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Objectives

Due to increased understanding in cancer biology, precision oncology has become a cornerstone in cancer treatment. Biomarkers have been used to improve the efficacy of oncology therapies and thus, have had an impact on resource utilization and expenditure worldwide. The Chilean healthcare system has not been immune to these trends. This study aimed to evaluate the precision oncology trends in the Chilean health system using Real-World Data.

Methods

1 Drug/Biomarker pairs data

All data were obtained from public repositories. The list of biomarker/drug pairs was obtained from FDA database (1) and matched with the drugs available in Chile. The list of drugs approved drugs was obtained from the ISP (Institute of Public Health) database (2) by active ingredient and classified by year of registration.

2 Resource utilization data

CENABAST database (most important purchaser of healthcare public system) was used to obtain data on the purchase of drugs with associated biomarkers (3). Expenditure on biomarker testing was obtained from Free-Choice Modality (MLE)/ National Health Fund (FONASA, public payer) database (4).

Results

Drugs with Biomarkers

The number of drugs with biomarkers has increased exponentially after 2000. In 2021, 74 oncology drugs with at least one associated biomarker were available (Figure 1). Breast cancer, hematological cancer and lung cancer are the most frequent disease with drug/biomarker pairs (Figure 2).

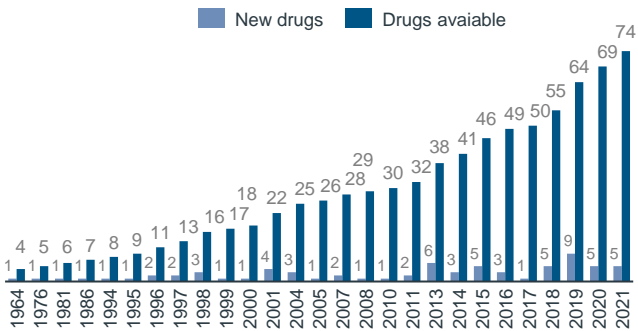


Figure 1. Trend of drugs available with Biomarkers in Chile

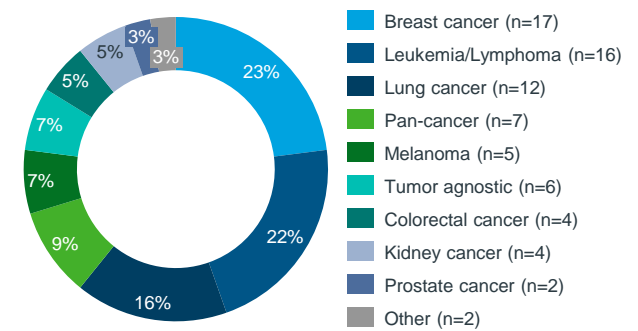


Figure 2. Frequency of cancer associated with drug/biomarker pair

CONCLUSIONS

Resource utilization related to precision oncology increased dramatically after 2010, as described by CENABAST purchases and FONASA expenditure. Increasing availability of Real-World Data may allow the evaluation of the impact of biomarker-specific drugs on health outcomes within the Chilean healthcare system.

REFERENCES
1. FDA. <https://www.fda.gov/drugs/science-and-research-drugs/table-pharmacogenomic-biomarkers-drug-labeling>
2. ISP Chile. <https://registrosanitario.ispch.gob.cl/>
3. CENABAST Chile. <https://www.cenabast.cl/compras-cenabast/>
4. FONASA Chile. <https://www.fonasa.cl/sites/fonasa/datos-abiertos>

Resource utilization

Drug purchasing in CENABAST has increased across the years, reaching 129 purchases in 2021 (Figure 3), with an associated expenditure of \$41,454,040 USD (Figure 3). The most used program of CENABAST has been the intermediation program (purchases to public institutions) (Figure 3). Most of the expenditure for biomarker-linked drugs trough CENABAST is led by Dasatinib, Rituximab, Nivolumab, Palbociclib and Pertuzumab (Table 1).

Finally, expenditure on PCR-specific testing for tumor markers through MLE-FONASA in 2021 was USD\$ 23,257 (seven-fold compared to 2019 expenditure).

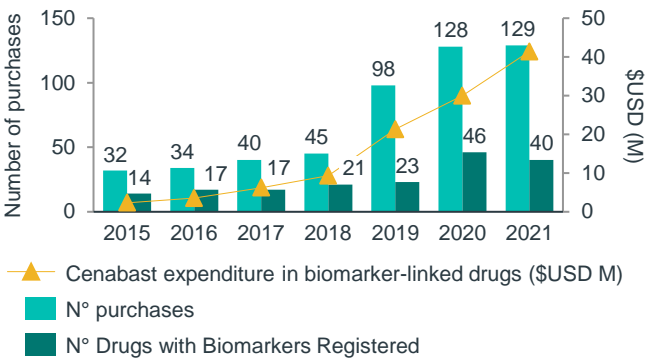


Figure 3. Trends of Cenabast purchases in Drugs with Biomarkers

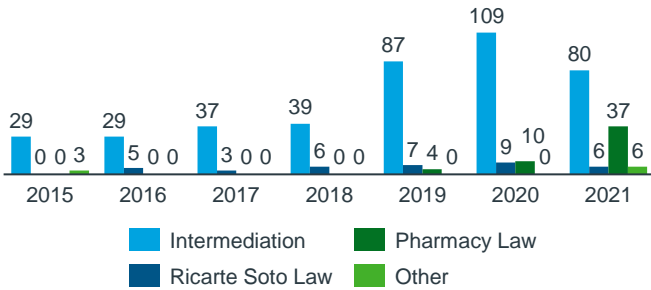


Figure 4. Cenabast purchases by program

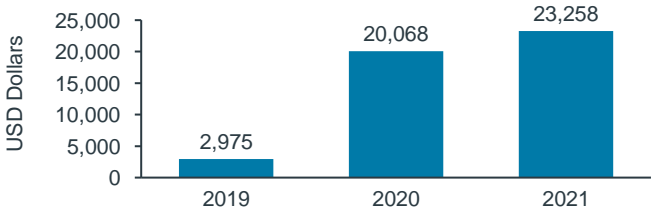


Figure 5. FONASA spend of PCR (polymerase chain reaction) testing related with precision oncology

Drug	Expenditure (\$USD)	Biomarker	Indication
Dasatinib 100 mg	\$ 3,396,916	(Ph+) Chr	Chronic Myeloid Leukemia / Acute Myeloid Leukemia
Rituximab 1400mg/11,7 ml	\$ 3,127,254	CD 20 positive	Non-Hodgkin Lymphoma
Nivolumab 10mg/ml	\$ 2,289,160	PD-L1	Pan-cancer
Palbociclib 125 mg	\$ 1,136,163	ER (+), HER2 (-)	Breast cancer
Pertuzumab 420 mg/14ml	\$ 884,995	HER2 (+)	Breast Cancer

Table 1. Top of Drugs with Biomarkers according the spend of Cenabast in 2021