

DARE

DIGITAL LIFELONG PREVENTION

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Spoke 2 Deliverable

SP2. D6.2 Plan for Advanced Training Courses

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SP2.D6.2 Plan for Advanced Training

Courses

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1. Publishable Summary

The document details the initiatives within the DARE (Digital Lifelong Prevention) project, specifically focusing on SPOKE 2 (SP2) "Community-Based Digital Primary Prevention" within Working Package 6 (WP6) titled "Education, training, and career paths."

WP6 aims to address the shortage of skilled personnel and elevate digital knowledge and skills, emphasizing primary prevention, health promotion, and epidemiological surveillance in healthcare. It follows the One Health and the Planetary Health approaches. The plan involves advanced post-graduate courses targeting professionals in emerging digital roles and organizations to bridge the digital divide in healthcare. The global shortage of digital experts in healthcare is highlighted, stressing the need for specialized professionals and re-training programs.

The consortium's institutions bring diverse training programs, from advanced biomedical and bioinformatics training at UNIPA to UCSC's focus on Epidemiology, Genetic Epidemiology, and Health Policy research.

SP2's aim is to equip professionals with essential digital skills through seminars, courses on ethics committees, narrative medicine, good clinical practice, and specialized workshops. The plan includes an online school on Digital Prevention and asynchronous access to master's degree modules.

The training leverages robust IT infrastructure and learning environments like "LearningFlix" to offer certifications through the ECTS system, micro-credentials, and open badges for shorter courses.

WP6 outlines a comprehensive strategy, led by UNIPA and esteemed partners, to address the shortage of skilled professionals in digital healthcare. The dynamic training plan, aligned with DARE's broader goals, ensures adaptability and responsiveness. The inclusion of specialized courses and seminars signifies a commitment to providing a holistic and contemporary education in healthcare.

2. Introduction

Within the DARE (Digital Lifelong Prevention) project, for the SPOKE 2 (SP2) “Community-Based Digital Primary Prevention” focusing on primary prevention, the Working Package 6 (WP6), entitled “Education, training and career paths”, aims to address the lack of qualified personnel and to improve the level of digital knowledge and skills in support of primary prevention, with a particular regard to primary prevention, health promotion, and epidemiological surveillance, following the One Health and the Planetary Health approaches.

WP6 leader was identified with University of Palermo (UNIPA), while the other partners of the WP are University of Bologna (UNIBO), University Cattolica del Sacro Cuore (UCSC), University of Padova (UNIPD), University Kore of Enna (UKE), University of Pittsburgh Medical Center Italy (UPMCI), GIMBE and Azienda Ospedaliera Universitaria Policlinico di Catania (AOUPCT).

The WP6 consists of 3 Task (Task 6.1, Task 6.2, Task 6.3). In particular task 6.2 refers to the training domain, dealing with professional retraining and advanced training courses. Therefore, it will develop and deliver advanced post-graduate courses: i) at the individual level to better prepare professionals to hold emerging positions in the digital area, such as Data Stewards, Data Custodians, Data Managers, Data analysts, Data Scientists, Data Architects, Data Engineers, to support digital infrastructures; ii) at the organization level (e.g., ethics committees, health authorities, healthcare management, etc.), to bridge the digital divide.

The lack of professionals with the competencies to support the digital revolution in the healthcare sector, is a full-blown global crisis. Professional training therefore represents a key strategic asset.

More in depth, all public and private companies operating in the digital health sector confirm the lack of staff with adequate digital skills. The shortage of digital experts who can develop cutting-edge technologies is a main issue at global level but the percentage in the Italian workforce is even below the EU average and the outlook is not good because of the low enrolment and graduation rates in the ICT sector. To achieve digital transformation in healthcare and to support the growth of the digital health industry there is the need for specialized professional figures, and re-training for employees of public and private



companies operating in the health sector. Such a large workforce requires a substantial investment in new training, re-training, and higher education programs for both technical and non-technical professionals.

A focus on continuous education and training will be also relevant in order to create career opportunities, to make the use of technologies easier, and to bridge the digital divide across generations of healthcare professionals.

This deliverable, identified for WP6, refers to the plan for an advanced training program related to SP2.

3. Consortium professional training competences

The partners belonging to the DARE Consortium, taken altogether, document a relevant portfolio of training programs, which will be enriched, updated, and expanded, according to the SP2 digital activities, and following a census of the educational and training demand and needs.

UNIPA will provide advanced training experience in the biomedical, bioinformatics and health sectors through post graduate Specialization Schools, PhD programs, Master of Science courses, post-graduate advanced and training courses, with particular regard to Public Health, Prevention and Epidemiology.

During the last decay, UCSC has been offering an extraordinary environment for training and research in the field of Epidemiology, Genetic Epidemiology, Personalized Medicine, Health Policy research, Health Technology Assessment, Environmental Health, Bioethics. Being one of the leading Public Health research centres in Europe and the hub of a network of national and international relationships and strategic partnerships, it will provide support for training in health protection and promotion.

Fondazione Policlinico Universitario Agostino Gemelli IRCCS (FPG) continuously provides training activities dedicated to its own staff. In particular, according to the Framework Agreement with UCSC, it has been providing training to residents and PhD students. More than 200 accredited (ECM) courses have been organized yearly at the FPG for more than 50.000 hours of training.



BI-REX will confer the industry 4.0 technologies available within its Pilot Plant for application, demonstration, and hands-on activities, in support of professional and PhD courses provided by universities and partners of the project. BI-REX also provides 6 ongoing relevant professional courses (ranging from cyber security to supercomputing, big data, and IoT applications). Lastly, BI-REX intends to enhance its own training offer and plan new training initiatives by drawing on the skills present within its consortium and the network of technical partners.

UNIBO is currently offering Lifelong learning certificates for professional workers in Data Science (developed within the UNA EUROPA consortium), and in Medical Statistics. These programs will be updated and enhanced with DARE results.

GIMBE foundation currently provides three relevant courses on evidence-based practice. GIMBE Foundation has a long-term operational capacity for events and training activities management in terms of communication, organization, logistics, web platforms, IT systems, networking.

GIMBE Foundation will contribute to develop training programs for healthcare professionals and the public based on digital lifelong prevention and on its methodological and technological features developed and deployed in SP2.

4. Advanced training activities

All the training and retraining activities of the DARE project will be realised within the WP6. Moreover, these activities developed within SP2 will be coordinated with the WP6 activities of Spokes 1 and 3.

More in depth, the aim of WP6 in SP2 is to provide essential and advanced digital and computational skills in health prevention and promotion, to train qualified personnel with adequate levels of digital skills in the context of digital primary prevention, which employers and employees require.

The target group includes graduated and post-graduated fellows with a career path coherent with DARE objectives, the current healthcare workforce and newly hired professionals, and DARE workforce and newly hired personnel.



The training plan, including continuous education and training, retraining, and specialization, is developed dynamically, and other training pathways may be added in response to special needs that may arise in the course of SP2 DARE's planned activities. The contents of the newly developed training activities are planned by a Scientific committee whose task is to propose a detailed syllabus and to identify the lecturers.

4.1. Training activities for healthcare workforce and newly hired personnel

The following training activities developed in WP6 of SP2 will be promoted by DARE partners to the abovementioned target groups:

- **Seminars on the technological and ethical aspects of digital prevention.** A series of seminars will be offered with the goal to make aware of the different aspects related to use of the digital technologies developed and deployed through the DARE project. A seminar catalogue has already been developed, and the seminar series will start in 2024. The seminars will be delivered in the present and online and will also be recorded with the aim of constituting a DARE seminar library.
- **Online short course on the role of ethics committees.** According to the analysis of the pilot projects carried out by SP1 and to the training need highlighted on the role of ethical committees, a training course on this topic will be proposed together with Spoke 1 and 3 WP6s.
- **Online short course on narrative medicine** would empower healthcare professionals with innovative tools for fostering empathetic connections and redefining patient experiences in contemporary healthcare.
- **Good clinical practice workshop.** The course will be offered with the goal to train professionals to the role of auditors in a regulated context.
- **Training course on European Research Council (ERC) grants** aims to train the DARE workforce on ERC opportunities.
- **Artificial intelligence applied to prevention.** Overview of AI key applications in prevention will be provided by UNIPA.
- **Big Data in oncology: genomic analysis and bioinformatics.** This course, provided by UNIPA, has the aim to introduce the Next Generation Sequencing (NGS)

technologies and standard bioinformatic analysis to study the mutational landscape of cancer. From basic analysis such as mutation co-occurrence or mutual exclusivity to more advanced ML-based applications.

Another training output of DARE will be:

- **Online School on Digital Prevention.** It will be publicly available and will be aimed at providing an in-depth knowledge of digital prevention in healthcare, borrowing from the DARE experience. The partners will contribute with recorded classes that together will provide a guideline for people interested in improving their competence in the DARE topic.

The following pathways will be offered by university partners who will make some of the master of science modules available in asynchronous mode:

- **Master of Science Degree Course in Organisation and management of health care facilities and services,** provided by UNIPA, aiming to train professionals capable of carrying out care, management, training and research processes in the relevant field of the completion of prevention activities dedicated to the individual and the environment in an increasingly One-Health approach in line with the directives of the World Health Organisation.
- **M.Sc. degree in Biomedical Engineering,** provided by UNIBO, including a new curriculum focused on digital health and exploiting DARE's results and methodologies.
- **M.Sc. degree in Statistical Science,** provided by UNIBO, including two relevant curricula: Data Science and Health and population analytics.
- **M.Sc. degree in Machine Learning and Big Data,** provided by UNIPD, to train experts in the application of AI and Machine Learning in the field of prevention.
- **M.Sc. degree in Public Health,** provided by UNIPA, to train experts in the management of events of Public Health interest or concern.

4.2. Educational platform and certifications

The design and the implementation of the advanced training and retraining will take into account the solid IT and knowledge management infrastructure provided by GIMBE



Foundation and the blended delivery systems through a specific learning environment called “LearningFlix”, provided by partner BI-REX.

Specific didactic multimedia approaches will be adopted that will include innovative teaching strategies involving collaborative learning, for example, debates, case studies, simulations, and live interaction with learners.

These pathways will be certified through the ECTS system and also micro-credentials and open badges for shorter courses that can be shared, portable and combined into larger credentials.

ECTS credits will be provided where appropriate.

5. Conclusions

In conclusion, this deliverable related to SP2 through WP6 outlines a comprehensive and forward-looking strategy to address the critical shortage of skilled professionals in the digital healthcare sector. Led by the University of Palermo (UNIPA), and in collaboration with prestigious partners, including GIMBE, UNIBO, UCSC, UNIPD, UKE, UPMCI, BI-REX, and AOUPCT, the planned advanced training and retraining have been conceived to provide courses targeted to healthcare professional dealing with primary prevention.

This training plan's dynamic development, coordinated with other spokes and aligned with the broader D.A.R.E. project, ensures flexibility and responsiveness to emerging needs. Specialized courses and seminars, such as those on ethics committees, narrative medicine, and artificial intelligence, demonstrate a commitment to providing a well-rounded and cutting-edge education.