macrophages, and whether they are required for this remodelling remains unclear. We have recently developed a mouse model (*MacLow*) where approximately 50% of macrophages are depleted and now aim to investigate whether *MacLow* mice would demonstrate a reduced pulmonary hypertension phenotype in response to hypoxia, when compared to non-macrophage ablated littermates.

Methods Macrophage ablation was induced in CD68-rtTA-eGFP/tetDTA double transgenic mice (*MacLow*) where macrophage-specific (CD68) induction of the cytotoxic diphtheria toxin A chain (DTA) is achieved by administration of doxycycline containing chow diet (doxy-chow). Mice were divided by sex and then fed either regular or doxy-chow for 2 weeks prior to either 2 weeks exposure to hypoxia (10% oxygen), or room air. All mice were phenotyped for PH by echocardiography followed by closed chest cardiac catheterisation. Heart and lung tissue were harvested for morphological, immunohistochemical and biochemical analyses.

Results Doxy-chow fed mice displayed the expected 50% reduction in macrophages (liver) compared to controls. *MacLow* mice with the induced ablation of macrophages were not protected from hypoxia induced pulmonary hypertension although females displayed a trend for higher RVSP after hypoxia (34 mm Hg vs 29 mm Hg). Interestingly male *MacLow* mice with induced macrophage ablation displayed a spontaneous PAH phenotype (33 mm Hg), in normoxia, that was not further increased by hypoxia. The changes in RVSP were accompanied by appropriate changes in RVH.

Conclusion These data suggest that macrophages play a modulating role in pulmonary vascular remodelling but further work is required to explore the mechanisms involved in this phenotype, and to fully assess the change in macrophage number within the lungs of these mice.

P6 MANAGING ACUTE PULMONARY EMBOLISM IN THE OUTPATIENT SETTING: INITIAL EXPERIENCES AND OUTCOMES IN A UK DISTRICT GENERAL HOSPITAL

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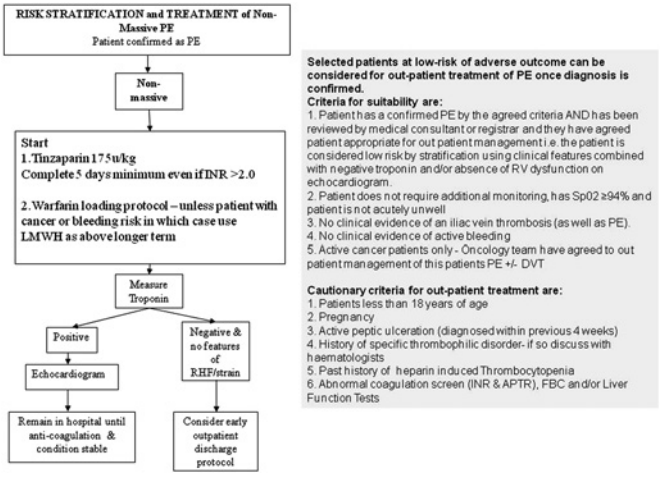
Introduction and Objectives Outpatient (OP) management of low risk cases of pulmonary embolism (PE) can be as effective as inpatient (IP) management and reduce length of stay (LOS) (1). Concerns exist regarding the safety of this strategy, with a wide range of adverse outcomes reported (2). In our hospital a treatment pathway was implemented to identify low risk individuals diagnosed with PE suitable for OP management, based on the European Society of Cardiology PE Guidelines (2008) (Abstract P6 figure 1). The aim of this study was to retrospectively review all cases of acute PE in a 6-month period, to determine appropriateness of management as OP and assess LOS, venous thromboembolism (VTE) recurrence and anticoagulation related adverse events.



Abstract P6 Figure 1 Pathway to identify low risk individuals diagnosed with PE suitable for OP management.

Methods Episodes of PE occurring between January and June 2010 were identified through clinical coding (ICD-10: I26). Clinical notes were reviewed and data collected for LOS, time to diagnostic investigation, risk stratification (troponin, echocardiography and adverse clinical features), IP/OP management, recurrence of VTE, bleeding events, respiratory clinic follow-up and mortality.

Results 102 cases were identified of which 90 had acute PE. 81 sets of clinical notes were available. 24 (29.6%) patients were managed as OP. This group was younger than those treated as IP (59.30±3.84 vs 64±2.12, $p<0.05$). The LOS was significantly shorter for OP: (1.87±0.27 vs 8.79±0.77 days; $p<0.0001$). There were no episodes of recurrent VTE or bleeding events at 90 days in either group, and only one readmission for anticoagulation related events (high INR; IP group). Three patients (3.7%) died within 90 days (1 from sepsis, 1 from metastatic carcinoma and 1 from congestive cardiac failure). We identified a number of patients with low risk who were not treated as OP for a various reasons. All patients with OP management were subsequently followed by Respiratory team.

Conclusions Out patient management of diagnosed PE in a carefully selected group is practical, safe and decreases LOS using existing OP DVT services. The use of risk stratification assists identification of safe OP management.

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P7 ARE WE SCREENING SURVIVORS OF PULMONARY EMBOLISM (PE) FOR CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION (CTEPH)?

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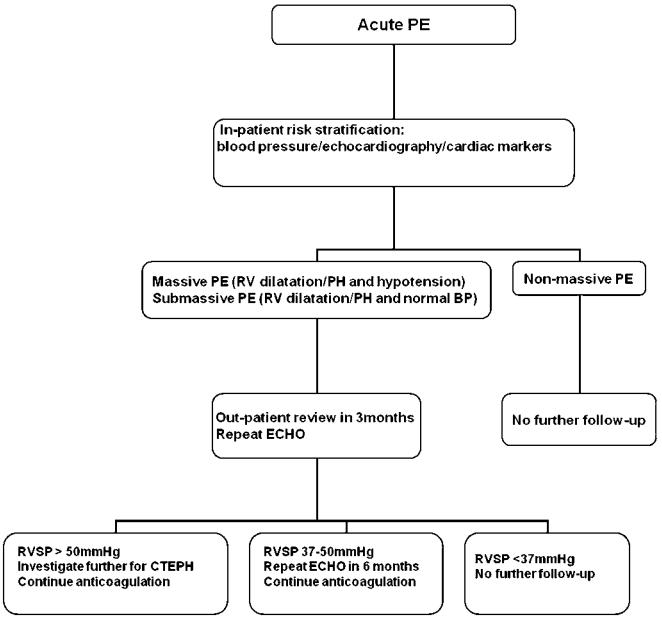
Background Incidence of CTEPH following idiopathic PE has been reported as 4%. The British Thoracic Society recommends that patients with massive or submassive PE should undergo echocardiography 6–12 weeks following the index event.

Aim To investigate local practice in the follow-up of patients with acute PE to devise management guidelines.

Methods A retrospective study of 110 patients diagnosed with acute PE at our hospital between 2007 and 2008 was conducted. Mean age was 68.6 years (range 27–100), 40 (36%) were male and 18 (16%) had previous venous thromboembolism. In 51 (46%) patients PE was idiopathic.

Results All patients diagnosed with PE were normotensive and 27 (25%) had in-patient echocardiography (ECHO). In 5 (18%) patients scan confirmed RV dilatation and 2 of them had repeated ECHO within 2 months. Subsequently one patient was diagnosed with CTEPH and underwent pulmonary endarterectomy. In the group of patients with acute PE but without in-patient echocardiography 40 of 83 (48%) received a follow-up appointment (mean 4 months) and 10 (25%) had follow-up ECHO. Two more patients were diagnosed with CTEPH during this period (mean 34 months) with an overall incidence of 2.9%.

Conclusion Recorded outcome, literature review and the BTS/ERS guidelines resulted in the development of local protocol for the screening acute PE survivors for CTEPH. [Abstract P7 figure 1].



Abstract P7 Figure 1

P8 USE OF D-DIMER: CRP RATIO COMPARED TO D-DIMER ALONE TO PREDICT PE ON VQ SCANNING

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Introduction Pulmonary embolism (PE) is a common presentation in the emergency department and in-patient setting. Measurement of D-dimer in conjunction with clinical risk assessment is used to exclude patients at low risk of PE. Some of the conditions that mimic PE, including infection and inflammation, are also associated with elevated D-dimer concentrations such that the test lacks specificity. Most infectious and inflammatory conditions result in an elevated acute-phase serum response which can be quantified using C-Reactive Protein (CRP) assay. We hypothesised, therefore, that patients with isolated PE would have a higher D-dimer: CRP ratio than patients with infectious or inflammatory mimics of PE and therefore that this ratio would be more discriminatory.
Methods We analysed data from all patients who underwent V/Q scanning to confirm or exclude PE at Royal Free Hampstead NHS Trust, London, UK, during 2010. The CRP and D-dimer results closest, but preceding the V/Q scan were analysed using receiver operator characteristic (ROC) curves to test the hypothesis that the D-dimer: CRP ratio (expressed as ng/ml:mg/l) was a better predictor or PE than D-dimer alone.
Results 179 patients (mean (SD) age 52.8 (19.7) years) had a V/Q scan for suspected PE during the study period. Of these, 85 had a D-dimer assay, a median (IQR) of 1 (0–1) days prior to the imaging. The median D-dimer concentration was 272 (178–675) ng/ml. 137 patients had CRP assay (12 (3–56) mg/l), measured 1 (0–1) days prior to imaging. It was possible to calculate a D-dimer: CRP ratio in 78 patients (44% of the total), of whom 19 (24%) had a V/Q scan reported as high risk for PE. D-dimer, and the D-dimer: CRP ratio, but not CRP were significantly higher between patients who did and did not have high-risk V/Q scans (Mann–Whitney U test analyses: 764 vs 245 ng/ml, p=0.001; 107 vs 31 units, p=0.020 and 20 vs 10 mg/l, p=0.134 respectively). Biomarker data were $\log_{10}$ transformed to permit ROC analysis. Area-under-curve (AUC) values using ROC for D-dimer alone, and D-dimer: CRP ratio were 0.74 and 0.68 respectively, both less than the standard criteria for utility of 0.8.
Conclusions D-dimer: CRP ratio is not superior to D-dimer alone in predicting PE in patients with a clinical suspicion of this diagnosis sufficient to require V/Q scanning.

P9 DETERMINING THE APPROPRIATE D-DIMER CUT-OFF TO EXCLUDE PULMONARY EMBOLI IN AN AMBULATORY CARE SETTING USING DIFFERENT THRESHOLDS BASED ON PRE-TEST PROBABILITY

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Introduction Currently the same threshold value is used to identify a positive D-dimer result for all patients presenting to our ambulatory clinic with suspected pulmonary emboli (PE). It has been suggested that adjusting the threshold value according to the pre-test probability would exclude PE in more patients than using the same cut-off point regardless of clinical probability.
Methods Data from 362 consecutive patients presenting to the ambulatory PE clinic was collected. A pre-test probability of PE was recorded for all patients and those with a high pre-test probability had radiological investigations. Patients with a low or intermediate pre-test probability had a latex agglutination D-dimer test. If this result was =0.5 μg/ml they had further investigations, otherwise they were discharged. The diagnosis of PE was made if a VQ scan showed ventilation/perfusion mismatch or CTPA report demonstrated PE. Receiver operating characteristic curve analysis was performed separately for patients with low and intermediate probability and the optimum cut-off value to exclude PE determined. Sensitivity, specificity, negative predictive value and positive predictive value for different cut-off points were determined.
Results 362 patients were included in the analysis, 207 (57%) had low, 129 (36%) intermediate and 26 (7%) high pre-test probability. Prevalence of PE was 2% in the low probability group, 14% in the intermediate probability group and 42% in the high probability group. No patients with a D-dimer of <0.5 μg/ml who were discharged without further tests have re-presented with similar symptoms. In the low pre-test probability group, a cut-off point of 1.07 improved the specificity from 64% to 89% while maintaining a sensitivity of 100% and negative predictive value of 100%. Analysis in patients in the intermediate risk group suggested that a cut-off of 0.5 μg/ml was appropriate. By adjusting the D-dimer threshold to >1.0 μg/ml in the low probability group, a further 53 patients could have been discharged home without need for radiological investigation.
Conclusion The diagnostic accuracy of D-dimer testing may be improved in patients with a low pre-test probability by adjusting the cut-off threshold.

P10 RISKS OF LOW MOLECULAR WEIGHT HEPARIN IN SUSPECTED PULMONARY EMBOLISM

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Background National Patients Safety Agency (NPSA) issued a statement in July 2010 highlighting the risks associated with the prescription of low molecular weight Heparins (LMWHs). Evidence of harm has been reported due to dosing errors caused by failure to weigh patients and calculate creatinine clearance.
Aim We hypothesised that harm associated with prescription of LMWHs is underreported on the national reporting and learning system (NRLS). We performed a retrospective study to evaluate the frequency of harm associated with LMWHs in patients admitted with a suspicion of pulmonary embolism (PE).