A web-based cohort monitoring dashboard for multi-center clinical studies with biospecimens within the German Cancer Consortium (DKTK)

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Background & objectives

The German Cancer Consortium (DKTK) is a national long-term cancer consortium comprising the German Cancer Research Center (DKFZ) and nine university hospitals with their comprehensive cancer centers. Within DKTK there is a need for registering and monitoring biospecimen such as tumor tissue and blood from cancer patients. EXLIQUID is a DKTK project that involves ten central liquid biobanks at the participating sites.

EXLIQUID is focusing on the development of liquid biopsy (LB) assays for early prediction of therapy efficacy by the analysis of circulating tumor DNA. For this purpose, the consortium is implementing a valuable LB cohort from tumor patients. To enable cooperative biobanking among all involved DKTK sites, strong IT support is needed. Additionally, all participating sites need to work hand in hand to provide all the necessary data.

Methods

The dashboard is a web-based central platform to monitor availability of LB samples within EXLIQUID. Our goal is to inform the participating principal investigators about the current

sample count combined with patient's clinical data such as tumor diagnosis. The federated approach allows us to accumulate all necessary information in real-time, while ensuring data protection.

Results

To avoid increasing complexity, we are using already existing site resources such as the DKTK processing node "bridgehead" and the processes between primary systems and the bridgehead. The local components of the federated infrastructure are established at the bridgeheads of the respective sites. The dashboard currently collects data from all contributing sites and displays the number of LB samples with the corresponding entity. With these technologies we are currently evaluating the use-case of cohort specific monitoring and exploration. At the same time, we are focusing on the challenge to adjust and improve the workflows and processes for each site individually.

Conclusion

Although the EXLIQUID dashboard development is still in progress, we have already achieved a proof-of-concept operation with selected sites, allowing researchers to explore the data for their research applications. Once all sites are enrolled, we will expand the dashboard and refine a more detailed exploration platform. By showing its merit in its current form, the described infrastructure can be a useful blueprint for further endeavors.