

The Incidence of Thymic Malignancy in England 2001-2016

David Gilligan^{1,3}, Cong Chen², Brian Rous², Claire Haslop³, Susan
Harden^{1,2,3}

Department of Oncology, Cambridge University Hospitals,
Cambridge UK¹, National Cancer Registration and Analysis Service,
Public Health England, London UK², Thoracic Oncology Service,
Royal Papworth Hospital, Cambridge UK³

Disclosures

None relating to this presentation

Background

clinical practice guidelines

Thymic epithelial tumours: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up†

N. Girard¹, E. Ruffini², A. Marx³, C. Faivre-Finn⁴ & S. Peters⁵, on behalf of the ESMO Guidelines Committee*

Incidence and epidemiology
Thymic epithelial tumours represent a heterogeneous group of rare thoracic cancers, with reported annual incidence ranging from 1.3 to 3.2 per million [1]. Thymic epithelial tumours are classified according to the World Health Organization (WHO) histopathological classification, which distinguishes thymomas from thymic carcinomas.

Thymomas are further subdivided into different types (called A, AB, B1, B2, B3 and rare others) based upon the morphology of epithelial tumour cells, the relative proportion of the non-tumoural lymphocytic component (decreasing from type B1 to B3) and resemblance to normal thymic architecture (Table 1) [2, 3]. The term 'thymic carcinoma' should be avoided. Thymomas are more frequent than thymic carcinomas, which have an incidence of 0.2 to 0.5 per million [3].

overall, even if a slight female preponderance has been reported for type A, AB and B1 subtypes in most studies, and a male preponderance in carcinomas [2-7].
No environmental or infectious factors have been demonstrated to play a role in the pathogenesis of thymoma after radiation, solid-organ transplantation and immunosuppression, including the context of human immunodeficiency virus infection, are rare; differential diagnosis with thymic rebound hyperplasia may be discussed in this setting (see below).
Genetic risk factors, such as multiple endocrine neoplasia type 1 (MEN1), may influence the development of thymomas, as well as their association with cancer susceptibility syndromes [8].
Moreover, extrathymic haematopoietic cancers (mostly diffuse large B-cell lymphoma and leukaemia) and a broad spectrum of solid cancers (stomach, pancreas, colon and thyroid) have been reported to occur more frequently in thymoma patients, particularly

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Thymic epithelial tumours: A population-based study of the incidence, diagnostic procedures and therapy

Wouter K. de Jong^{a,*}, Johannes L.G. Blaauwgeers^b, Michael Schaapveld^c, Wim Timens^d, Theo J. Klinkenberg^e, Harry J.M. Groen^a

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ABSTRACT

The population-based incidence, diagnostic procedures, therapy and survival of thymic epithelial tumours were determined using the Netherlands Cancer Registry and the Netherlands Cancer Registry. Excess mortality compared to the general population was estimated by relative survival analysis. Between 1994 and 2003, 537 thymic epithelial tumours were diagnosed. The incidence of all thymic epithelial tumours was 3.2/1,000,000. Diagnosis was obtained by primary resection in 96% of cases. Survival data were available for 232 cases. Not only thymic carcinoma, but also thymomas (types B1-B3) were associated with excess mortality. Cases that underwent resection (78%) had a better survival than non-operated cases (median survival >10 years versus 2.1 years, $p < 0.001$). Amongst the surgically treated cases (median survival >10 years), thymic carcinoma did not predict survival ($p = 0.53$). Thymic epithelial tumours are rare. Excess mortality was observed in the majority of cases. Surgery offers the best perspectives, even if the resection is incomplete.

Keywords:
Thymic epithelial tumour
Population-based study
Incidence
Diagnosis
Therapy
Survival

1. Introduction

Thymomas and thymic carcinomas are rare tumours but nevertheless are the most common neoplasms that arise from the thymus in the anterior mediastinum.¹ Thymomas originate from thymic epithelial cells. Although in thymomas often locally invasive tumours and can therefore be considered as potentially malignant. Whether they are truly malignant is still a subject of debate. Thymic carcinoma also arise from

thymic epithelial cells, but they have both a malignant cellular appearance and behaviour. One-third to two-thirds of the thymomas are found in asymptomatic patients.¹ The most well known paraneoplastic syndrome is myasthenia gravis, occurring in up to 45% of patients with a thymoma.^{1,2} A preoperative diagnosis of a thymic tumour is based on clinical features and anatomical appearance on computed tomography (CT).³ A definitive diagnosis of a thymic epithelial tumour is subsequently established by examination of tissue obtained through transthoracic needle or surgical biopsy, or

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Corresponding author: Tel.: +31 50 3613161, fax: +31 50 3613320.
E-mail address: w.k.de.jong@i.uva.nl (W.K. de Jong).
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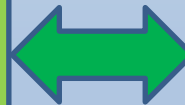
Background

ESMO guidelines: 1.3 – 3.2 thymic tumours per million population/year



This would equate to 70 – 175 new cases per year in England

Thoracic Oncology MDTs – feeling this was an underestimate



Patients diagnosed wanting more information and support

Data Collection

- National Cancer Registration Service (NCRAS)
 - Collects >300,000 cancer cases/year
 - Multiple data sources, matching & merging
 - Demographics
 - Medical Records
 - Death Certificates
 - Other registries etc.
 - UK legal permission to collect data without consent
 - Can provide a complete picture of cancer incidence & prevalence in England only

	Population mid-2016	Share of UK population	Increase on mid-2015	Percentage change since mid-2015	Percentage change since mid-2006
England	55,268,100	84.2%	481,800	0.9%	8.4%
Wales	3,113,200	4.7%	14,100	0.5%	4.3%
Scotland	5,404,700	8.2%	31,700	0.6%	5.3%
Northern Ireland	1,862,100	2.8%	10,500	0.6%	6.8%
UK	65,648,100	100.0%	538,100	0.8%	7.9%

Source: Office for National Statistics, National Records of Scotland, Northern Ireland Statistics and Research Agency

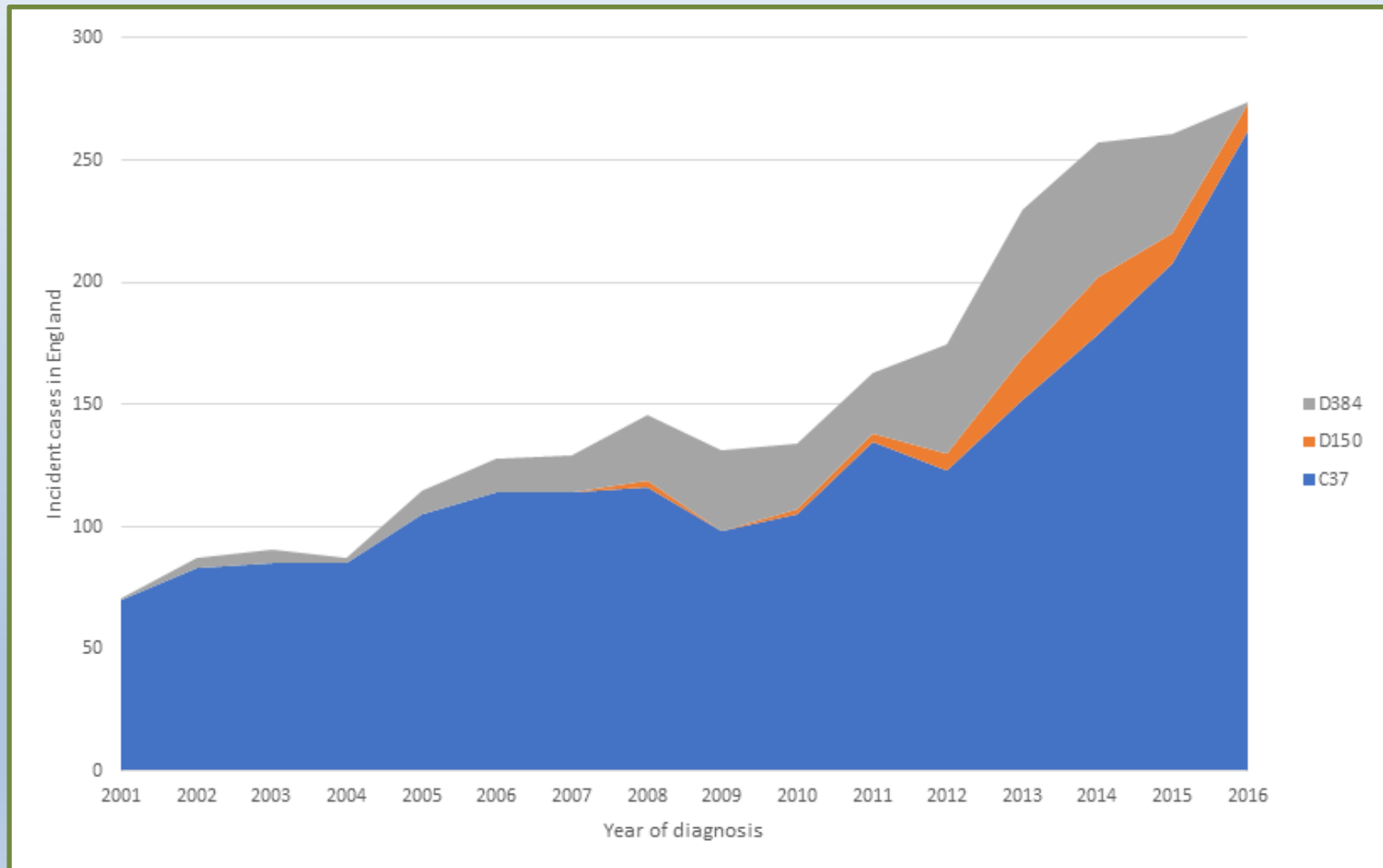


Coding History

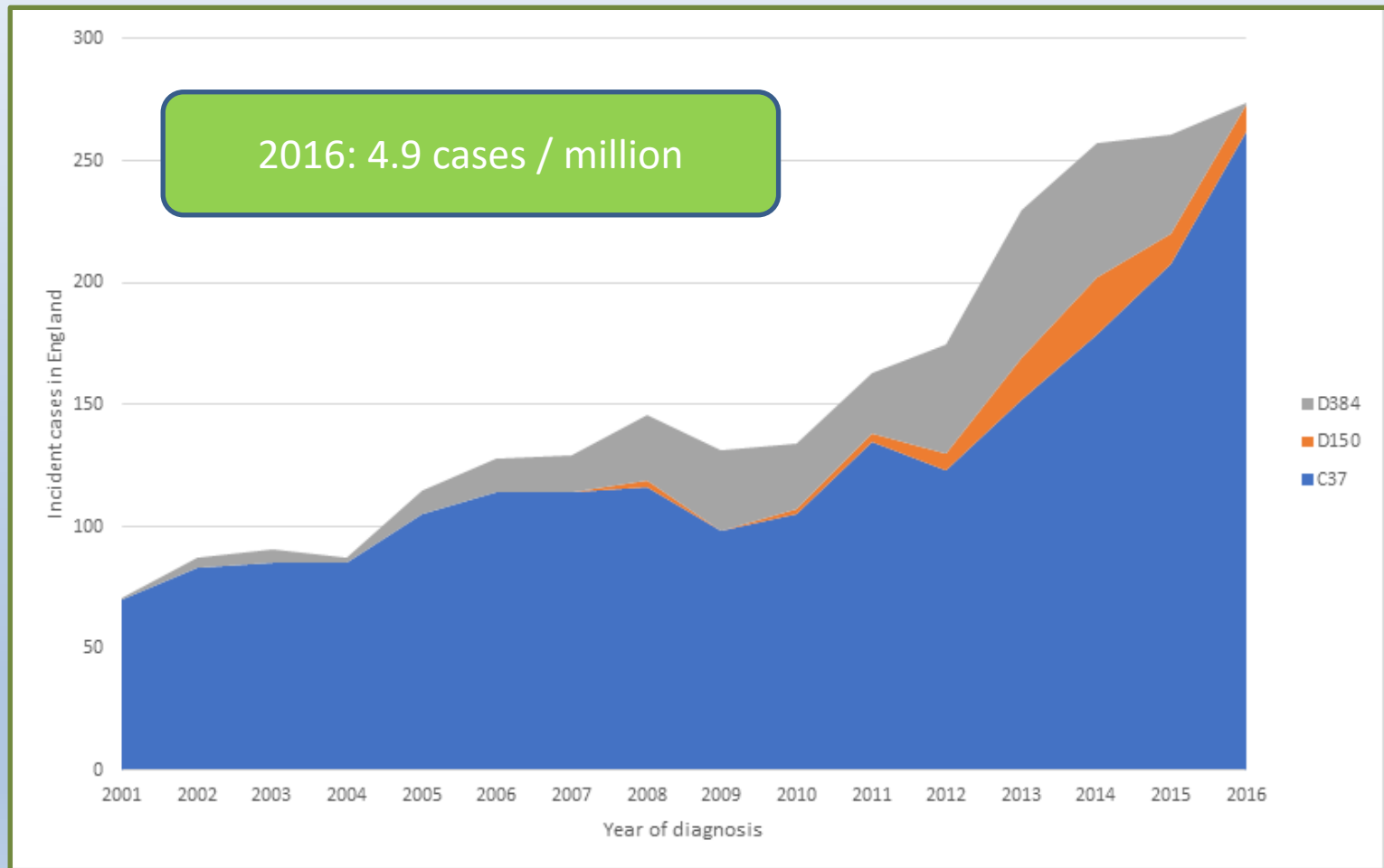
- ICD10 – pre 2000 all thymomas were considered benign and not recorded
 - Unless otherwise stated
- 2000-2013 – gradual switch from ICD10 to ICD-O3
- From 2013 ICD-O3 coding registered as uncertain or malignant
- 2016 – almost all cases graded as malignant

ICD10 codes	
C37	Malignant neoplasm of thymus
D38.4	Neoplasm uncertain behaviour thymus
D15.0	Benign neoplasm thymus

Recorded Cases of Thymic Tumours: 2001-2016

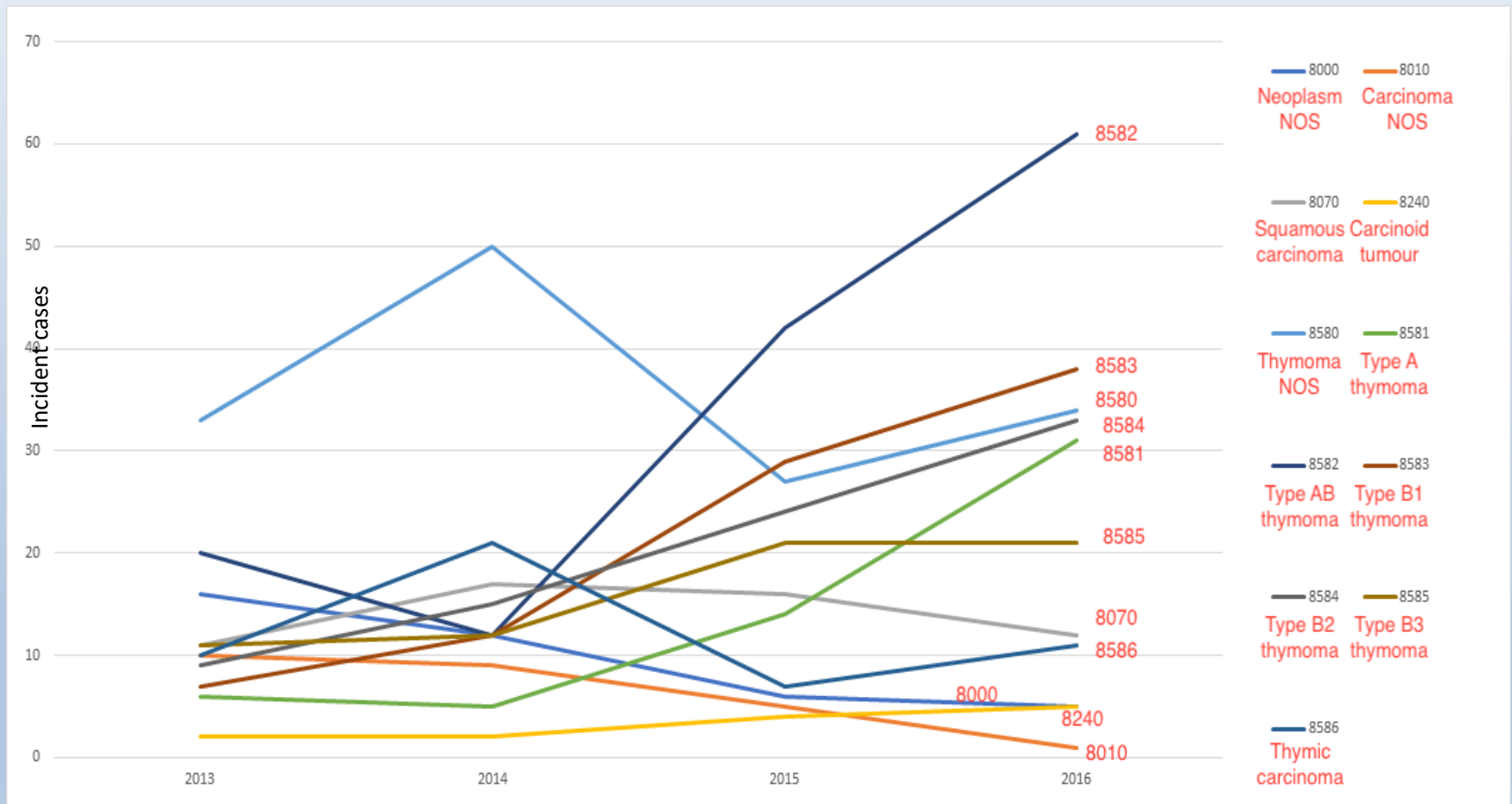


Recorded Cases of Thymic Tumours: 2001-2016



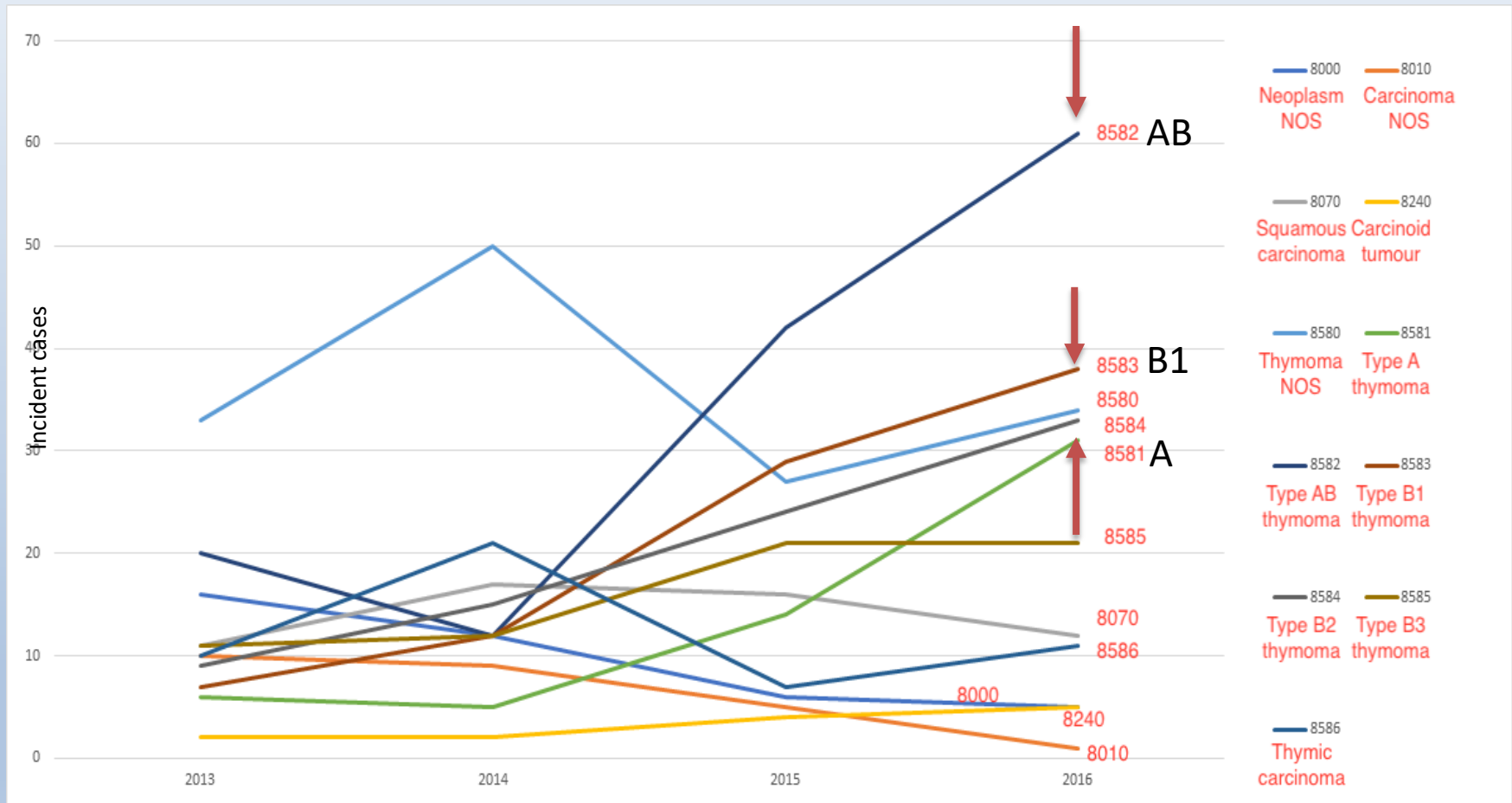
Subtypes: 2013 -16

Morphology Codes ICD-03



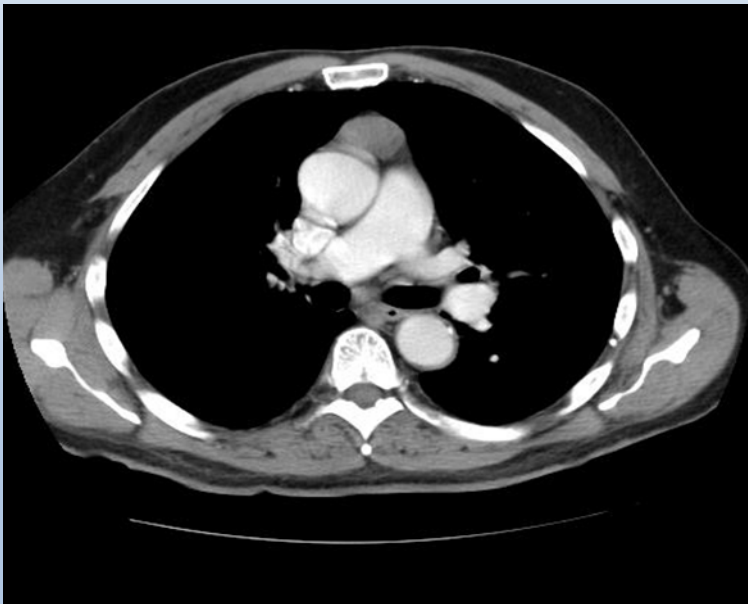
Subtypes: 2013 -16

Morphology Codes ICD-O3

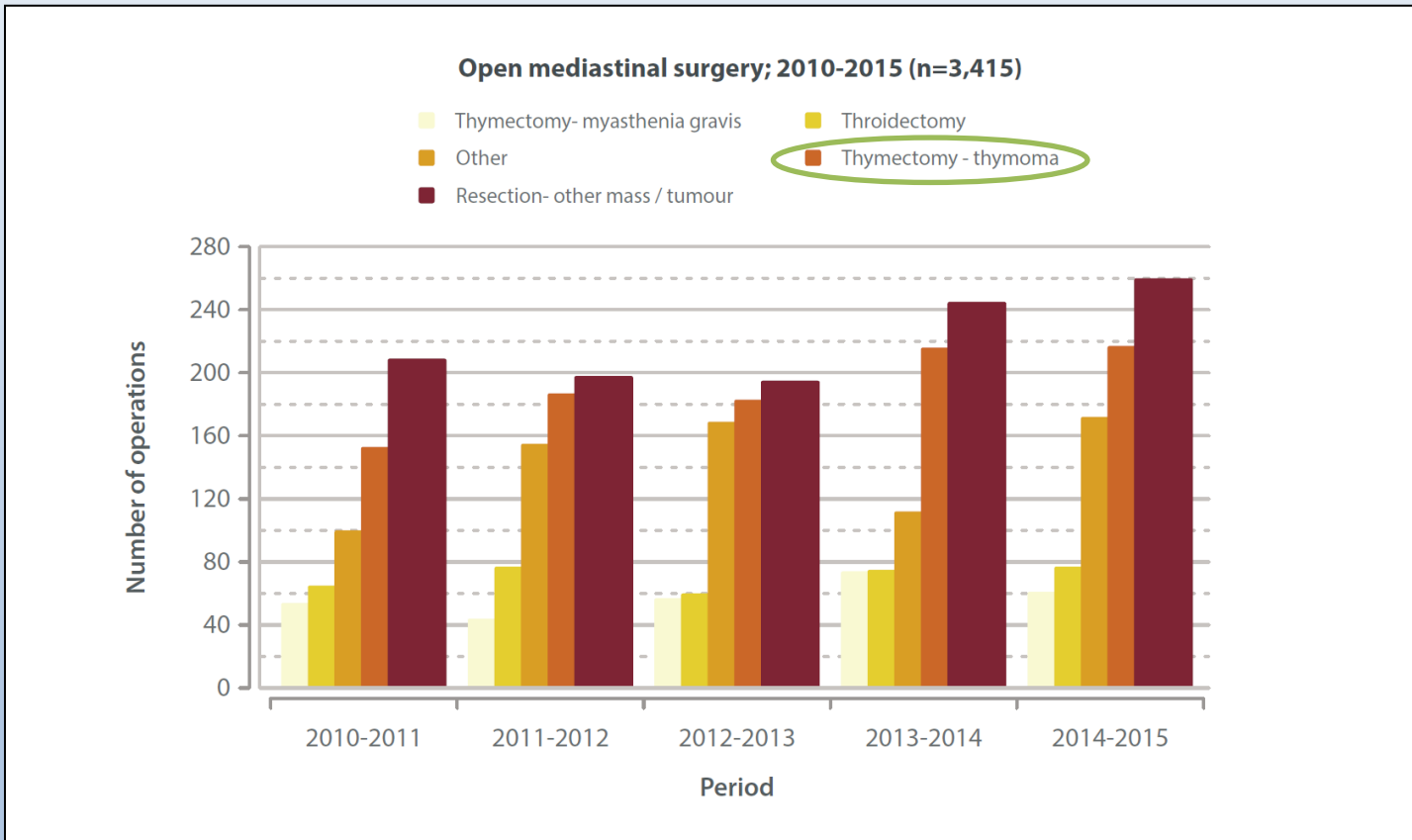


More CT scans performed

Possible incidental findings?



UK & Ireland Surgical data: thymectomy for thymoma



SCTS - 2017-18 Data: UK & Ireland

Type of thymectomy - (for tumour)	Cases	Deaths
Open	202	1
VATS	106	0
Robotic (RATS)	26	0

D West, SCTS (2018) Third National Thoracic Surgery Activity & Outcomes Report

Conclusion

Year	Thymic tumours (T): cases per million	Thymic carcinoma (TC): cases per million	New cases per year in England (in UK)
2001	1.3/1,000,000	n/a	
2016	4.9/1,000,000	0.45/1,000,000	270 (320) T 25 (30) TC

More work to be done
on staging and
outcomes

Take Home Messages

1. Better recording of thymic tumours as malignant by ICD-O3 from 2013 including morphology
2. Increase in number of CT thorax investigations possibly leading to more incidental findings of thymic tumours
3. Increased discussion at MDT meetings and advances in surgical technique – more resections
 - especially WHO types A/AB/B1
4. UK now discussing clinical / patient networks

Cambridge University Hospitals **NHS**
NHS Foundation Trust



Thank - you

NHS
Royal Papworth Hospital
NHS Foundation Trust



Public Health
England

ncras
National Cancer Registration and Analysis Service

NHS
England



Thymic UK



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