

Summary of the Activity Plan for 2025-2029

Summary in Portuguese for publication

O CHRC é uma unidade de investigação em saúde translacional, clínica e de saúde pública. Resulta de um consórcio entre a NOVA Medical School, a Escola Nacional de Saúde Pública, a Universidade de Évora, o Lisbon Institute of Mental Global Health e a Fraunhofer AICOS. Entre 2025-2029, o CHRC está preparado para um crescimento transformador, capitalizando as recentes melhorias organizacionais, incluindo novas instalações, a integração da Unidade ToxOmics, a expansão para investigação especializada em Nutrição e a parceria estratégica com a Fraunhofer. O centro irá reforçar a sua liderança em investigação translacional, promoção da saúde pública e inovação tecnológica através de colaborações estratégicas com o meio académico, entidades de saúde, partes interessadas do setor e agências governamentais.

Objetivos-chave para 2025-2029:

1. Investigação de Excelência: Elevar a reputação científica do CHRC ao liderar projetos de investigação multidisciplinares em saúde, visando uma presença significativa em revistas de alto impacto, com resumos acessíveis em linguagem simples.
2. Diversificação de Financiamento: Aumentar o financiamento internacional para apoiar projetos em diversas áreas, incluindo oncologia, cardiologia, doenças músculo-esqueléticas e doenças infecciosas e também na promoção da saúde, nutrição, exercício físico e políticas de saúde.
3. Cultura de Investigação Colaborativa: Fomentar o trabalho em equipa interdisciplinar, com 60% dos projetos provenientes de colaborações internacionais.
4. Desenvolvimento de Produtos: Traduzir investigação em produtos de saúde impactantes, com pelo menos 5 produtos com TRL 8-9 para uso clínico.
5. Expansão Educacional: Criar 8 novos programas educacionais inovadores, atraindo 600 candidatos e apoiando a graduação de 300 alunos de mestrado e 50 de doutoramento por ano.
6. Desenvolvimento de Carreira: Estabelecer um departamento dedicado para apoiar trajetórias de carreira, visando 15 novas posições permanentes, e mentoria para jovens investigadores doutorados.
7. Influência Global: Expandir colaborações globais com 6 novos protocolos formais para investigação e treino com instituições internacionais de alto nível (CMU, Harvard, Sheba), e um com uma nova instituição nacional, além da adoção das melhores práticas em políticas e práticas de saúde.
8. Equidade em Saúde e Envolvimento Comunitário: Abordar disparidades em saúde e promover literacia em saúde através de intervenções baseadas em evidência, incluindo colaborações com a FIOCRUZ no Brasil e iniciativas em PALOPs e Ruanda.

Estratégias para o Sucesso:

- Financiamento e Infraestrutura: Reforçar os mecanismos internos de financiamento para apoiar colaborações internacionais
- Programas de Formação: Expandir bolsas de estudo, programas de intercâmbio e iniciativas de treino especializado
- Parcerias com a Indústria Tecnológica
- Foco em Propriedade Intelectual e Comercialização
- Envolvimento Comunitário: Aprofundar os laços com comunidades globais e locais.

Summary in English for publicity purposes

CHRC is a translational, clinical and public health research unit. It is a consortium coordinated by NOVA Medical School managed with National School of Public Health, Evora University, Lisbon Institute of Mental Global Health and Fraunhofer. In the period of 2025-2029, CHRC is investing in a transformative growth, capitalizing recent organizational enhancements including building new campi, integration with the ToxOmics Unit, expansion into specialized Nutrition research, and a strategic partnership with Fraunhofer. The center will reinforce its leadership in translational research, public health promotion, and technology innovation through strategic collaborations with academia, healthcare entities, industry stakeholders, and government agencies.

Key Objectives for 2025-2029:

1. Research Excellence: Excel CHRC's scientific reputation by pioneering multidisciplinary health research, aiming for a significant presence in open-access and top-tier journals with accessible lay language summaries.
2. Funding Diversification: Increase international research funding to support projects across diverse areas including oncology, cardiology, musculo-skeletal, and infectious diseases, health promotion, nutrition, physical activity and health policies.
3. Collaborative Research Culture: Foster interdisciplinary teamwork and international partnerships, driving 60% of projects from international collaborations.
4. Product Development: Translate research into impactful healthcare products with at least 5 reaching Technology Readiness Levels (TRL) 8-9 for clinical use.
5. Education Expansion: Develop innovative educational programs with 8 new courses, attracting 600 yearly applicants and supporting 300 master's and 50 PhD completions annually.
6. Career Development: Establish a dedicated department to support career pathways, aiming for 15 new permanent positions and robust mentorship for early PhD researchers.
7. Global Influence: Extend global collaborations with 6 new institutional collaboration protocols for research and

training with international top level research institutions (CMU, Harvard, Sheba), and top level national institutions, and adoption of shared best practices in health policy and practice.

8. Health Equity and Community Engagement: Address health disparities and promote health literacy through evidence-based interventions, including collaborations with FIOCRUZ in Brazil and initiatives in African Portuguese-speaking countries and Rwanda.

Strategies for Success:

- Funding and Infrastructure: Reinforce internal funding mechanisms to support extensive international collaborations, improve CHRC funding office's efficiency, and invest in state-of-the-art research facilities
- Comprehensive Training Programs: Expand scholarships, exchange programs, and specialized training initiatives
- Partnerships with the Technology Industry
- Focus on Intellectual Property and Commercialization
- Community Engagement: Deepen ties with global and local com

Summary in English for assessment

Comprehensive Health Research Center (CHRC) is a consortium coordinated by NOVA Medical School managed with National School of Public Health, Evora University, Lisbon Institute of Mental Global Health and Fraunhofer. In the strategic period of 2025-2029, CHRC is investing in a transformative growth, capitalizing recent organizational enhancements including building new campi, integration of the ToxOmics Unit, expansion into specialized Nutrition research, and a strategic partnership with Fraunhofer AICOS. These developments position CHRC as a leading center in translational research, public health promotion, and technological innovation. The R&D unit aims to leverage strategic partnerships with academic institutions, healthcare organizations, industry stakeholders, and government agencies to maximize resources, expertise, and funding opportunities and significantly enhance its research capabilities, innovation and impact.

1 - Enhancing Entrepreneurship and Innovation:

- Foster Healthcare Innovation: Collaborate with external entities like Carnegie Mellon Portugal Program to boost entrepreneurship and commercialization of innovations. Support the launch of CHRC-affiliated startups and aid in the commercialization of patented products. KPI: Support the development of 3 startup/spin-off and facilitate the commercialization of patented products.

2 - Education and Training Expansion:

- Diversify Educational Offerings: Enhance educational programs and training opportunities for students, healthcare professionals, and community members interested in multidisciplinary health research. Develop innovative curricula bridging basic science, clinical practice, and public health. KPI: Introduce 8 new CHRC programs/courses, attract 600 annual applicants, and support 300 master's and 50 PhD completions per year.

3 - Mentorship and Career Development:

- Nurture Healthcare Research Leaders: Implement robust mentorship and career development programs to support early PhD researchers and nurture the next generation of healthcare research leaders. KPI: Enroll 30 early PhD researchers annually in the CHRC early PhD mentorship program.

- Creating a Career Development Department: It will facilitate the creation of sustainable career pathways and oversee the development of associate and full professor positions as well as senior research roles within CHRC. KPIs: 1) 15 Associate and Full professor permanent positions within CHRC (including FCT-Tenures); 2) 15 researchers permanent positions within CHRC (including FCT-Tenures); 3) 1 Chair position within CHRC.

4 - Contributing to Global Impact and Decision-Making:

- Extend International Collaborations: Strengthen CHRC's global influence by establishing new collaboration protocols with top-level research institutions worldwide. Aim to influence the adoption of shared best practices in health policy and practice. KPI: Establish new international collaboration protocols e.g. with FioCruz (Brazil), Digital Data Design Institute (Harvard, USA), IDOR and Albert Einstein University (Brazil), and SHEBA (Israel) and drive adoption of 3 shared best practices.

5 - Health Equity and Community Engagement:

- Addressing Health Disparities: Engage in research and interventions targeting health inequities, with a focus on underserved and marginalized populations. Collaborate with local communities and policymakers to implement evidence-based solutions. KPI: Develop and implement culturally competent, evidence-based health solutions in collaboration with local stakeholders.

CHRC's success in achieving these objectives relies on robust strategies; Reinforcing internal funding mechanisms, enhancing the CHRC funding office, and investing in state-of-the-art research facilities. Also, CHRC will expand scholarship offerings, develop new international exchange programs, and launch specialized training initiatives like translational research bootcamps. Community engagement efforts will be deepened through tailored educational programs for less developed regions and collaborative international research projects. CHRC is committed to apply science in community service, promoting scientific and technological culture, and engaging in citizen science to promote inclusive healthcare solutions.

10. Description of the Activity Plan for 2025-2029

10.1 Objectives and strategy of the R&D Unit for 2025-2029

In the upcoming period of 2025-2029, CHRC will strategically leverage structural and organizational changes to enhance research excellence and impact. NOVA Medical School, the coordinating institution, is building a campus in Carcavelos to support educational and research transformations in response to emerging health and societal challenges. The National School of Public Health is expanding its campus to accommodate more postgraduate students and researchers. Univ Evora has initiated the establishment of a medical school, adding a new dimension to teaching and research. The Lisbon Institute of Global Mental Health is reinforcing its pivotal role in mental health epidemiology and policy research. Additionally, CHRC will integrate Fraunhofer AICOS, known for innovative health technology research, into its management structure. The consolidation of the ToxOmics Unit within CHRC and the addition of a specialized Nutrition research team further enhance CHRC's position in translational research, public health promotion and technology innovation.

Strategic partnerships include the clinical academic center (CCAL) with hospitals and healthcare centers, the Associated Laboratory REAL with two other research units, two collaborative laboratories (CoLab Trials and ValueforHealth) with industry and academia, and other international and national networks, consortia, collaborations, and partnerships. These strategic enhancements will foster an environment conducive to integrating fundamental knowledge across scientific disciplines to drive translational, clinical, and public health research initiatives, thereby enriching knowledge, policies, products, and solutions for improving individual lives and societal benefit.

Strategic Objectives for 2025-2029:

1. Achieving Research Excellence:

- Excel CHRC's Scientific Reputation: Distinguished by its pioneering discoveries, excelling CHRC as a premier reference in multidisciplinary health research and impactful contributions to the scientific community. KPI: aiming for more than 75% publications in top-tier Q1 journals. Ensure 90% of publications are in open-access journals, with at least 25% including lay language summaries, making research societally accessible.

2. Increasing Funding and Grants:

- Augment and diversify research funding, particularly increase funding from international sources, to support a wide array of projects spanning oncology, cardiology, musculoskeletal, infectiology and other clinical fields, health promotion, health systems and new technologies.

KPI: Attain 80% of CHRC funding from international sources.

3. Promoting Collaborative Research Culture:

- Further develop a dynamic research environment emphasizing interdisciplinary teamwork and international partnerships, fostering a space where knowledge exchange leads and where mentorship is available to researchers at every stage of their careers.

KPI: Aim for 60% of CHRC projects to originate from international networks and collaborations.

4. Organizing and Hosting Global Scientific Events:

- Regularly organizing conferences, workshops, science cafes and debates. Continuously host high-impact scientific conferences and seminars to nurture global dialogue, establishing a hub for scientific thought leadership.

KPI: Promote 3 Global high impact Scientific Events.

5. Developing Impactful Research-Based Products:

- Streamlining Research Translation: Accelerate research translation and promote entrepreneurship through industry partnerships.

- Accelerate the transformation of research discoveries into viable clinical, diagnostic, therapeutic and public health applications, leveraging acceleration research programs and industry partnerships to facilitate this translation.

KPI: Ensure 5 CHRC research-based products reach Technology Readiness Levels 8-9.

- Enhancing Entrepreneurship and Develop Accelerator with Carnegie Mellon University (CMU) to boost Commercialization of Innovations: A new NOVA Medical School (via CHRC) collaboration with NOVA SBE, the CMU Portugal Program and the Swartz Center for Entrepreneurship at CM University culminated in the creation of the CMU Portugal Patient Innovation (PI) Accelerator. The joint accelerator will propel healthcare innovation and entrepreneurship through the Patient Innovation Bootcamp, a collaborative effort with NOVA SBE, Copenhagen Business School, IESE Business School, BioCat, and Patient Innovation.

Built upon previous success in which CHRC developed 16 patents and numerous prototypes, the launch of CHRC-affiliated startups will be supported, aiding the commercialization of patented products.

KPI: 1) Support the development of 3 CHRC startups/spin offs; 2) Commercialization of 2 already patented products and 1 from a new patent application.

6. Elevating Education and Training:

- Expanding Educational Offerings: Enhance educational programs and training opportunities in multidisciplinary health research. CHRC already offers 7 PhD programmes, 12 master and >60 advanced courses (training in cadavers, simulators, ...). We'll develop innovative curricula that bridge the gap between basic science, clinical practice, and public health.

KPI: 1) 8 new CHRC programs/courses (including a new master program in medicine; 2) 600 yearly applications in CHRC courses; 3) 300 masters completion yearly; 4) 50 CHRC PhD completion per year.

- Strengthening Mentorship: Implement robust mentorship to nurture the next generation of healthcare research leaders.

KPI: 30 early PhD researchers into the CHRC early PhD mentorship program annually.

7. Supporting Career Development:

- Establish a Career Development Department, to nurture staff and researchers throughout their career trajectories, to facilitate the creation of sustainable career pathways and oversee the development of both associate/full professor and senior research positions within CHRC.

KPI: 1) 15 Associate and Full professor permanent positions, 2) 15 researchers' permanent positions (1 & 2 including FCT-Tenures) and 3) 1 Chair position, within CHRC.

8. Contributing to Global Impact and Decision-Making:

- Fostering Global Collaborations: Extend international influence by establishing new collaboration protocols with top-level research institutions, to collaboratively address pressing global health challenges and promote sustainable practices.

KPI: 1) 6 new formal collaboration protocols with international top level research institutions; 2) 3 shared best practices adopted by peer institutions or incorporated into government policies.

9. Promoting Health Equity, Citizen Science and Community Engagement:

- Engage in research and interventions specifically designed to address health disparities and enhance community health literacy and engagement.

KPI: Develop and implement culturally competent health solutions in collaboration with local communities, stakeholders, and policymakers. (Project Maré, collaboration with FIOCRUZ in Brazil)

CHRC will achieve its 2025-2029 objectives by (roadmap):

- Advance Funding and Infrastructure: Reinforce internal funding mechanisms to support international collaborations, enhance the functionality of the funding office and invest in state-of-the-art research facilities tailored to the evolving needs of our expanded research units.
- Comprehensive Training and Development Programs: Maintain and grow scholarship offerings, develop new international exchange programs and launch specialized training initiatives such as a translational research bootcamp integrating diverse scientific disciplines with practical applications.
- Community Engagement Efforts and Impact: Deepen ties with global and local communities through educational programs tailored for less developed regions and collaborative international projects, while continuing to foster an inclusive environment through initiatives like the PI Bootcamp and the Alentejo Living Lab consortium. More specifically, CHRC will develop outreach programs and educational initiatives to engage with schools, community groups and policymakers, in Portugal and abroad. As examples, we highlight the collaborative project with FIOCRUZ to establish a Global Health Innovation Hub to strengthen universal health coverage (UHC) by the public health systems and the North-South and South-South collaborations but also to address the challenges posed by guaranteeing access to health and reducing inequalities for marginalized and vulnerable populations. CHRC will perform an expansion of educational activities for less developed communities in African Portuguese speaking countries and Rwanda (via the University of Global Health Equity) or the development of a clinical research course with Aga Khan Foundation, applied in Nairobi, Kenya.
- Strategic Partnerships with Leading Academic Institutions: CHRC will forge partnerships with leading academic institutions, healthcare organizations, industry stakeholders and government agencies to leverage resources, expertise and funding opportunities. A recent protocol was established for the development of a twin Digital Data Design Institute at Harvard in Portugal. Some examples of important collaborations: IDOR and Albert Einstein University from Brazil, Carnegie Mellon university from USA, SHEBA, from Israel and LKC School of Medicine Singapura.
- Expanding the Delivery of Community Health Services and Enhancing Population Health Literacy. CHRC has the commitment to apply science at community service, including the promotion of scientific and technological culture and citizen science. We highlight current activities that will continue to be delivered in the upcoming years, as the PI Bootcamp - where patients and caregivers are trained and supported to bring their innovative products to the market -, or the Alentejo Living Lab consortium - focused on the internationalization of products, procedures and services that can promote the well-being of the Alentejo population by developing a su

10.2 Organization of the R&D Unit for 2025-2029

CHRC is a pioneering multi-disciplinary and multi-institutional research hub dedicated to advancing translational, clinical, public health, and health services research. Key pillars also include health education, training, and innovation. From 2025 to 2029, CHRC will be promoted by 5 partners: NOVA Medical School (NMS) - coordinator, National School of Public Health (ENSP), Évora University (UE), Lisbon Institute of Global Mental Health (LIGMH), and Fraunhofer AICOS, incorporating 217 PhD researchers, 168 PhD students, 16 non-PhD technicians, and 80 collaborative researchers from diverse fields.

Governance Structure:

1. Board of Directors (Strategic Level)

- Composition: coordinated by the Dean of NMS, with the director/dean from each partner's institution.
- Responsibilities: Oversees strategic planning, budget approvals, and key financial decisions, with ordinary meetings held biannually.

2. CHRC Executive Director and Executive Committee (Operational Level)

- CHRC is managed by an Executive Director which is hired by the Board of Directors. She/He is permanently assisted by the CHRC scientific coordinator, 2 researchers nominated by the Board of Directors and by another one nominated by the coordinators of the TL.

Responsibilities: Implements CHRC's strategic plan, sets performance indicators, develops detailed timelines and resource allocation for projects, and conducts monthly meetings to review progress and financial performance. This operational level relates directly to all the support infrastructures (described below) and manages the scientific organization and outputs of the TL and research groups.

-External Advisory Board:

Role: Comprises renowned scientists and stakeholders who provide external insights, suggest enhancements, and assess project outcomes, playing a critical role in continual quality improvement. It also undertakes periodic evaluations of the Unit's activities.

Strategic Impact and Sustainability:

CHRC will continuously develop metrics to evaluate the impact of its research and advocate for policies that support ethical, diverse, and open scientific practices. The management team will also focus on strategic funding and operational efficiency to ensure CHRC's long-term sustainability and success.

Research Organization:

CHRC is organized around 4 thematic lines and 14 research groups, headed by experts in fields ranging from Personalized Medicine to Global Health. These groups conduct pioneering research across various domains such as Nutrition and Metabolism, Health Innovation and Data Technology, supported by a robust infrastructure that facilitates

cross-institutional collaboration. From a multidisciplinary perspective, although each researcher is part of a particular group, he is encouraged (CHRC grants, support to publications, workshops) to collaborate with other groups where his expertise can make a relevant contribution.

Support and Infrastructure:

- Technical Support Departments: Cochrane ENSP-NMS Centre, CHAIN Biobank, Clinical Trials Unit (NovaCRU), Physical Fitness Assessment Lab, Kitchen Lab, Innovation Center, Data Center, and Pre-Clinical Research Support Center
- Cochrane Center: Affiliated with both ENSP and NMS, it focuses on promoting evidence-based health decisions through systematic reviews and educational initiatives
- CHAIN Biobank supports researchers through the collection, processing and quality control of a wide range of human biospecimens (solid and fluid) and associated health data. It is composed by 3 labs: BLS2 biosafety lab; freezers rooms; sample processing and quality control lab that offer services of DNA and RNA extraction, cell culture, flow cytometry and microscopy working in collaboration and in coordination with the pre-clinical research support Center. Presently it stores more than 30000 samples from 11000 participants, including blood, serum, plasma, urine and bones
- Nova-CRU: is the clinical research management unit of NOVA University and it is a joint venture between NMS and NOVA Information & Management School. Its expertise in the development of clinical research protocols, regulatory requirements, monitoring and management, support the development of investigator initiated clinical trials. It articulates with PtCRIN, the national scientific partner of ECRIN-ERIC, which can support national investigators seeking to internationalize clinical trials, and, on the other hand, to involve CHRC in clinical trials initiated by investigators in other European countries
- The Physical Fitness Assessment Laboratory at UE is equipped with a DXA to assess body composition, an isokinetic dynamometer to assess muscle strength, and force platforms to analyze the biomechanics of gait and balance, among other features.
- A Kitchen Lab hosting nutrition research studies, education, training and community activities.
- Pre-clinical Research Support Center supports cutting-edge research on molecular, biochemical, and cell culture and in vivo approaches. It is composed of NMS infrastructures and skilled professionals for live cell imaging, histology, flow cytometry, omics analysis and a comparative pathology lab and rodent-specific animal facility. The Center also includes the UE Laboratory of Pharmaceutical Technology - targets pharmaceutical formulations and manufacturing processes design -, the Laboratory of Biomedical Sciences - host in vitro and cell culture models, clinical biochemistry development, and clinical genomic -, and the 'One Environmental Health' Laboratory - collects, processes and analyzes samples in the context of cohort, case-control, and cross-sectional studies.

Research Empowerment and Administrative Support

CHRC also benefits from a strong and organized administrative structure that provides support in financial and project management - Research Funding Office -, internal and external communication - Communication Office-, and institutional and international relationships, legal and regulatory affairs through the Knowledge & Technology Transfer Office.

Innovation and Data Management:

- Innovation Center: Develops and validates digital health tools, comprising multiple labs that foster cutting-edge research and the application of AI and high-tech solutions in healthcare
- Data Center: Facilitates data management and analytics across CHRC projects, ensuring adherence to FAIR principles and supporting extensive epidemiological studies

Career Development and Diversity Initiatives:

-A new Career Development Department will be established to enhance researcher training, promote career growth, and focus on gender balance, diversity and inclusion, ensuring that CHRC fosters an environment where diverse perspectives and backgrounds are valued.

Community Engagement and Well-being:

CHRC promotes partnerships with patient associations, healthcare companies, and government agencies to enhance research impact. CHRC also prioritizes community mental well-being, offering support and promoting work-life balance.