

6TH WORLD FORUM ON BREAST AND CERVICAL CANCER



O. Topolcan, J. Ferda, J. Molacek, M. Pestova, S. Svobodova, L. Kravec, M. Hora, M. Jirasko, R. Kucera, H. Mikolaskova

Faculty Hospital and Medical Faculty in Pilsen, Czech Republic

Strategic and Evidence-Based Use of Tumor Markers in Oncology: Practical Insights from a Multidisciplinary Clinical Center

Tumor markers play a pivotal role in contemporary oncology, providing valuable information for cancer diagnosis, prognosis, therapeutic monitoring, and early detection of disease recurrence. However, their clinical utility is highly dependent on appropriate selection, timing, and interpretation within the broader diagnostic and therapeutic framework.

This review summarizes the long-term experience of our multidisciplinary center with the application of tumor markers across a wide spectrum of oncological indications. Emphasis is placed on the strategic integration of markers based on their biological specificity, organ affinity, sensitivity, and predictive value. Rather than relying on single analytes, we advocate for multimarker approaches tailored to the tumor type and clinical scenario. For instance, in lung cancer, combining CYFRA 21-1, NSE, and CEA enhances diagnostic yield, while in colorectal cancer, CEA and CA 19-9 may be complemented by emerging markers for improved prognostication.

We present illustrative case studies demonstrating how rational marker selection contributes to earlier detection of relapse, more accurate assessment of treatment response, and timely therapeutic decision-making. Furthermore, we highlight the importance of individualized longitudinal monitoring, where marker dynamics over time provide insights into tumor biology and treatment efficacy—especially in patients undergoing systemic or targeted therapies.

In our experience, critical interpretation of tumor marker results, when combined with imaging and histological data, significantly improves diagnostic precision and supports personalized oncology care. Importantly, inappropriate or indiscriminate testing may lead to false positives, unnecessary interventions, and increased healthcare costs. Therefore, we stress the need for standardization of analytical methods, adherence to evidence-based guidelines, and ongoing education of clinicians in the rational use of tumor markers.

In conclusion, a structured, clinically contextualized, and multidisciplinary approach to tumor marker utilization can substantially enhance the quality and efficiency of oncological care. It allows for better patient stratification, resource optimization, and contributes to more sustainable cancer management.

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Biography

Prof. Ondřej Topolčan, MD, PhD, is the Head of the Department of Immunochemistry and Biobank at University Hospital Pilsen and Deputy Director of the Biobank at the Faculty of Medicine, Charles University in Prague. He specializes in laboratory medicine and personalized oncology, focusing on the clinical use of tumor markers for cancer diagnosis and patient monitoring. Prof. Topolčan has significantly contributed to advancing biobanking infrastructure and services in Pilsen, supporting research and clinical studies. His work emphasizes individualized cancer treatment strategies across lung, breast, colorectal, and prostate cancers. He is actively involved in improving diagnostic workflows and biomarker analyses to enhance patient care and outcomes.