Factors affecting time to reimbursement of novel anticancer drugs in Ireland

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BACKGROUND

To secure reimbursement in Ireland, all new drugs are first evaluated by The National Centre for Pharmacoeconomics (NCPE) for cost and clinical effectiveness and budgetary impact.(1)
Innovative anti-cancer medicines over the last quarter of century have transformed the fight against cancer across multiple domains.(2, 3) The alignment of novel drug development with precise scientific principles could result in accelerated reimbursement, fostering a mutually beneficial cycle of reduced research and development costs, shorter timeframes for market entry, and enhanced returns on investment for pharmaceutical companies.(4) Simultaneously, it promises to amplify clinical benefits and expedite patient access to medical breakthroughs.

OBJECTIVE

We investigated the time to reimbursement (TTR) of novel oncology drugs since 2006 that were reimbursed in Ireland that had a European Society of Medical Oncology Magnitude of Clinical Benefit Scale (ESMO-MCBS; which serves as a tool to assess and quantify the clinical benefit of cancer treatments) rating and were accompanied by a companion diagnostic (CDx) or not.

METHODS

We developed a database derived from all pharmacoeconomic evaluations conducted by the NCPE from September 2006 until the end of 2022.(1) The database excluded CAR T-Cell, chemo-, hormonal, modified virus, and radiopharmaceutical therapies. Based on indication, oncology drugs were labelled if accompanied by a CDx for that oncological condition. The dataset of biologic and small molecule oncology drugs were extracted from 30 pharmaceutical companies that had made a Rapid Review (RR) submissions to the NCPE.(5) A subset of oncology drugs that were reimbursed and rated by the ESMO-MCBS were extracted, and additional information was added: whether the drug originated from the largest twelve pharmaceutical firms (Pharma), had accelerated access (AA), a CDx, conditional marketing authorization (CMA), first-in-class (FIC), or orphan status (OS). Analysis was conducted to test the relationship between TTR and the absence and presence of these specific factors employing Spearman's rank correlation.

RESULTS

Since 2006 there were 188 submissions for oncology drugs to the NCPE (excluding chemotherapeutics). There has been a steady increase in the number of oncology drugs submitted to the NCPE in Ireland (apart from 2020), with drugs requiring a CDx outpacing non-CDx drugs since 2019 with 2021 being the exception, see figure 1. Only 116 (61.3%) of these oncology drugs received an ESMO-MCBS rating of either 1 through 5 (in a non-curative setting) or A, B, or C (in a curative setting), of those oncology drugs rated, 70 had a CDx and 46 did not have a CDx, see figure 2.(6) 61 of these oncology drugs with an ESMO-MCBS rating were eventually reimbursed and available for our analysis, the average TTR was 591 days. Factors that were strongly correlated with TTR included the presence of a CDx (503 vs 664 days; p = 0.04), CMA (289 vs 596 days; p = 0.02) and 'Pharma' (584 vs 316 days; p = 0.03). Other factors such as ESMO-MCBS rating, AA, FIC, and OS did not have a significant correlation with TTR.

Figure 1: Non-CDx versus CDx novel oncology drug submissions to NCPE

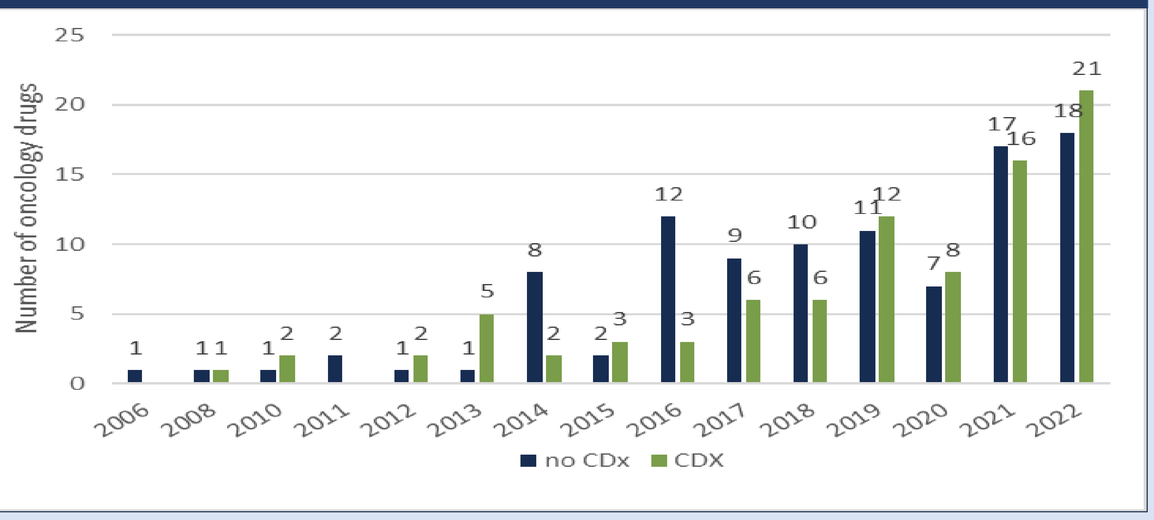


Figure 2: Rapid Review submissions to NCPE which received an ESMO-MCBS rating

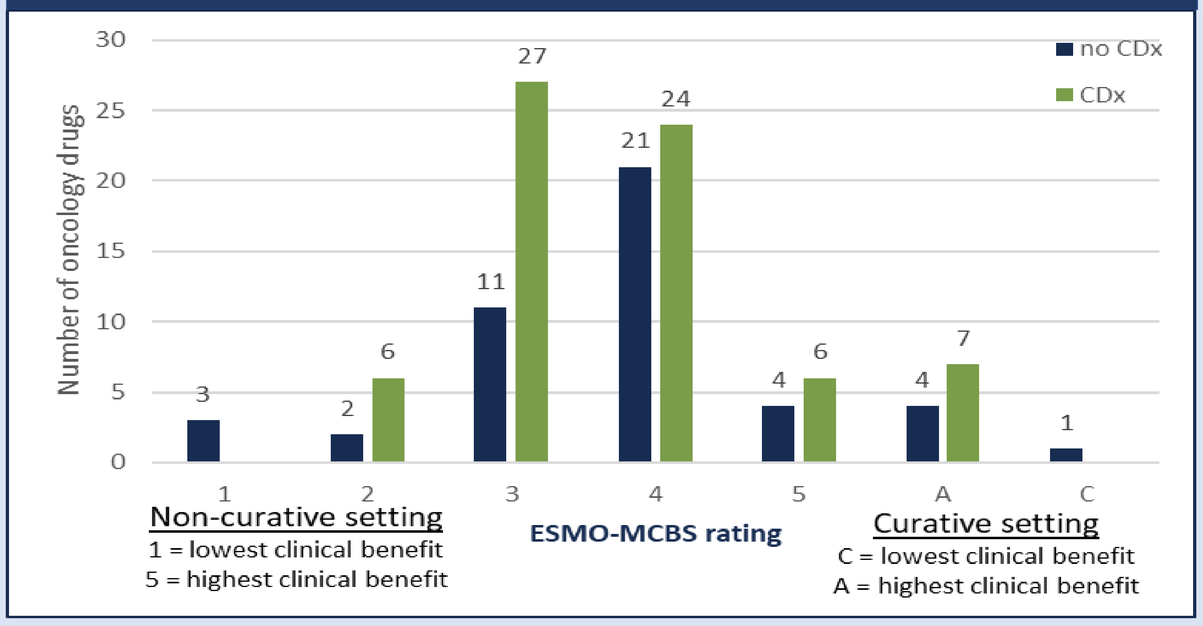
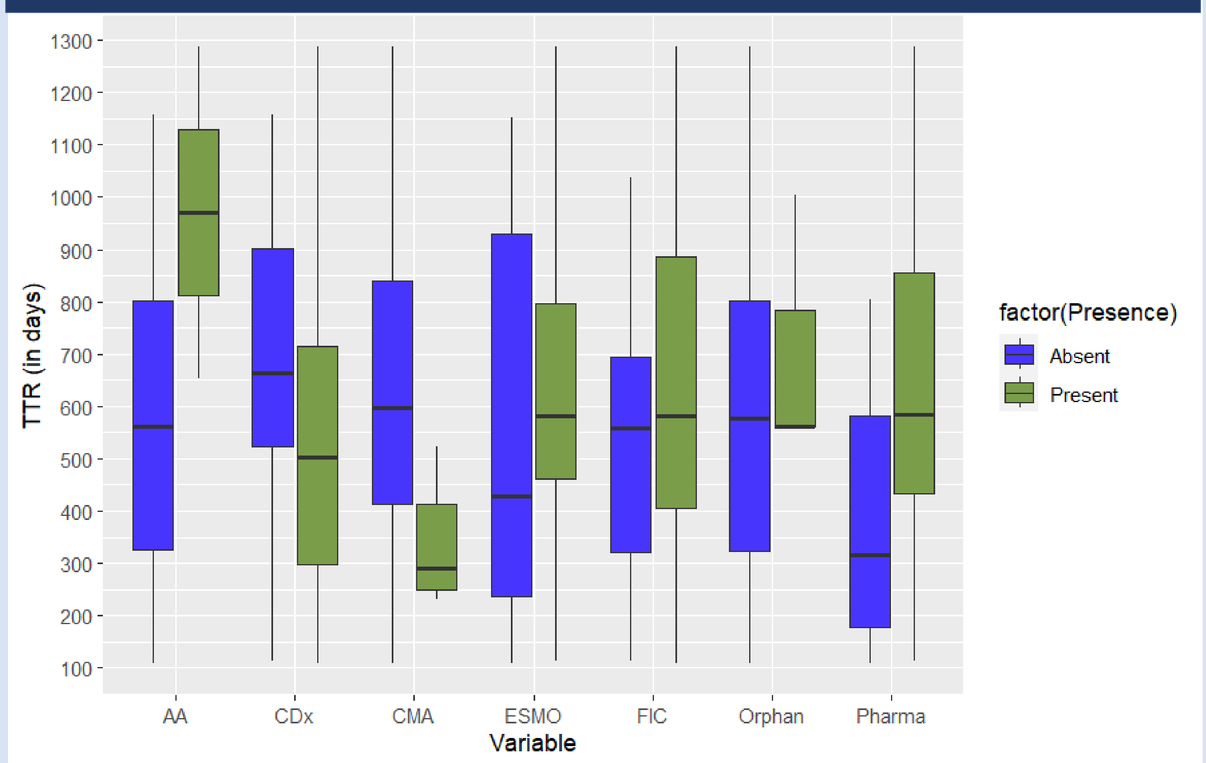


Figure 3: Box plot of time to reimbursement from NCPE submission



AA: accelerated access; CDx: companion diagnostic; CMA: conditional marketing authorization; ESMO: European Society of Medical Oncology - Magnitude of Clinical Benefit Scale rating, (low is absent and high is present); FIC: First-in-class; Orphan: orphan status; Pharma: in 'Pharma companies' or not.

Table 1: Spearman's rank correlation between time to reimbursement from NCPE submission and seven factors

	AA	CDx	CMA	ESMO	FIC	Orphan	Pharma
No. present	2	36	6	41	42	3	53
No. absent	59	25	55	20	19	58	8
P-value	0.158	0.040*	0.022*	0.330	0.259	0.486	0.033*
Correlation	+ve	-ve	-ve	+ve	+ve	+ve	+ve

AA: accelerated access; CDx: companion diagnostic; CMA: conditional marketing authorization; ESMO: European Society of Medical Oncology - Magnitude of Clinical Benefit Scale rating, (low is absent and high is present); FIC: First-in-class; Orphan: orphan status; Pharma: in 'Pharma companies' or not.
*a p value <0.05 is considered statistically significant

CONCLUSION

Like prior authors we found no correlation between TTR and AA or ESMO-MCBS.(7) However, oncology drugs that require a CDx to guide therapy have a shorter TTR, confirming our previous analysis. (8) This maybe because when ESMO-MCBS for CDx versus non-CDx are compared those oncology drugs requiring a CDx have a higher clinical benefit (see figure 2). CMA also has a positive effect on TTR, but this might reflect the small sample size of drugs in our analysis with a CMA. Conversely similar to previous authors we found that large pharmaceutical firms do not have an advantage in accelerating TTR.(7) This may be because they are bringing more complex medicines to the Irish market, which require longer evaluation time, but again this may reflect the sample size.

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