

Tumor Mutational Burden, MSI & HRD Scores — Hands-on

Learn how to compute, quality check and interpret tumor mutational burden (TMB), microsatellite instability (MSI) and homologous recombination deficiency (HRD) scores from NGS outputs. This module focuses on assay concepts, bioinformatics metrics and how these biomarkers are summarised and used in real oncology reports and tumor boards.

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Session 1

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Biomarker Concepts: TMB, MSI & HRD Landscape

Immuno oncology and targeted therapy biomarkers

[checkpoint inhibitors overview](#) [DNA repair defects snapshot](#) [companion diagnostics mindset](#)

TMB, MSI and HRD — what each metric reflects biologically

[mutational load](#) [mismatch repair deficiency](#) [homologous recombination deficiency](#)

Assay types and panels that report these biomarkers

targeted NGS panels **exome and genome based scores** **IHC and PCR snapshot for MSI**

Session 2

Fee: Rs 11800 Apply Now

Computing TMB & MSI from NGS Data

TMB data requirements and counting logic

callable territory concept **non synonymous variant counts** **panel vs exome adjustments (high level)**

MSI metrics from NGS

instability at microsatellite loci **MSI high vs stable categories** **comparison to PCR/IHC results mindset**

QC and pitfalls for TMB and MSI values

coverage and depth thresholds **tumor purity impact** **assay and pipeline versioning**

Session 3

Fee: Rs 14800 Apply Now

HRD Scores, Cutoffs & Clinical Meaning

Genomic scar based HRD metrics (high level)

LOH, TAI and LST concepts **summary HRD scores** **tumor types where HRD is relevant**

Cutoffs, categories and reporting styles for TMB, MSI, HRD

numeric values vs bins (low / intermediate / high) **assay specific reference ranges** **regulatory labelling snapshot**

Interpreting biomarkers in clinical context

immunotherapy response likelihood (high level)
PARP inhibitor sensitivity snapshot **when not to over**
interpret scores

Session 4

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Mini Capstone: Biomarker Panel for a Case

Work through an anonymised oncology case with TMB/MSI/HRD outputs

Theory + Practical

Build a concise biomarker summary table

biomarker value and category **assay reference note**
therapy and trial pointers (high level)

Draft a tumor board ready narrative paragraph

plain language explanation **caveats and limitations**
suggested follow up testing