Managing Myeloma

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What are the different technologies used to assess cytogenetic risk status?

1. Three tools to assess cytogenetic risk status in multiple myeloma
    a. Routine karyotyping
    b. Fluorescence in situ hybridization (FISH)
    c. Gene expression profiling

2. Routine karyotyping
    a. 20 cells evaluated during metaphase for all forms of genetic abnormalities
    b. Abnormalities include additions, deletions, and other genetic problems, including those known in myeloma and those that have no clear relevance in myeloma
    c. Most coarse approach because it only evaluates 20 cells

3. Fluorescence in situ hybridization (FISH)
    a. Hundreds of cells evaluated to identify certain abnormalities that have known clinical significance in myeloma
    b. Panels differ between institutions, but commonly include the known variables:
        i. del17p
        ii. 1q addition
        iii. t(4;14)
        iv. t(11;14)

4. Gene expression profiling
    a. Large arrays that evaluate overall gene signatures as to which genes are expressed or not expressed; may have ramifications for patients' ability to stay in remission or have early relapse
    b. Two main platforms
        i. Signal Genetics MyPRS® score; a 70-gene profile
        ii. SKY92, 92-gene profile