

BD4QoL

BIG DATA FOR QUALITY OF LIFE

Newsletter #4 July '22 – December '22

1. ABOUT THE BD4QoL PROJECT

BD4QoL aims at **improving head and neck cancer survivor's Quality of Life** through person-centred monitoring, post-treatment support and personalised follow-up.

BD4QoL takes advantage of **technologies for social communication and unobtrusive personal monitoring** embedded in smartphones to **improve head and neck cancer survivor's Quality of Life**. Physical activity, social interactions, sleep, and health data are automatically collected by a mobile app for over two years after treatment and will be analysed to early intercept quality of life deterioration and health risks.

The project will last until December 2024. Would you like a closer look on how BD4QoL works and is implemented? See the project's presentation video: <https://youtu.be/90YmWxtytn0>

Give a look at the BD4QoL [leaflet](#) and [presentation](#) to know more about the first projects results!

For more information about BD4QoL, visit: www.bd4qol.eu

2. BD4QoL NEWS&EVENTS

BD4QoL 4th Plenary Meeting in Madrid



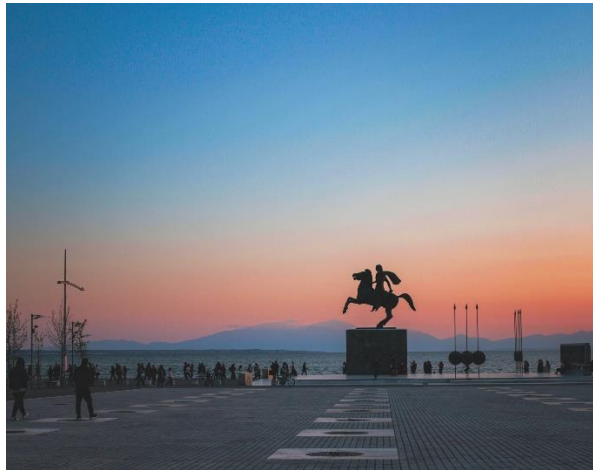
The BD4QoL 4th Plenary Meeting took place on November 8th, 2022, in Madrid at the **Universidad Politécnica de Madrid (UPM)**.

The meeting was held in mixed modality, both **virtually and in person**; the main **objectives** were:

1. to share a picture of the status of the activities
2. to highlight open issues needing fast actions especially in WP6 and WP7
3. to agree on recovery actions due to issue with the data collection by the m-apps
4. to discuss the possible request for extension of the project duration
5. to start the reporting procedure in view of next reporting period and review

[Read](#) the details.

DOTSOFT demonstrate the mobile app in the 16th EAI International Conference on Pervasive Computing Technologies for Healthcare



DOTSOFT participated in the 16th [EAI International Conference on Pervasive Computing Technologies for Healthcare](#) that took place between 12-14 December 2022 in Thessaloniki, Greece. DOTSOFT gave a full demo of the mobile application on the first day of the conference, in the scope of the “Parallel Workshop - IoT-HR: Workshop on Internet of Things in Health Research – Demo Session and Discussion Table Part A Chairs: Dr Dario Salvi, Dr Francesco Potorti”. The scientific and clinical audience were very interested in the mobile application and were interested in the technical issues involved with the personal data collection model.

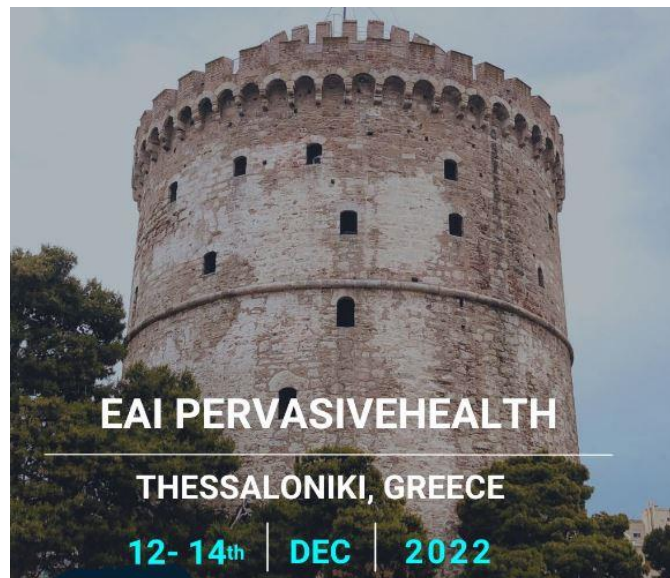
BD4QoL prospective clinical trial: updates from “Casa Sollievo della Sofferenza” pilot site



The enrollment phase of the BD4QoL project is continuing at “Casa Sollievo della Sofferenza” hospital in S. Giovanni Rotondo, Italy. The hospital already enrolled in the study more than 30 patients both in the intervention arm and in the control arm. “These first phases of the study are of crucial importance to fix and fine-tune the enrollment procedures. We are working hard together with

technical partners to fix the few minor bugs that overtake the testing procedures of the components deployed within the projects. The lessons learned during this phase will hopefully smooth and ease the recruitment operations in ours and the other centres.”, declares Francesco Ricciardi, project manager of BD4QoL at “Casa Sollievo della Sofferenza” hospital. The technical work is going on along with a continuous interaction with the physicians who expect that the result of the project will make a difference in terms of monitoring, and hopefully improving, the quality of life of patients during their post-interventional follow-up.

UPM will participate in the 16th EAI International Conference on Pervasive Computing Technologies for Healthcare



UPM participated in the 16th EAI International Conference on Pervasive Computing Technologies for Healthcare where it presented the work done in the context of the BD4QoL project related to smartphone-based strategies to monitor the Quality of Life in Head and Neck Cancer survivors. First, the results from a literature review focused on mHealth services for cancer patients have been shown. Afterward, UPM presented a complete overview of how to consolidate a clinical trial protocol where patients are encouraged, through a mobile application, to perform self-management of their health status, keep healthy lifestyles and interact with an artificial intelligence that provides counsel validated by Head and Neck Cancer experts

“Return to work after cancer: scientific evidence and experiences – WAVE-TRAPEZIO project”



Thanks to improvement in therapies, the life expectancy of cancer patients has increased in recent years, together with the proportion of people of working age. Among the various problems related to the cancer experience (physical, psychological and social) there are the difficulty in returning to work and the decline in career prospects. This implication of the disease is very important as it is deeply linked to survivors’ quality of life after treatments.



An interesting event was organized on this theme, which will focus on the new challenges that cancer patients have to face, including the barriers associated with the returning to work. In this context, the work of SEPI on the impact of having a Head and Neck Cancer (HNSCC) on the weekly wage of employees in Italy will be presented. Furthermore, there will be the presentation of the WAVE-TRAPEZIO project and its website, dedicated specifically to this topic.

The event will be open to all types of professions, but a high percentage of healthcare professionals and university researchers are expected in the audience.

Fostering innovation in care pathways for cancer patients



Lombardy Region and ARIA S.p.A. believe that innovation has a pivotal role in improving the lives of cancer patients. Such improvement should be fostered by developing new technologies allowing for remote monitoring, support, and personalized care pathways.

This objective is pursued in BD4QoL by advancing the adoption of Artificial Intelligence-assisted mobile applications specifically focused on Head and Neck Cancer. However, Lombardy Region and ARIA S.p.A. nurture innovation in the broad European ecosystem by participating in other projects and initiatives to collect and develop innovative ideas to aid the life of cancer patients.

During last month, in the context of the European-funded project *X-eHealth – Exchanging Electronic Health Records in a common framework*, ARIA and Lombardy Region organized a *X-eHealth hackathon for Rare Diseases and Cancers*. The hackathon took place on the 3-4th of October with the goal of showcasing the state-of-the-art applications in the Rare Diseases and Cancers management domain, particularly focusing on the efficient exchange of electronic health records by reusing the specifications developed by X-eHealth.

The projects presented by the participant teams intend to ease the care management as well as more efficiently handle clinical documents produced in the treatment. For example, one of the teams presented the *Survivorship Passport (SurPass)*, an electronic and paper-based document that collects the entire clinical history of children going into remission following pediatric cancer. The tool will contain detailed information regarding diagnosis, follow up and an individualized care plan inclusive of screening recommendations to enable a person-centred and long-term care for survivors of childhood cancer. All team ideas and the content of all the events can be found on the [project website page](#).

Lombardy Region awarded as a 4 stars Active and Healthy Ageing Reference Site



The European Innovation Partnership on Active and Healthy Ageing provides a collaboration between the European Commission and EU Countries, along with the active participation of Regions, local communities, hospitals and PMIs in order to ensure a global and integrated approach healthcare in an ageing society.

Regarding innovation projects for an active and healthy ageing Lombardy Region is particularly keen in defining and implementing broad strategies to support frailties and chronic patients.

The award is an important opportunity to highlight projects joined by Lombardy Region targeting elders, frail and chronic patients, addressing emerging topics such as telemedicine, digital and IT tools and new ICT solutions.

Therefore, the BD4QoL project stars among the many projects covering such domains, as it provides people after Head and Neck Cancer treatment and the different medical specialists involved in their care with innovative monitoring tools. They imply the use of Big Data-driven AI algorithms as well as mobile and wearable devices, to be used for real-time assessment of individual Quality of Life that will guide timely and personalized interventions.

INETUM in the BD4QoL project: AI in the fight against head and neck cancer



The main tasks carried out by INETUM during the year 2022, the year in which the project has entered production, have focused on performing maintenance tasks of the database, as well as updating tables and the corresponding APIs so that their data are correct. This has made it possible to perform database administration tasks, including backups, database integrity checks, or updates to database statistics at specific intervals.

The BD4QoL project ensures authenticated and authorized access to infrastructure resources and data.

In addition, named permissions and permissions for services are kept up to date so that executions are secure. INETUM is also carrying out the maintenance of the rest of the infrastructure, such as the project documentation portal.

At the same time, INETUM continued to work on the analysis of the value propositions that the BD4QoL project provides to the different users and the ecosystem of providers involved in the follow-up of survivors of head and neck cancer. From an open perspective, the different strategies to allow the use of BD4QoL by the largest number of survivors are being analyzed, seeking the viability and sustainability of the provision of BD4QoL services.

Based on a first global analysis of possible promoters of the BD4QoL service that we describe in the General Business Model (Canvas), it will detail for each value proposition an exhaustive analysis of each use case and its benefits, as well as the current market situation (D.9.6 "Market Study").

BD4QoL has been accepted for Poster presentation at the ESMO Congress 2022



BD4QoL has been accepted for Poster presentation (display) at the ESMO Congress 2022 which took place in Paris from September 9th to 13th, 2022.

ESMO (European Society for Medical Oncology) is the leading professional organisation for medical oncology. With more than 25,000 members representing oncology professionals from over 160 countries worldwide, ESMO is the society of reference for oncology education and information.

ESMO's core mission is to improve the quality of cancer care, from prevention and diagnosis all the way to palliative care and patient follow-up. It is to educate – doctors, cancer patients and the general public – on the best practices and latest advances in oncology.

The BD4QoL study is a multicenter, international, randomized (2:1), open-label, superiority trial. The primary endpoint is defined as a clinically meaningful global health-related quality at any point during 24 months post-treatment follow-up.

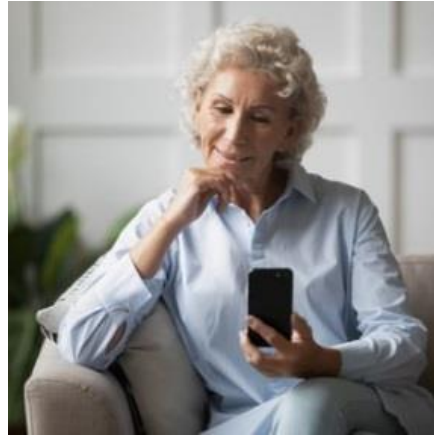
During the trial patients will be randomized to be followed up using the BD4QoL platform or per standard clinical practice. The BD4QoL platform includes a set of services to allow patients monitoring and empowerment through two main tools:

- the Point of Care dashboard, to manage all of the personal data and followup by clinical investigators
- a mobile application (mApp) installed on smartphones, that includes a chatbot for patients ecoaching.

Also, a web-form tool is provided to allow the QoL questionnaire completion.

You can find more information on the Congress on the [event official page](#).

Quality rules set to evaluate the mHealth BD4QoL mobile app



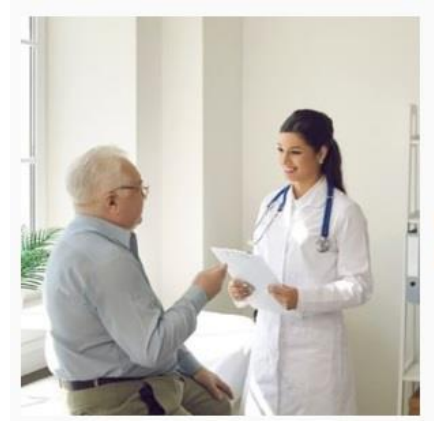
The BD4QoL mobile app has been used for more than three months from patients that have survived from Head and Neck Cancer, in the scope of a clinical trial. The purpose of the study is to demonstrate whether the mobile app can help patients improve their way of living. The app itself has been improved to generate summative evidence on the criteria that are commonly set for user assessment of mHealth apps. A set of rigorous and appropriate criteria have been chosen and quality rules automatically generate related clinical trial evaluation results. The process of evaluating the health app is ongoing and we expect a full set of results in the next 24 months.

Specifically, a set of about one hundred quality rules have been identified to check the quality of the clinical trial operation. These rules refer to both the control and the intervention arm of the trial. They refer to issues that cover matters of a) coherence, b) compliance and c) sustainability. The coherence dimension investigates whether the minimum requirements of consistency are covered, and that is assessing mainly whether the coupled 6monthly questionnaires are appropriately filled in by patients. Compliance refers to assessing whether the minimum requirements for entering the clinical trial are met throughout the trial duration. Finally, Sustainability refers to assessing the time within which compliance criteria remain valid.

To investigate these trial dimensions a set of quality rules have been identified and grouped in these categories: a) patient behavior while “using” the BD4QoL platform, b) patient engagement with the “Bidi” chatbot, c) completion of 6monthly questionnaires and d) other general issues.

The findings are expected to provide fruitful knowledge for lessons learned for operating successful clinical trials.

BD4QoL prospective clinical trial: updates from “Casa Sollievo della Sofferenza” pilot site



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crucial importance to fix and fine-tune the enrollment procedures. We are working hard together with technical partners to fix the few minor bugs that overtake the testing procedures of the components deployed within the projects. The lessons learned during this phase will hopefully smooth and ease the recruitment operations in ours and the other centres.”, declares Francesco Ricciardi, project manager of BD4QoL at “Casa Sollievo della Sofferenza” hospital. The technical work is going on along with a continuous interaction with the physicians who expect that the result of the project will make a difference in terms of monitoring, and hopefully improving, the quality of life of patients during their post-interventional follow-up.

Results of Horizon Results Booster published



The results of the Horizon Results Booster Module A, describing the main exploitable results of participating projects ([Capable](#), [Faith](#), [BD4QoL](#), [Ascape](#)) has been delivered to the Cluster participants and to the European Commission.

Oral presentation at the XLVI conference of the Italian Association of Epidemiology (AIE)



The SEPI team presented in the [XLVI AIE conference](#) a work with the aim of studying the impact of having an Head and Neck Cancer (HNSCC) on the weekly wage of employees in Italy.

The analysis was based on the WHIP-Health database, which integrates data on individual work histories developed from the administrative archives of the National Institute for Social Welfare (INPS) and several health information, including hospital discharges records retrieved from the Italian Ministry of Health.

Previous studies shown greater difficulties in returning to work and an increased probability of losing employment for patients with HNSCC compared to other types of cancer, with a consequent deterioration in the quality of life (QoL). However, little evidence is available on the career of those who continue to be employed, and this work is a first step in this direction.

This preliminary work was also useful to verify the completeness and accuracy of administrative dataset in selecting HNSCC and also to check the availability of the information on stage and treatments. The latter are relevant for identifying cancer-specific determinants of post treatment occupational status and salaries and therefore of QoL.

This study is part of the line related to occupational outcomes considered in the BD4QoL project, which intend to provide the occupational and socio-economic framework useful for QoL determinants sizing.

Digital transformation for integrated and person-centred care and QoL



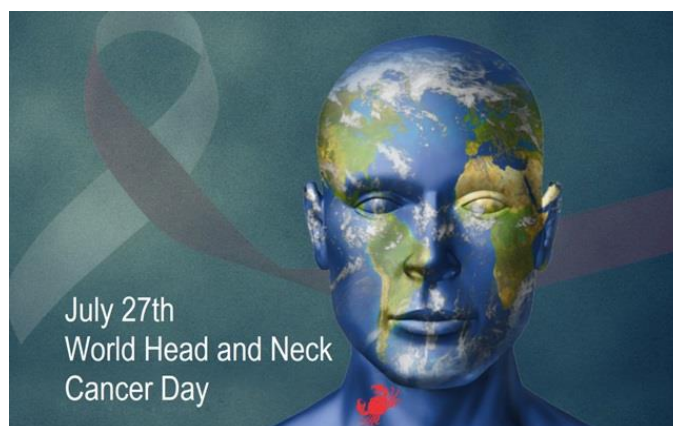
Lombardy Region and ARIA S.p.A are directly involved in Bd4QoL, Jadecare and HsMonitor innovation projects where digital transformation is addressed to deliver integrated and person-centred care and to improve QoL.

Bd4QoL realizes Artificial Intelligence-assisted mobile applications aimed at improving the quality of life of Head and Neck Cancer patients through personalized monitoring, support, and care after treatment. BD4QoL will adapt and implement four evidence-based strategies, shown to be effective among Head and Neck Cancer survivors.

HsMonitor is a pre-commercial procurement (PCP) project investing in Research and Development (R&D) services towards innovative ICT-enabled monitoring solutions to improve health status and optimise hypertension care. The envisaged solutions should cover areas such as early detection and prevention, healthier lifestyle and nutrition, treatment adherence, training and education.

Jadecare will contribute to innovative, efficient and sustainable health systems through providing expertise and sharing good practices solutions of digitally enabled integrated person-centred care. The approach is to enable the participating national authorities and those beyond the Consortium, to benefit as “Next adopters” from efficient solutions developed by the providers of the original Good Practices (oGPs).

World Head and Neck Cancer Day 2022



The 27th of July is the World Head and Neck Cancer Day. It’s an opportunity to raise awareness about head and neck cancer in the general public and acknowledge the impact it has on people affected in our community.



The partners of BD4QoL project care about citizens awareness and the Quality of Life of the ones that are affected. With our project we fulfill the purpose of developing a digital framework for the optimal follow-up of patients after head and neck cancer treatments; it consists in a minimally obtrusive environment for the real time detection of early health and quality of life problems and for guiding timely and personalized interventions.

Novel technologies for improving the Quality of Life



Lombardy Region and ARIA S.p.A believe that novel technologies can have an important role for improving the Quality of Life and are actively involved in [Bd4QoL](#), [SMART-BEAR](#) and [Hocare2.0](#) innovation projects.

[BD4QoL](#) realizes Artificial Intelligence-assisted mobile applications aimed at improving the quality of life of Head and Neck Cancer patients through personalized monitoring, support, and care after treatment. BD4QoL will adapt and implement four evidence-based strategies, shown to be effective among Head and Neck Cancer survivors.

[SMART-BEAR](#) platform integrates heterogeneous sensors, assistive medical and mobile devices to enable the continuous data collection from the everyday life of the elderly, which will be analyzed to obtain the evidence needed to offer personalized interventions promoting their healthy and independent living. The platform will also be connected to hospital and other health care service systems to obtain data of the end users (e.g., medical history) that will need to be considered in making decisions for interventions.

[HoCare2.0](#) project delivered and deployed highly innovative solutions for social and health home-care for the elderly through co-creation approaches, involving them in the product design process and ensuring that digital-based solutions were well accepted by the care recipients. SME and Policy Tools for the delivery of innovative Home Care solutions have been designed and developed. 13 SMEs and 7 Public service providers have tested the co-creation method in product and service development in pilot actions. Key facts of the 20 Pilots carried out by SMEs and Public service providers, are summarized [here](#).

Technology supported counselling for cancer survivors



Inetum contributes to the BD4QoL project from two different perspectives, from a technical one, with the design and provision of a secure and interoperable data lake equipped with cutting-edge big data technologies and operations, enabling the deployment of analytical models to support patients QoL improvement, and from an open perspective, analyzing different strategies to allow



the use of BD4QoL by the greatest number of survivors, seeking the viability and sustainability of the provision of BD4QoL services.

The project will make use of an infrastructure that supports the required features for the cross-functional teams involved in delivering the machine learning workflows, from the ingestion and preparation of the data, through the exploratory analysis of the datasets and the experimentation environments to discover the value of the features, the computation of derived features to help the convergence of the algorithms and finally the publication of models and the monitoring of their performance.

The infrastructure will provide different warehouses with specific characteristics for each stage of information processing, with a very high capacity staging area suitable for the landing of raw data, data stores prepared for the EDA (exploratory data analysis) workbench and high-performance in-memory data structures for real-time data processing.

All the information handled in the project will be published in the form of a data hub that will feature different access APIs with appropriate levels of protection, through the definition of specific access realms for the different entities.

In order to enable the construction of machine learning models, high performance devices such as GPUs that will be provisioned on-demand when analytical workloads request it. This availability will be elastic, so that it can grow or shrink on demand and thus optimise the computing costs inherent to this type of project. The infrastructure will also allow to package, deploy and serve the trained models in an industrialisation model that automates their monitoring and fine-tuning, as well as model output publishing to consumer applications and services.

Inetum has started the BD4QoL strategic market study, analyzing the different value propositions for the different users and ecosystem providers involved in the throat and neck cancer problem.

From an open perspective, several strategies are analyzed to allow the use of BD4QoL by the greatest number of survivors, seeking the viability and sustainability of the provision of BD4QoL services to improve their living conditions after cancer through the use of technology and medical assistance monitored in real time.

The Bidi chatbot is recognised by the European Commission's Innovation radar project



The Innovation Radar is a European Commission initiative that aims to identify and highlight Innovations with high potential from EU funded research projects. The objective is to make information on such innovations more readily available and in doing so create an ecosystem of incubators, entrepreneurs and investors that can help get innovations to market faster.



The Bidi chatbot, which provides a natural language interface for HNC survivors to ask questions, get health tips and report symptoms to their point of care was highlighted by the Innovation Radar. They found the bot was “Business Ready” and was assessed to have a “high level of market creation potential”.

Details of the innovation can be found on the Innovation Radar [web page](#). The Bidi chatbot will join other innovations from the BD4QoL project including the Mobile app and point of care component, all the innovations for the project can be found [here](#).

3. **BD4QoL PUBLICATIONS**

Do you want to know more about the first outputs of the BD4QoL project? Have a look at [deliverables published](#) by BD4QoL project so far!

4. **BD4QoL activities on social network**

BD4QoL social channels are constantly updated with all the **latest news**. Follow us for more updates!

- [Twitter](#)
- [Instagram](#)
- [LinkedIn](#)
- [YouTube](#)