

# *Effect of drug class on association of beta-blocker with ovarian cancer survival*

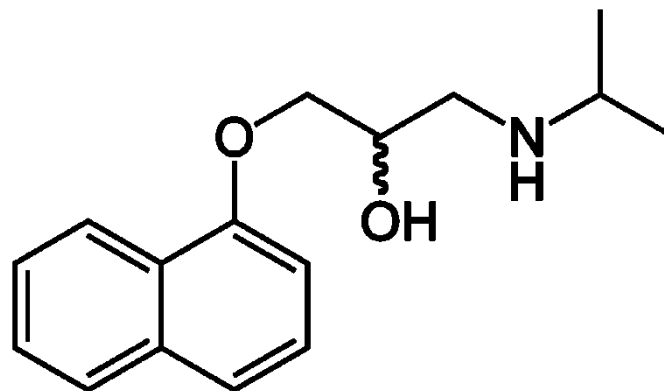
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1. National Cancer Registry Ireland, 2. Trinity College Dublin, 3. Newcastle University

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# Beta blocker indications

- Heart failure / Myocardia infarction / Angina
- Arrhythmias / Atrial fibrillation
- Supraventricular tachycardia
- Sinus tachycardia / Hypertension
- Anxiety
- Migraine
- Glaucoma
- High blood pressure



# Effect on Ovarian Cancer?

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Gynecologic Oncology

248 women  
(23 exposed)



journal homepage: [www.elsevier.com/locate/ygyno](http://www.elsevier.com/locate/ygyno)

## Cancer

### Original Article

#### Clinical impact of selective and nonselective beta-blockers on survival in patients with ovarian cancer

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### Issue



Cancer

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1425 women  
(269 exposed after-baseline)

Beta block

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### Study

Sigrun A Johannesdottir<sup>12\*</sup>, Morten Schmidt<sup>1,2</sup>, Gary Phillips<sup>3</sup>, Ronald Glaser<sup>4,5,6</sup>, Eric V Yang<sup>5,6</sup>, Michael Blumenfeld<sup>4</sup> and Stanley Lemeshow<sup>1,2</sup>

6,626 women  
(all-cause mortality)

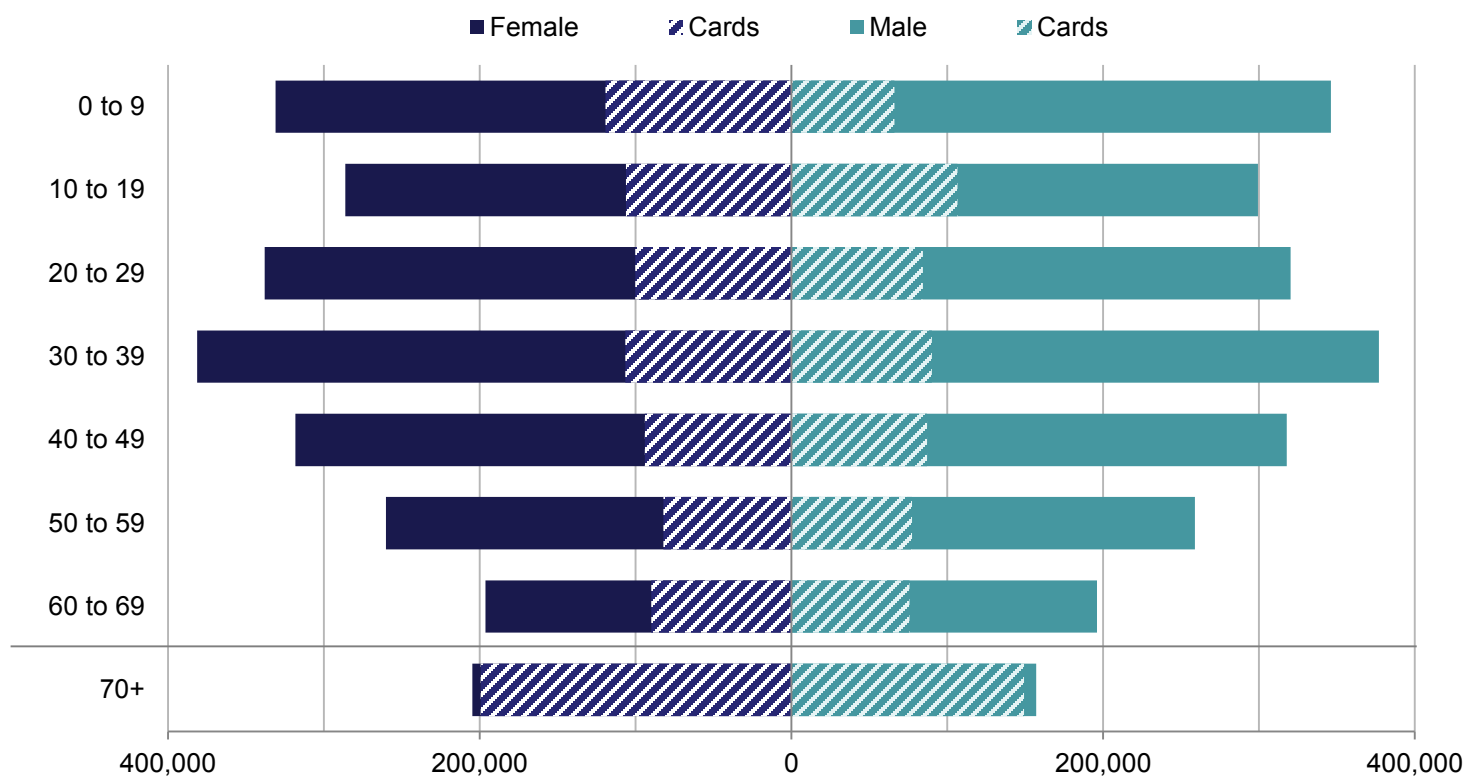
ing ovarian  
cohort

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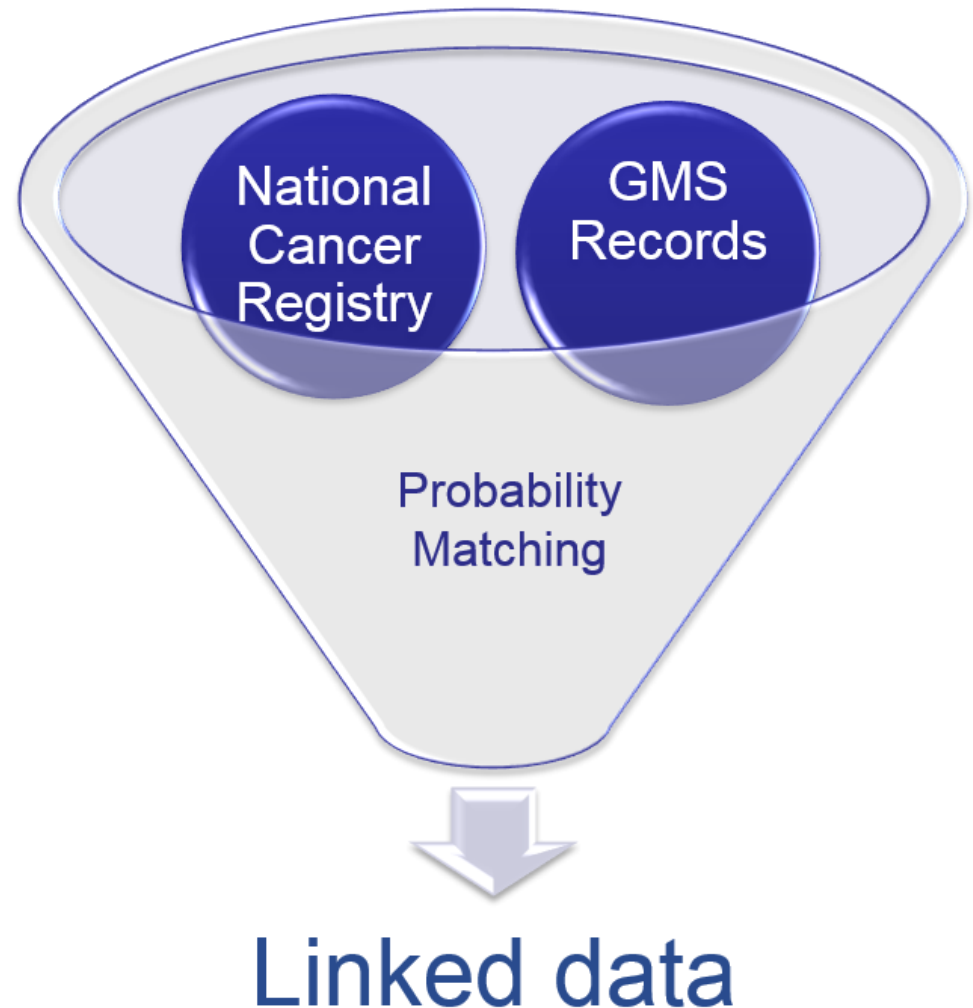
# Age and free healthcare

## Irish population (and medical cards) in 2011



# Prescription data linkage

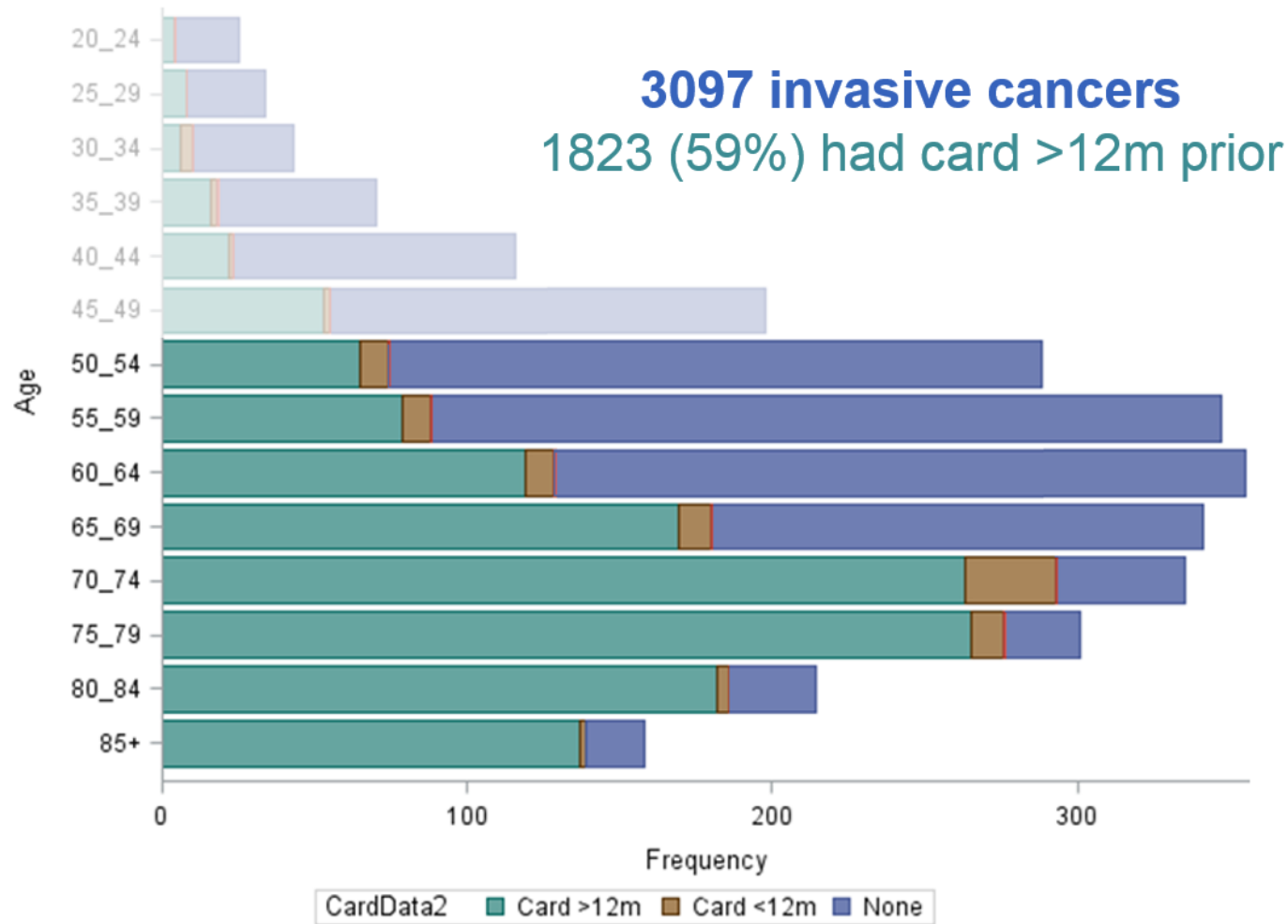
All women diagnosed with invasive ovarian cancer (ICD10-C56) between 2001-2011 were linked to GMS card records



# Methods

- Associations between any pre-diagnosis beta-blocker exposure and cause-specific survival using Cox regression
  - Models adjusted for: age, smoking, marital status, diagnosis year, urban/rural residence, deprivation, stage, grade, and surgery at diagnosis.
  - Alive cases censored on 31/12/2012
- Secondary: Adjusting for competing risks
- Pre-planned subgroup analysis
  - Selective, Non-selective, Both

# Ovarian cancers 2001-2010



# Exposure pre-diagnosis

Characteristic		N	BB (%)
Age at diagnosis	<60	325	34 (10.5)
	60-69	373	84 (22.5)
	70-79	679	189 (27.8)
	80-89	392	115 (29.3)
	90+	54	10 (18.5)
Deprivation quintile	1 – Least dep.	236	68 (28.8)
	2	200	36 (18.0)
	3	260	75 (28.8)
	4	306	64 (20.9)
	5 – Most dep.	703	159 (22.6)
Marital status	Married	722	165 (22.9)
	Single	319	68 (21.3)
	Other	782	199 (25.5)
Population density	High-Urban	639	161 (25.2)
	Intermed.Urban	368	78 (21.2)
	Rural	678	158 (23.3)

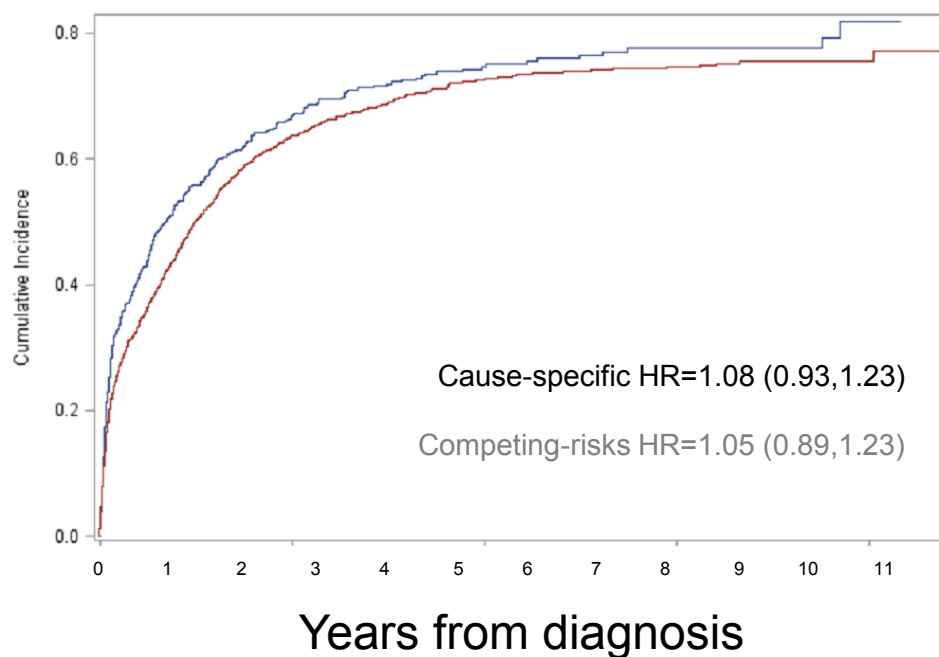
Characteristic		N	BB (%)
Smoking status	Current	277	44 (15.9)
	Never smoked	880	206 (23.4)
	Unknown	499	138 (27.7)
Grade	Well	84	19 (22.6)
	Moderately	203	47 (23.2)
	Poorly	568	128 (22.5)
	Undifferentiated	24	4 (16.7)
Tumour stage	Missing	944	234 (24.8)
	1	257	51 (19.8)
	2	148	32 (21.6)
	3	535	134 (25.0)
	4	577	153 (26.5)
	Missing	306	62 (20.3)

Drug Class		N	%
Class	None	1391	76%
	Selective	384	21%
	Non-selective	34	2%
	Both	14	1%

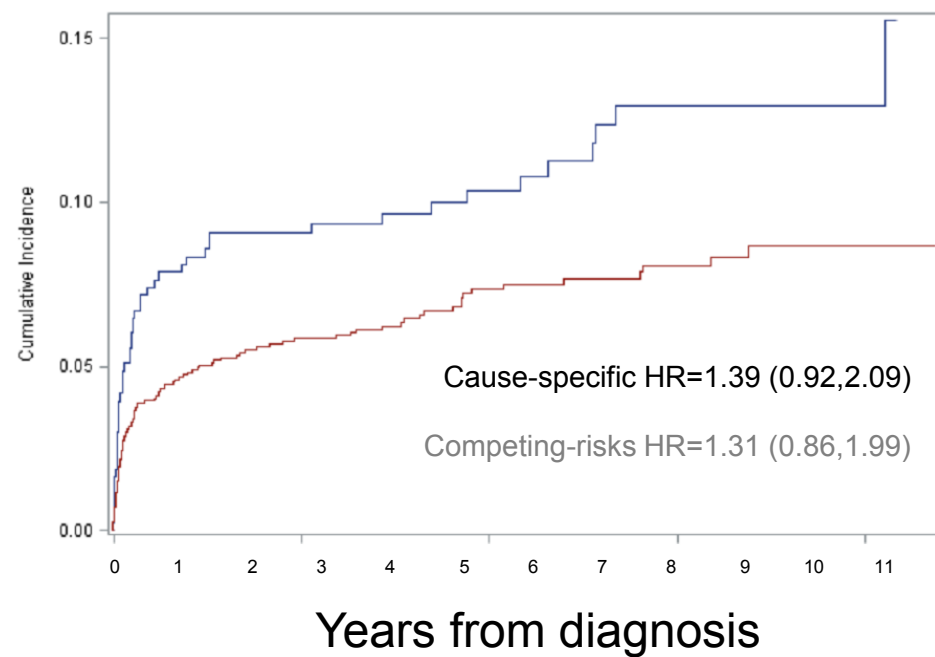


# Cumulative incidence of death

## Ovarian cancer



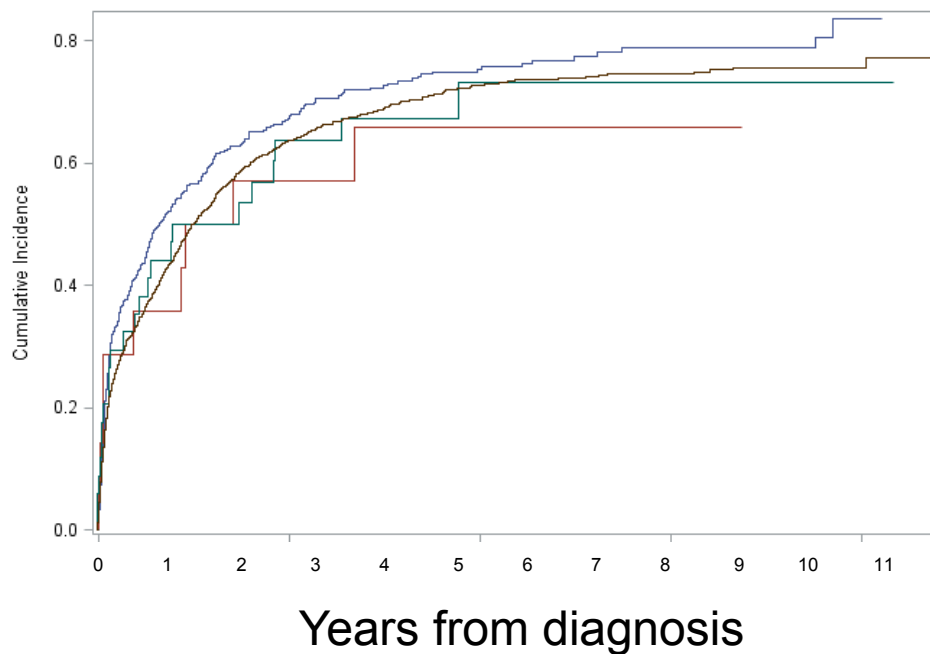
## Other causes



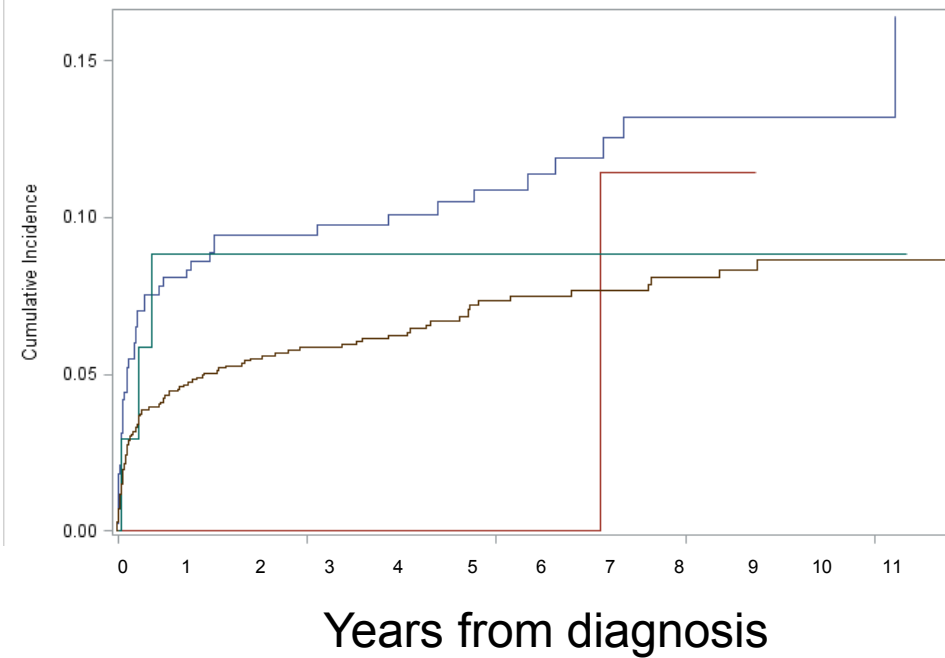
— Any BB — None

# Effects by drug class

## Ovarian cancer



## Other causes



— Selective BB (n=384) — Both (n=14) — Non-selective BB (n=34) — None (n=1391)

# Effects by drug class

## Adjusted effects...

Model*		Ovarian cancer death HR (95%CI)	Other death HR (95%CI)
Test of interaction		P=0.55	P=0.37
Pre-diagnostic	Selective BB	1.11 (0.95, 1.30)	1.04 (0.88, 1.24)
	Non-selective BB	0.88 (0.56, 1.38)	0.96 (0.60, 1.53)
	Both	1.24 (0.63, 2.43)	1.41 (0.75, 2.62)

*\*Models adjusted for age, smoking, marital status, diagnosis year, urban/rural residence, deprivation, stage, grade, and surgery at diagnosis*

# Conclusion

This is one of the largest observational studies of beta-blocker use in ovarian cancer:

- No association between pre-diagnostic exposure and cancer-specific survival.
- Unknown if drug class is relevant.

This analysis is being replicated in Northern Ireland (NICR) and English (CPRD) populations.

# Acknowledgements

- Staff at National Cancer Registry of Ireland, in particular:
  - **The data team** for linkage of GMS records,
  - **Tumour registration officers** for collecting data
- **HSE-PCRS** for providing the GMS prescription data
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