

A large, stylized orange grid graphic that resembles a globe or a network, composed of thick, curved lines that intersect to form a grid pattern. It is positioned in the background, partially overlapping a dark grey horizontal band at the bottom of the page.

Decoding HER2 in NSCLC: Advances in biomarker testing and targeted therapies

Practice aid for HER2 alterations in NSCLC

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Prevalence of different HER2 alterations in NSCLC¹

**HER2
mutation**

1–4%

**HER2
overexpression**

2–30%

**HER2
amplification**

2–5%

HER2 alteration testing techniques^{5,6}

Mutation

NGS (preferred), Sanger sequencing, ARMS-PCR, ddPCR, pyrosequencing, RT-PCR, qPCR

Amplification

FISH, NGS, qRT-PCR

Overexpression

IHC

Guidelines on HER2 alteration testing requirements



ESMO²

HER2 mutation testing should be carried out for metastatic non-squamous NSCLC

Multiplex platforms (NGS) are preferable



ASCO³

Tissue and/or blood NGS testing for HER2 alterations



NCCN⁴

Complete genotyping including HER2 in advanced/metastatic adenocarcinoma, large cell and NSCLC NOS

Can be considered in mSCC

NGS-based approaches preferred

Trastuzumab deruxtecan approvals

EMA⁷

- Advanced NSCLC with **activating *HER2* mutation** and requiring systemic therapy following platinum-based chemotherapy ± immunotherapy¹

FDA⁸

- Unresectable or metastatic NSCLC with **activating *HER2* mutations** after prior systemic therapy²
- Unresectable or metastatic **HER2-positive (IHC 3+)** solid tumours following prior systemic treatment and with no satisfactory treatment options²

Guideline recommendations for use

ESMO²

Recommended for patients with ***HER2* exon 20 mutations** following prior first-line therapy

ASCO³

Recommended in patients with ***HER2* alterations** as a **second-line therapy**

NCCN⁴

- **Preferred subsequent therapy** after first-line treatment in patients with ***HER2* mutation** (trastuzumab emtansine as alternative)
- **Option for subsequent therapy** for patients with ***HER2* overexpression (IHC 3+)**

Abbreviations and references

Abbreviations

ARMS, amplification refractory mutation system; ASCO, American Society of Clinical Oncology; dd, droplet digital; EMA, European Medicines Agency; ESMO, European Society for Medical Oncology; FDA, US Food and Drug Administration; FISH, fluorescence in situ hybridization; HER2, human epidermal growth factor receptor 2; IHC, immunohistochemistry; mSCC, metastatic squamous cell carcinoma; NCCN, National Comprehensive Cancer Network; NGS, next-generation sequencing; NOS, not otherwise specified; NSCLC, non-small cell lung cancer; PCR, polymerase chain reaction; q, quantitative; qRT-PCR, quantitative real-time PCR; RT-PCR, reverse transcription PCR.

References

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