVT	
			Central	Peripheral	Proximal	Distal
Group 1	195	16 (8%)	0 (0%)	4 (6.25%)	2 (1.5%)	10 (7.6%)
Group 2	221	34 (15.3%)	4 (5.4%)	7 (9.4%)	7 (4.7%)	16 (10.8%)
Group 3	122	81 (66.4%)	19 (46.3%)	5 (12.2%)	45 (55.5%)	12 (14.8%)

**Conclusion** Our study suggests that when the d-dimers are significantly elevated (>5000) the associated risk of VTE (PE and DVT) is significantly elevated. The risk appears to increase

proportionately until the value of 5000 beyond which it increases exponentially. Levels >5000 strongly predicts the likelihood of a central PE or a proximal DVT. Clinicians could use this as an additional indicator to thrombolys PE's in absence of confirmatory test. Further validity studies will be required to confirm this.

## REFERENCES

1. Dr Stein *et al.* d-Dimer for the Exclusion of Acute Venous Thrombosis and Pulmonary Embolism; *Ann Intern Med.* 2004;140(8):589–602.doi:10.7326/0003-4819-140-8-200404200-00005

**P152 PULMONARY EMBOLISM RULE-OUT CRITERIA IN CLINICAL PRACTICE**

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Suspected pulmonary embolism (PE) is a common reason for referral to the medical team on call. The pulmonary embolism rule-out criteria (PERC) is a validated scoring system to identify patients at low risk of PE, allowing for possible discharge from the Emergency Department (ED) prior to referral. It is potentially advantageous over the modified Well's score (MWS) for PE, as a D-dimer result is not required.

We aimed to investigate two practice models: the PERC and the MWS in the investigation of suspected PE.

Those patients referred to the medical team on call by the University Hospital Lewisham ED with a suspected PE were identified over a 3 month period (January to March 2012). Further information was gathered on each patient by review of their ED notes. Patients who did not meet all 8 PERC criteria or had a MWS >4 were considered to be at high risk for PE.

94 patients were identified. The mean age was 53 years (range 18–92) and 68 were female (72%). 9 PEs were diagnosed.

13/94 patients met all PERC criteria, among these no PEs were diagnosed. This group underwent 10 D-dimer tests (70% positive), 2 CTPAs, and 3 V/Q scans. The overall length of stay directly related to waiting for these tests was 6 days, with a mean admission length of 1.3 days per patient. When all PERC criteria were not met due to age (>50 years) alone, the D-dimer proved an excellent 'rule-out' test, as the 2 patients in this cohort with PEs, had strongly positive D-dimer results.

Using MWS, 32/94 patients scored >4. Among this group there were 4 confirmed PEs (13%) and 1 indeterminate V/Q result. In the 62 patients with a MWS =4 there were also 4 confirmed PEs (6%), each with a positive D-dimer.

PERC is a useful scoring system to identify patients unlikely to have a PE and seems advantageous over the MWS in terms of reducing unnecessary admissions and investigations, while maintaining patient safety. When the PERC criteria are not met due to age alone, a negative D-dimer may also be an effective 'rule-out' option.

**P153 MANAGING SUSPECTED PULMONARY EMBOLISM: APPLYING AN EFFECTIVE AMBULATORY EMERGENCY CARE STRATEGY**

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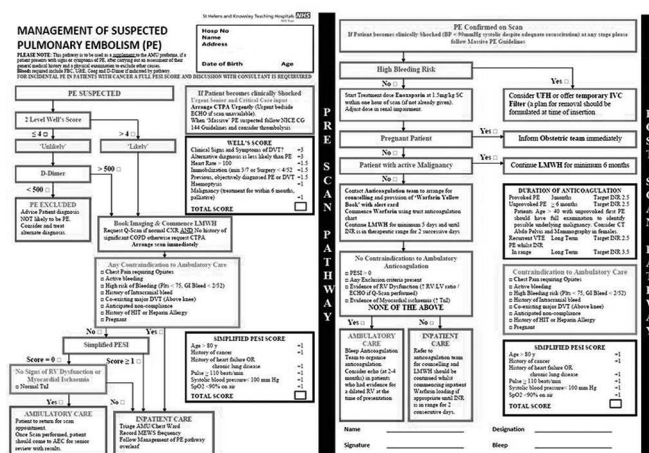
**Background** We observed a high number of patients admitted with suspected pulmonary embolism (PE) via our acute medical unit. After positive diagnosis, they remained as inpatients until their International Normalised Ratio (INR) was in range resulting in long lengths of stay - Median (range) 7 (0 to 52) days. Recently, there has been increasing interest in ambulatory management providing high quality cost-effective care.

**Objectives** To develop a care pathway for suspected PE incorporating prognostic scoring to assist ambulatory same-day management. To assess cost effectiveness of such a strategy in terms of bed day release whilst ensuring that it did not adversely affect safety by misclassification of patients.

**Method** We formulated an ambulatory pathway (figure1) with an algorithm comprising of the simplified PESI (pulmonary embolism severity index) score and serum Troponin I measurement with various exclusion criteria to identify patients fit for ambulatory management. Over a 3-month period, 191 patients underwent computerised tomography pulmonary angiogram (CTPA) for suspected PE. 28/191 patients were excluded from analysis as they were outpatients or pre-existing inpatients. We retrospectively applied the pathway to the remaining 163 patients. To assess the impact of the pathway, we measured increase in the number of patients that could have been managed using same-day emergency care, incremental bed day release and benefits derived via the enhanced tariff through Payment by Results (PbR). Safety was assessed by noting mortality within the ambulatory group identified.

**Results** 73/163 (44%) patients were male and mean (SD) age was 62 (17.8) years. Using our pathway, 36/163 (22%) of all suspected PEs could have been managed within a zero-day admission. 5/36 (14%) with a definite PE could have been managed as ambulatory patients. A mean incremental stay of 4 days for the 36 patients equates to 144 bed days released over the 3-month period. The PbR additional income on completion of a same-day emergency management would add £225/patient to savings made. None of the patients selected for ambulatory management via the pathway suffered any adverse events.

**Conclusion** We have successfully developed and implemented an effective ambulatory management strategy for suspected PE. A validity study is planned.



Abstract P153 Figure 1.

# P154 OUTPATIENT MANAGEMENT OF PULMONARY EMBOLISM-PATIENT CHARACTERISTICS AND OUTCOMES

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**Introduction** Management of Pulmonary Embolism (PE) has been until recently largely in-patient based and markedly affects length of stay in these patients. Recent evidence suggests that suspected or confirmed cases of PE can be managed out of hospital<sup>1, 2</sup>. We present our experience of outpatient management of PE in a small district general hospital.

**Method** We identified 35 patients investigated/treated for PE as outpatient between March 2012 and June 2013. Demographic and clinical data was collected from case notes. Statistical analysis was performed on Medcalc based on normality.

**Result** The table below profiles our cohort. (Table)

There was a high PE diagnosis (51%) within our cohort despite most patients being in a low PESI class. Clinical decision made in high PESI class to manage as outpatient. PE was diagnosed in 4 of the 5(80%) patients with a raised Troponin level (odds ratio 1.66, statistically not significant). Out of 21 GP referrals, 13(61.9%) had a positive scan as opposed to 5 of the 13 (38.4%) patients referred from hospital, however this did not attain statistical significance (odds ratio 3.25, p = 0.12). The equivocal CTPA was deemed not PE on clinical grounds. All patients were reviewed by a Registrar or Consultant prior to discharge. No mortality recorded till date. One patient re-presented with exacerbation of Asthma.

**Discussion** Carefully selected patients with suspected or confirmed PE can be managed out of hospital. Based on time to imaging, at least 28 unnecessary inpatient days were avoided leading to £9800 saved and a high pick up rate. In our experience, mortality and re-admission rates have been minimal highlighting outpatient management as a safe and cost-effective strategy in management of PE.

## REFERENCES

1. Safety of outpatient treatment in acute pulmonary embolism. Erkens PM, Gandara E, Wells P, et al. *J Thromb Haemost*, Nov 2010, vol/iss. 8/11(2412-7), 1538-7836
2. Outpatient Management of suspected Pulmonary Embolism at a District General Hospital; A Two Month Review. JA Benjamin, A Griffiths, S power, et al. *Thorax* 2012;67:A123 doi:10.1136/thoraxjnl-2013-204457.305

## Abstract P154 Table 1.

Referral source-number of patients	General Practice-17, A&E-10, Clinics-4
Time of assessment	Out of Hours-18, Working hours-17
Sex	Females-25, Male-10
Age-Mean(SD)	51.26(18.85)
D-dimer, range(Median)	50-6793(512)
Positive Troponin	5/30 (16.6%) (not done in 5 cases)
PESI Class 1-2(low risk)	33/35 (94.2%)
CTPA done in 24 hours	24/35 (68.5%)
Result	Positive-18, Negative-16, Equivocal-1

SD-Standard Deviation. PESI- Pulmonary Embolism Severity Index.

## P155 ARE WE UTILISING CT PULMONARY ANGIOGRAPHY APPROPRIATELY IN THE DIAGNOSIS OF SUSPECTED PULMONARY EMBOLISM? A THREE MONTH REVIEW IN A DISTRICT GENERAL HOSPITAL

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