The Diagnostic and Prognostic Factors (DPFs) online search tool

A great achievement developed under the umbrella of the public-private partnership within PIONEER.

The seven experts Jihong Zong, Wolfgang Thielemann, Megan Molnar, Dan Plischke, Mieke van Hemelrijck, Lisa Moris, and Michael Lardas present this very helpful and self-explanatory tool, on behalf of the entire team involved, and give us an insight into the development process, the uniqueness, and the benefits of this search machine.

First of all, please briefly introduce yourselves and your role in the development of the tool.

Dan Plischke: "*I am a System Architect within the Digital Technologies Lab (DTLab) Team and have developed this tool. From identifying a lean technology stack, designing and implementing the user interface, translating the publication data into a retrievable format to implementing the search strategies.*"

Wolfgang Thielemann: "*I am heading the Semantic and knowledge graph technologies function, that is also part of the Digital Technologies. My role was twofold: on the one hand to create an extensive terminology about all the aspects we would like to cover and make searchable in the PIONEER platform and on the other hand, to build a natural language processing workflow which allows to annotate the publications with this terminology. We wanted to make sure that all key aspects in these publications, particularly the biomarkers, are correctly identified and then made available within the platform.*"

Megan Molnar: "*I am an epidemiologist in the Partnerships and Integrated Evidence Generation Office (IEG P&O) department. In WP2 I was one of the eight researchers reviewing articles for a systematic review on all diagnostic and prognostic factors in prostate cancer. Going into the systematic review, we knew that there would be hundreds of articles on the biomarkers, which would be lost in the final publication. Therefore, for a better and more useful access to this information, it was decided to develop a DPF online search tool to showcase the systematic review. I managed the development of the tool mainly by facilitating the communication between King's College London, who lead the publication, and the team at Bayer, who developed the online search tool.*"

Jihong Zong: "*The development of this online search tool is part of the deliverables from Work Package 2 (WP2). I am the EFPIA co-lead of WP2.*"

Quick reference guide on using the online search tool

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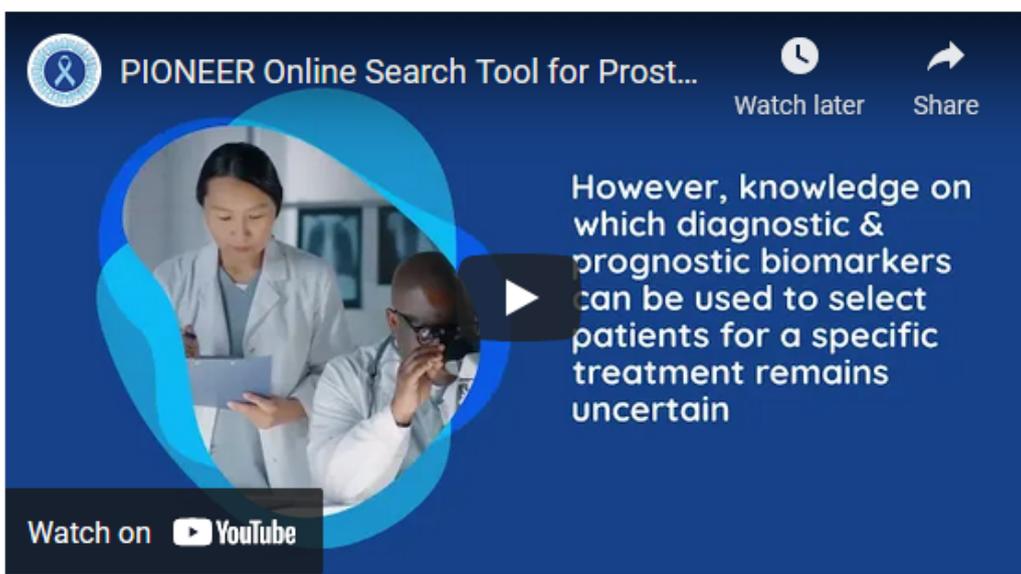
Lisa Moris: "*I am a urology resident and (senior) associate of the European Association of Urology, with a special interest in prostate cancer research. I was introduced to PIONEER during my PhD on high-risk prostate cancer and this international big data project immediately got my attention. For PIONEER, I was involved in WP2 of where I collaborated in the development of core outcome sets of clinically relevant standardised prostate cancer-related outcomes and prognostic and diagnostic factors.*"

Michael Lardas: *"I am a Urology Consultant working at the Second Department of Urology in Sismanoglio Hospital, Athens, Greece, and a Senior Associate member of EAU Guidelines Office. In PIONEER, I am working for WP2 and had the pleasure to help in the development of a core outcome set for prostate cancer and of prognostic and diagnostic factors."*

Mieke Van Hemelrijck: *"I am a Professor in Cancer Epidemiology at King's College London and also lead Guy's Cancer Real World Evidence Programme. In PIONEER, I am the academic lead for WP2. This means that I had the pleasure to oversee a fantastic multidisciplinary team of researchers across Europe who have done an outstanding job in defining the COS for prostate cancer as well as a tool to assess diagnostic and prognostic factors for prostate cancer."*

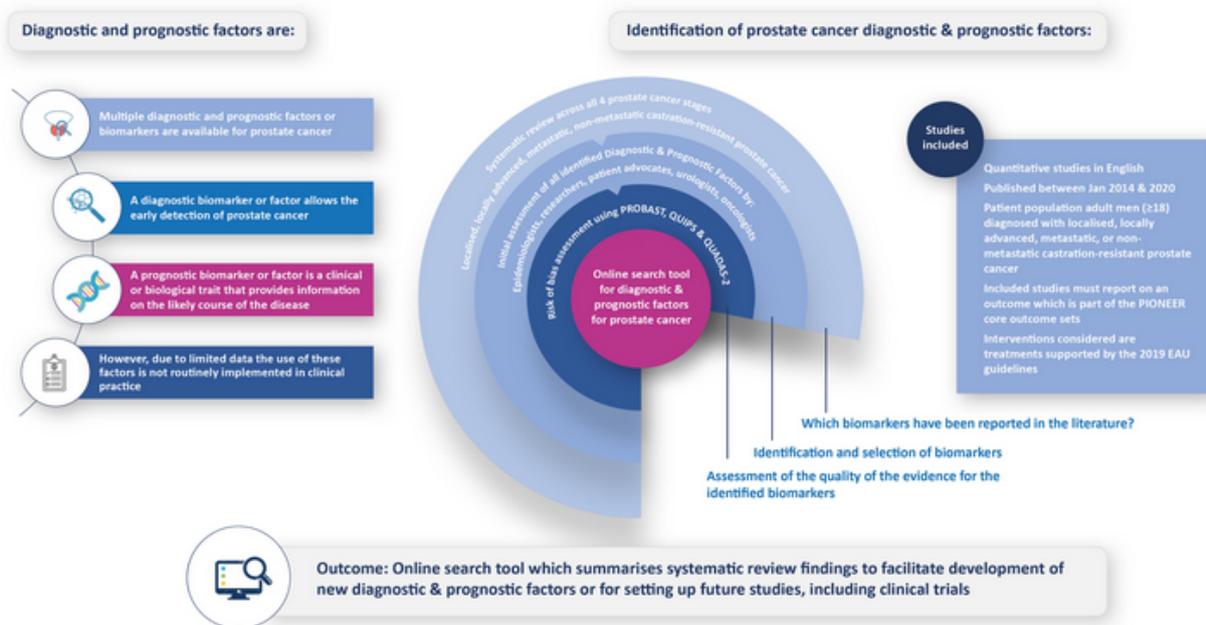[Click here to reach the introductory video on the DPFs Online Search tool.](#)

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Can you briefly summarise what the DPFs online search tool is exactly?

Jihong Zong: *"This online tool is a digital product from the WP2 deliverables. The main goal of WP2 is to develop standardized definitions of prioritized prostate cancer outcomes and diagnostic & prognostic factors across different stages of prostate cancer care whilst taking into consideration of existing heterogeneity in data collection and the disease itself, with the aim of informing guideline development and clinical practice.*

A systematic review was conducted to explore relevant diagnostic and prognostic factors (DPFs) for previously defined clinical and patient-reported outcomes for all stages of prostate cancer. Quantitative studies published between 2014 and 2020 were included in the review. Risk of bias assessment was performed for each study and systematic review identified through the search. A multidisciplinary team of patients, urologist, oncologists, radiation oncologist, methodological experts and pathologists was involved throughout the project. The development of this tool was based on the output from this systematic review project. This tool allows a quick retrieval on systematic review findings through an interactive online platform and makes these information more accessible to all stakeholders."

Wolfgang Thielemann: *"Of course, there are other platforms available to search for literature and clinical trials. What makes the DPFs online search tool unique is that it is focused on prostate cancer and on the diagnostic and prognostic factors. Popular search platforms like PubMed typically cover all major aspects of the respective documents and therefore are - of course - limited to certain level of granularity. Due to our special focus, we were able to go deeper and more granular in the annotation which allows the user a more comprehensive nonetheless straightforward search. A great benefit, especially for busy clinicians and researchers."*

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Who benefits from this tool? Who should use it?

Jihong Zong: *"This tool was designed to be accessible to a broad audience. Anyone who is interested in this topic can access up to date available evidence with an option of view the quality of published study. Clinicians and researcher can use this to help them when developing new DPFs or setting up clinical trials."*

Mieke Van Hemelrijck: *"Most of the diagnostic and prognostic factors identified require additional evaluation and validation in properly designed studies before they can be recommended for use in clinical practice. Nevertheless, the PIONEER online search tool for diagnostic and prognostic factors for prostate cancer will enable researchers to understand the quality of the current research and help them design future studies."*

[Click here to reach the Diagnostic & Prognostic Systematic Review](#)

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What was good about the development, and what was your motivation?

M. Molnar

As one of the researchers, I was very much aware of all the work that was put into this – including the background work from the core outcomes set developed in WP2. For me it was very motivating to turn all this work into an online platform where it can be showcased and used. Dan and Wolfgang did a great job in translating our groundwork into this platform and the platform development was really efficient.

"Diagnosis and prognosis play a vital role in patient management and decision making. The assessment of DPFs is one of the major objectives in clinical research and I was excited to take part in such an important project."

Dan Plischke

"It stood out how quickly we went from first discussions to the first working prototype and further to the final product. We were able to accomplish this due to the close collaboration with everyone involved as well as the lean setups and toolchains which we developed within DTLab. As for my motivation, I particularly enjoy participating in projects that facilitate collaboration with other external organizations and thus bringing experts from across the industry and academia and their insights together."

Lisa Moris

"Our knowledge on how to approach and treat prostate cancer changes daily. With the purpose of providing our patients with the best possible information we need tools to keep us up to date. Our DPF tool will provide an easy access to validated patient and disease specific factors, which can be implemented for each patient individually to provide a better patient-centered care."

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What was good about the development, and what was your motivation?

M. Van Hemelrijck

"DPFs that are capable of significantly improving diagnosis and prognosis in prostate cancer are an unmet need as most of them require additional evaluation in properly designed studies. Developing a tool that helps researchers to understand the quality of the current available studies, motivated me a lot."

J. Zong

"This project is important for Bayer. It shows Bayer's engagement to key stakeholders including patients, regulatory agencies and public institutions. It also further demonstrates Bayer's continuous commitment in prostate cancer patient care. I am fortunate to have the opportunity working with a brilliant and dedicated Bayer team, Megan, Dan, and Wolfgang, together with our WP2 public partner King's College London, to make this go live."

W. Thielemann

"It was a truly cross-functional project where we brought together expertise from very different areas. In my case it is expertise about natural language processing and annotation of digital documents. In Dan's case it was the programming skills, and other colleagues brought in the medical knowledge etc.. Thus, we brought together experts from different fields to have all those components that were necessary to make this work."