

# USE OF TARGETED THERAPY IN NON-SMALL-CELL LUNG CANCER PATIENTS IN RURAL AND URBAN AREAS OF SAXONY-ANHALT (2010-2023)

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**OBJECTIVES:** Over the past two decades, numerous targeted therapies (TT) have been integrated into routine non-small-cell lung cancer (NSCLC) treatment in Germany. This study aims to assess regional disparities in the utilization of TT for NSCLC in Saxony-Anhalt, a predominantly rural region, where access to treatment may be affected by distance to major clinical centers.

**METHODS:** Cancer registry in Saxony-Anhalt collects data on all curative and palliative systemic treatments. TT were identified according to the ENCR recommendations on recording treatment data (1) and classified according to the Anatomical Therapeutic Chemical Classification System levels (2). Rural areas were defined as counties with a low urbanity index of the Central Research Institute of Ambulatory Health Care (Zi) (3).

Year of therapy	UICC stage	TT in rural areas (%)	TT in urban areas (%)
2010-2014	I-III	8.6	6.3
	IV	12.7	9.8
2015-2020	I-III	31.5	26.4
	IV	59.2	57.1
2020-2023	I-III	27.4	19.4
	IV	82.1	71.3

Table 2. Percentage of patients in Saxony-Anhalt with non-small-cell lung cancer receiving targeted therapies (TT) by year of therapy, area type and UICC stage.

Year of diagnosis	Area type	UICC I-III	UICC IV	Total
2010-2014	rural	1917	1818	4003
	urban	713	673	1502
2015-2020	rural	1992	2237	4935
	urban	744	676	1607
2020-2023	rural	1743	2013	4441
	urban	587	623	1395

Table 1. Number of patients in Saxony-Anhalt diagnosed with non-small-cell lung cancer by year of diagnosis, area type and UICC stage

**RESULTS:** This study included 13,379 NSCLC patients from rural areas and 4,504 from urban areas, diagnosed between 2010 and 2023. From 2010 to 2014, epidermal growth factor receptor tyrosine kinase inhibitors (N=192, 35%) and vascular endothelial growth factor inhibitors (N=179, 33%) were the most commonly used TT. Programmed cell death protein 1/death ligand 1 inhibitors were the most commonly used TT group from 2015 to 2019 (N=1,625, 62%), and this increase continued from 2020 to 2023 (N=2,253, 81%). Overall, the utilization of TT increased over time, with an increase observed both for patients residing in rural areas (2010-2014: 10%, 2015-2019: 41%, 2020-2023: 50%) and in urban areas (2010-2014: 9%, 2015-2019: 38%, 2020-2023: 41%). Similar disparities were observed in both early-stage (UICC I-III: urban: 17% vs. rural: 23%) and advanced NSCLC (UICC IV: urban: 45% vs. rural: 53%).

**CONCLUSIONS:** Despite concerns regarding healthcare access in rural areas, the utilization TT for NSCLC in Saxony-Anhalt has increased over time, in both rural and urban areas. Future research should examine referral patterns, treatment timeliness and survival outcomes to better understand these trends.

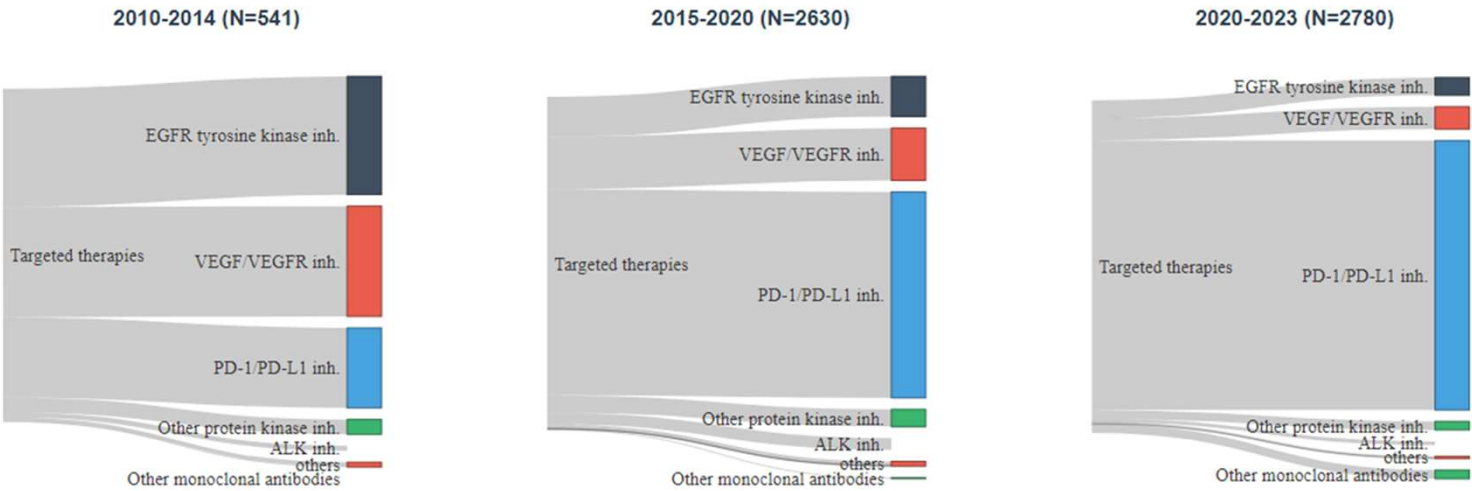


Figure 1. Sankey diagram illustrating the distribution of targeted therapies for treating non-small-cell lung cancer patients in Saxony-Anhalt. The diagram displays the percentage of therapies used by the 4th level Anatomical Therapeutic Chemical (ATC) Classification System code and by therapy year

## LITERATURE:

- (1) European Network of Cancer Registries (ENCR). 2025. ENCR Recommendation: Treatment Data Recording (phase I). [pdf] Available at: [https://encr.eu/sites/default/files/Recommendations/ENCR-Recommendation\\_Treatment\\_EN\\_Jan2025.pdf](https://encr.eu/sites/default/files/Recommendations/ENCR-Recommendation_Treatment_EN_Jan2025.pdf) (Accessed: 09 May 2025).
- (2) WHOCC ATC/DDD index 2025, WHOCC. Available at: [https://atcddd.fhi.no/atc\\_ddd\\_index/](https://atcddd.fhi.no/atc_ddd_index/) (Accessed: 09 May 2025).
- (3) Schulz, M. et al. (2015) 'Korrelation zwischen räumlichen Sozialstrukturfaktoren und Indikatoren des medizinischen Versorgungsbedarfs', Das Gesundheitswesen, 78(05), pp. 290-297. Available at: <https://doi.org/10.1055/s-0034-1396888>.

