Introduction
Venous thromboembolic (VTE) disease encapsulates both deep vein thrombosis (DVT) and pulmonary embolism (PE). A VTE is provoked when the cause is attributed to certain risk factors. These include surgery, trauma, family history, cancer, pregnancy, prolonged immobility and certain blood diseases. Current National Institute for Clinical Excellence (NICE) guidance (2012) states that patients diagnosed with an unprovoked VTE should have a physical examination (guided by history), blood tests, urinalysis and a chest x-ray (CXR) in an attempt to identify an occult malignancy. If there are no features of cancer based on these initial investigations, then the physician is to consider an abdomen-pelvic computed topography (CT) scan (and a mammogram in women) in patients over the age of 40 years. This guidance is based upon a Swedish prospective cohort study of 62000 patients in 1998 which identified the incidence of cancer in an unprovoked VTE at 11%. On the contrary, a randomized controlled trial of 854 patients in 2015 found the incidence of cancer in unprovoked VTE to be 4%. Additionally there was no significant affect on rate of cancer diagnosis or cancer mortality when CT was used to aid diagnosis when compared to the limited occult screening.

Objectives
1. Identify whether Royal Derby Hospital complies with NICE guidelines regarding the further investigation of unprovoked VTE:
   - Age <40 years old
   - History (evidence of cancer or previous cancer) or examination findings (masses etc)
   - CXR
   - CT abdomen and pelvis (not chest)
2. Calculate and analyse the local data of occult malignancy incidence in unprovoked VTE and compare to previous research

Methods
A computerised radiology information system (CRIS) search for the word ‘unprovoked’ within the report text for CT between the 1/1/16 and 31/12/16 was conducted. Further data was collected from iSOFT Clinical Management system (ICM) patient searches to populate information regarding age, diagnosis and prognosis. From the report text, 76 scans were identified that were truly ‘unprovoked’. This was then analysed using Microsoft Excel formulae functions and illustrated in graphic form.

Results
The results demonstrated non-adherence to the NICE guidance with regard to age (4%), preceding chest x-ray (18%) and correct CT (32%). Additionally, 7% of patients received a CT pulmonary angiogram and a CT chest. Malignancy was detected in just 3 patients (2 died within 6 weeks from metastases; 1 had no tissue diagnosis and did not require treatment). The cancer incidence in the unprovoked VTE cohort was 4% (1% were potentially treatable).

Conclusions
These results reflect newer research conducted by Carrier and Robertson (4% cancer incidence) which do not support the need to CT each patient with an unprovoked VTE. This investigation does not improve cancer detection rate or change morbidity outcomes. Current cancer screening methods based on patient history, examination and simple tests are sufficient to aid diagnosis or to prompt further investigation. A change in guidelines will prevent unnecessary patient radiation exposure and reduce the ever growing work load burden on radiology departments. The current NICE guidelines are expected to be updated in 2019 to reflect the newer studies that are referenced below.

References
2. NICE guidelines: Section 1.5: Investigations for Cancer; https://www.nice.org.uk/guidance/cg144/chapter/recommendations#investigations-for-cancer-2

Do investigations for cancer in patients with spontaneous VTE (DVT or PE) improve patient outcomes (morbidity and mortality)?

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