Privacy-preserving pan-European oncology benchmarking in the DigiONE network using federated real-world data: the DigiACT study

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136,645
patients, diagnosed 2019–2024

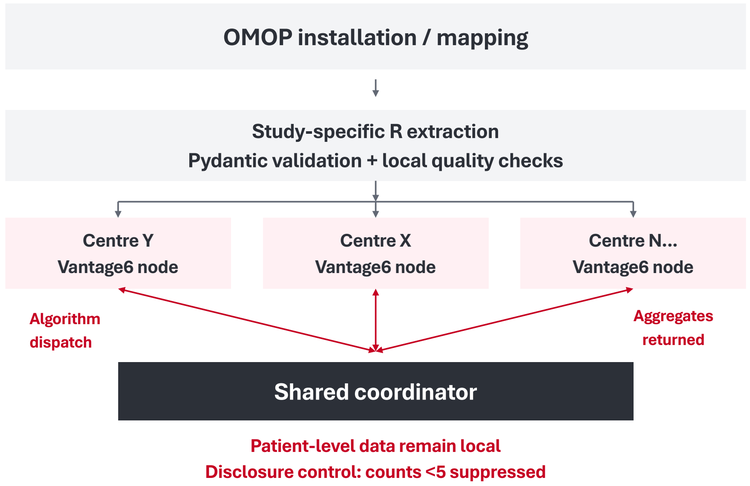
11
European cancer centres

13
tumour groups

Federated technology in practice

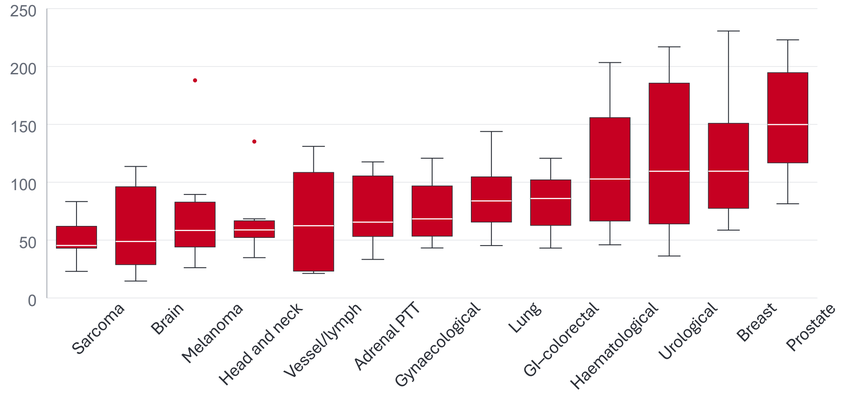
The DigiONE (Digital Oncology Network in Europe) employs federated analytics to enable privacy-preserving oncology RWE in near-real-time. To assess the network's capability to benchmark cancer burden, patient characteristics and diagnosis-to-treatment intervals across European cancer centres, the DigiACT study tested a common analytics workflow across heterogeneous hospital systems.

Local preparation at each centre



Treatment-delay distribution

Annual mean diagnosis-to-treatment intervals 2019–2024, days



136,645 patients with a primary cancer diagnosis across 11 DigiONE treatment centres (2019–2024). The largest tumour groups included **gastrointestinal-colorectal** (**n=24,366**), **lung** (**n=18,681**), **breast** (**n=18,637**), **haematological** (**n=17,171**) and **prostate** cancers (**n=16,158**).

Outliers in melanoma and head and neck correspond to COVID lockdown (March 2020).

PTT = paranasal sinus, thymoma, thyroid.

Mortality status at follow-up (%)

Percentage of the full tumour cohort at each time point. Cens. indicates the proportion of patients with unknown status or insufficient follow-up at that time point.

Tumour group	12 months			24 months			36 months		
	Alive	Dead	Cens.	Alive	Dead	Cens.	Alive	Dead	Cens.
Breast	46%	4%	50%	32%	6%	62%	21%	8%	71%
Lung	29%	18%	53%	15%	23%	62%	8%	25%	67%
GI–colorectal	32%	14%	54%	19%	20%	61%	11%	23%	66%
Prostate	46%	5%	49%	32%	8%	60%	20%	11%	70%
Brain	30%	23%	46%	16%	33%	50%	10%	36%	54%
Haematological	46%	14%	40%	32%	19%	50%	21%	22%	57%
Gynaecological	44%	10%	45%	28%	17%	55%	17%	20%	63%
Head and neck	41%	17%	42%	23%	25%	52%	15%	29%	57%
Melanoma	46%	4%	50%	31%	7%	62%	19%	9%	71%
Urological	33%	10%	57%	21%	14%	65%	13%	16%	70%
Adrenal PTT*	31%	7%	62%	22%	10%	68%	17%	11%	72%
Sarcoma	35%	17%	48%	17%	27%	56%	9%	31%	59%
Vessel/lymph	30%	7%	63%	17%	10%	74%	12%	10%	79%

Cens. = total − alive − dead, including unknown status or insufficient follow-up. Descriptive percentages, not adjusted survival.
*PTT: paranasal sinus, thymoma, thyroid.

Reusable infrastructure for digital oncology

A common data model, local validation and site-controlled federated execution enabled benchmarking across centres with differing digital maturity. This demonstrates deployed analytics infrastructure, rather than the validation of a predictive AI model.

Recorded intervals depend on referral pathways, treatment outside the centre and diagnosis-date provenance. Future analyses should address stage, treatment intent and ascertainment before comparative interpretation.

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