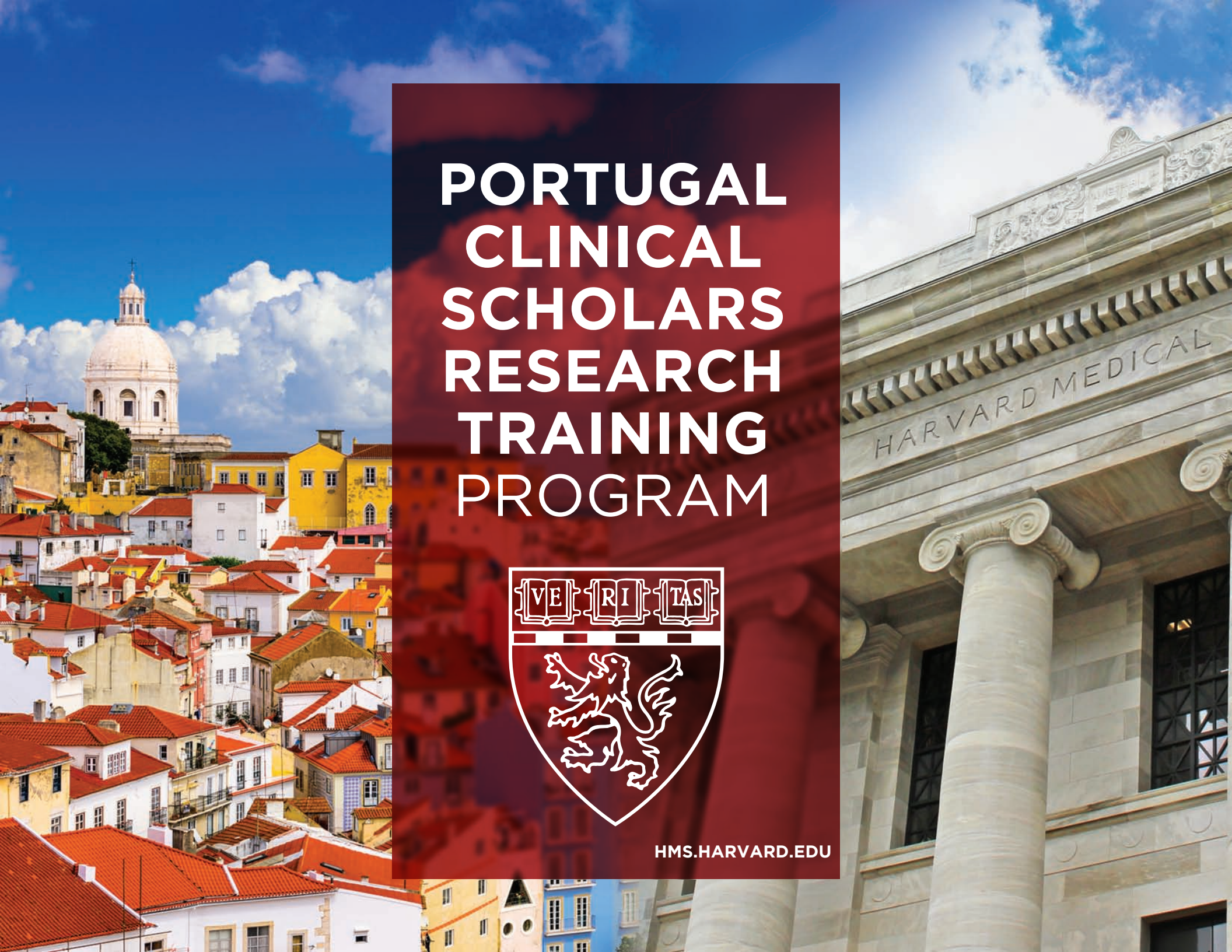


PORTUGAL CLINICAL SCHOLARS RESEARCH TRAINING PROGRAM

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HMS.HARVARD.EDU

FCT
Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

FCT MISSION

To continuously promote the advancement of scientific and technological knowledge in Portugal, to achieve the highest international standards of quality and competitiveness in all scientific and technological domains, and to stimulate their diffusion and contribution to society and the fabric of production.



HMS MISSION

To create and nurture a diverse community of the best people committed to leadership in alleviating human suffering caused by disease.

ABOUT THE PROGRAM

The Harvard Medical School Portugal Clinical Scholars Research Training (PTCSRT) program is a two-year program in clinical and epidemiological research training. The program is designed for scholars who would like to develop and refine patient-oriented research skills, as well as for practicing clinicians who wish to improve their understanding and interpretation of the medical literature.

The PTCSRT program delivers a comprehensive curriculum on the core theoretical and practical skills necessary to perform clinical research. Our learning model utilizes a combination of online instruction, interactive webinars and short, intensive workshops. Each component is delivered by leading Harvard clinical research faculty. The blended learning approach allows students to acquire information individually and at their own pace, while the in-person elements promote team-based learning and facilitated problem solving. The emphasis on teamwork persists throughout the program, and is designed to promote skills in collaboration and networking, which are critical for success in contemporary clinical research. Relevant modules are supported with examples and hands-on training in statistical programing using Stata software.



LEARNING OBJECTIVES

AFTER COMPLETING THIS PROGRAM, SCHOLARS WILL BE ABLE TO:

1. Develop detailed and feasible research questions
2. Design appropriate studies and testable hypotheses for clinical questions
3. Analyze, interpret and present clinical research data

KEY FEATURES

- The blended-curriculum will be delivered via a mixture of recorded online lectures (ROLs), interactive webinars and seven intensive, 2-day, residential workshops over the two years of the program.
- Leading clinical research faculty from Harvard Medical School, and T.H. Chan School of Public Health.
- Recorded online lectures (ROLs), available 24/7 throughout the program, are used to deliver the educational material of each module.
- Contemporary pedagogical approaches include 'flipped classroom' methods, team-based learning and development of critical thinking skills.



KEY PROGRAM ELEMENTS

- WORKSHOPS: Each workshop will be focused on the development of practical skills in clinical research. Particular emphasis will be placed on manuscript writing, research proposal preparation, biostatistical programming and critical thinking skills.

- RECORDED ONLINE LECTURES: Recorded online lectures (ROLs), available 24/7 throughout the program, are used to deliver the educational material of each module. In the first year a foundation course will introduce medical statistics and epidemiology, covering basic concepts in descriptive statistics, inferential statistics and study design. In the second year, the curriculum will focus on advanced epidemiology, including causal inference and advanced study design, as well as developing advanced concepts in biostatistics.

- ELECTIVES: There will be a choice of electives for students during the summer months (July and August) of each year. For first year students, the choice will be between clinical trials or advanced quantitative methods; for second year students, the choice will be between drug development and safety, or genetic epidemiology.

- WEBINARS: The live webinars are designed to complement the learning objectives of the ROLs, providing students with the opportunity to interact directly with Harvard faculty.

- MENTORED SCIENTIFIC WRITING: During the two year program, students will develop skills in the art of scientific communication. Each student will benefit from the input of a dedicated mentoring committee consisting of a primary Portuguese mentor and a Harvard advisor.

- TEAMWORK: Enrolled students will be randomly allocated to teams of approximately five students each. Each team will work together on two team assignments during year one and a further two team assignments during year two.

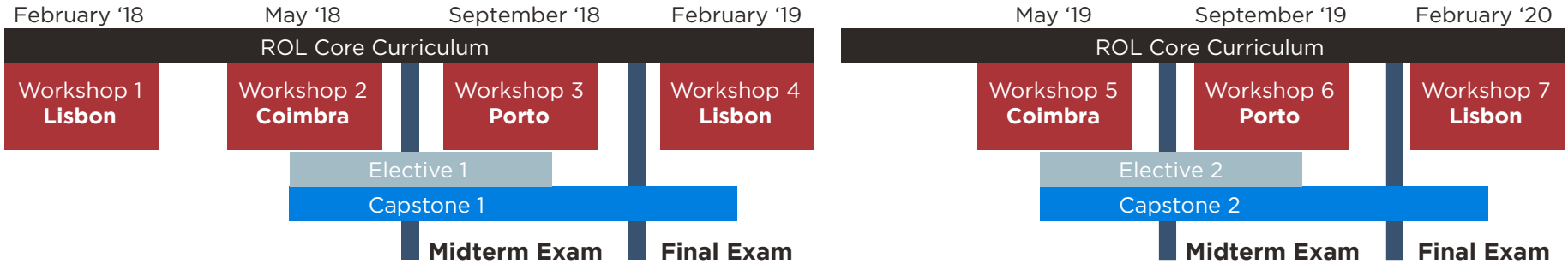
THE STUDENT PERSPECTIVE



"During PTCSRT I learned how to build a good project, ask a good research question and the methods to answer it; how to write a competitive grant application, to properly write and analyze a manuscript, and how to perform my own statistical analyses. It was an amazing experience, which enabled me to grow scientifically and establish a strong network with other young doctors."

INÊS LAÍNS
Research Fellow at Massachusetts Eye and Ear, Boston
Faculty of Medicine, University of Coimbra, Portugal
Coimbra University Hospital, Coimbra, Portugal

PROGRAM TIMELINE





CORE CURRICULUM

Foundation Courses

Biostatistics - This course addresses how to organize, summarize and display quantitative data; and the applied use of statistical software (Stata).

Epidemiology - This course covers the basic principles and methods of epidemiology, including disease (outcome) measures, measures of association, study design options, bias, confounding and effect modification.

Biostatistical Computing - This course focuses on the basics of Stata, including learning key commands, creating do-files, organizing data for analysis, and checking for errors. More advanced lectures will focus on using Stata for regression, survival analysis and generating publication quality figures and tables.

Research Ethics - This course reviews some common challenges in the conduct and review of biomedical human subjects research, including the evolution of ethical codes and regulations, the responsibility of physicians as investigators, the preparation of research protocol applications and informed consent documents, and the challenges of conducting research involving children and adolescents.

Leadership in Medicine - This course examines different aspects of working and leading a team. Lectures discuss the need to manage a group of people effectively, pilot successful collaborations within and outside a group, navigate the complexities of the institution, and manage the inevitable conflicts that arise in a clinical research environment.

Applied Regression - This course provides an understanding of the basic principles and uses of linear and logistic regression models for clinical research.

Survival Analysis - This course provides instruction to describe time-to-event data and compare groups with a time-to-event outcome, interpret the coefficients and control for confounding using a Cox proportional hazards model, interpret interaction terms and incorporate time varying covariates in a Cox model as well as assess the proportional hazards assumption.

Correlated Outcomes - This course covers methods to analyze longitudinal data, including the use of linear regression models. Topics will include polynomial trends for time (e.g., linear or quadratic) and linear mixed-effects models. Students will be able to understand the types of missing data that occur in longitudinal and cross-sectional analyses as well as understand the assumptions associated with each analytic approach.

Causal Design - Causal inference is an overarching objective of most forms of medical and epidemiological investigation. Students will develop a deeper understanding of observational approaches, especially from the perspective of overcoming the problem of confounding. Students will develop approaches toward identifying confounders, especially via the use of directed acyclic graphs.

CORE CURRICULUM

Electives

There will be a choice of electives for students during the summer months (July and August) of each year. For first year students, the choice will be between clinical trials or advanced quantitative methods; for second year students, the choice will be between drug development and safety, or genetic epidemiology.

Mentored Scientific Writing

During the two year program, students will develop skills in the art of scientific communication under the supervision of a dedicated mentoring committee. The task for year one students is to prepare an individual research proposal; and the task for year two is to prepare an original manuscript. It is expected that this manuscript would be submitted for publication in a peer-reviewed medical journal.



PROGRAM DIRECTORS



AJAY K. SINGH
MBBS, FRCP, MBA
PTCSRT Program Director
Senior Associate Dean for Global and Continuing Education
Harvard Medical School



EMÍLIA MONTEIRO, MD, PHD
PTCSRT Program Co-Director
Associate Dean for Education
Professor of Pharmacology
Universidade Nova de Lisboa



FINNIAN R. MC CAUSLAND
MBBCh, MMSc, FRCPL, MRCPI
PTCSRT Program Director
Assistant Professor of Medicine
Harvard Medical School



LINO GONÇALVES, MD, PHD, FESC
PTCSRT Program Co-Director
Professor of Cardiology
Faculty of Medicine,
University of Coimbra

FACULTY

Workshop Faculty

HEATHER J. BAER, SCD
Assistant Professor of Medicine
Harvard Medical School
Assistant Professor of Epidemiology
Harvard T.H. Chan School of Public Health
Associate Epidemiologist
Brigham and Women's HospitaL

BRIAN L. CLAGGETT, PHD
Instructor in Medicine
Harvard Medical School
Chief Statistician
Cardiac Imaging Core Laboratory and Clinical Trials Endpoints Center
Brigham and Women's Hospital

BRIAN HEALY, PHD
Assistant Professor of Neurology
Harvard Medical School
Assistant Professor of Biostatistics
Harvard T.H. Chan School of Public Health

SUSAN Z. KORNETSKY, MPH
Director of Clinical Research Compliance
Boston Children's Hospital

MELVYN A. J. MENEZES, MBA, PHD
Associate Professor
Boston University Quelstrom School of Business

ELLEN SEELY, MD
Professor of Medicine
Harvard Medical School
Vice Chair, Faculty Development
Director of Clinical Research, Endocrinology, Diabetes and Hypertension Division
Brigham and Women's Hospital

DJØRA SOETEMAN, PHD
Research Scientist, Center for Health Decision Science
Harvard T.H. Chan School of Public Health

CAREN G. SOLOMON, MD, MPH
Associate Professor of Medicine
Harvard Medical School
Deputy Editor, New England Journal of Medicine

SCOTT SOLOMON, MD
Professor of Medicine
Harvard Medical School
Senior Physician and Director Noninvasive Cardiology
Brigham and Women's Hospital

DAVID WYPIJ, PHD
Associate Professor of Pediatrics
Harvard Medical School
Director of Graduate Studies and Senior Lecturer on Biostatistics
Harvard T.H. Chan School of Public Health
Director, Statistics and Data Coordinating Center Department of Cardiology
Boston Children's Hospital

FACULTY

Online Faculty

JOHN Z. AYANIAN, MD, MPP
Director, Institute for Healthcare Policy and Innovation
Michigan State University

HEATHER J. BAER, SCD
Assistant Professor of Medicine
Harvard Medical School
Assistant Professor of Epidemiology
Harvard School of Public Health
Associate Epidemiologist
Brigham and Women's Hospital

NITEESH K. CHOUDHRY, MD, PHD
Professor of Medicine
Harvard Medical School
Associate Physician, Division of Pharmacoepidemiology and Pharmacoeconomics and the Hospitalist Program
Brigham and Women's Hospital

BRIAN L. CLAGGETT, PHD
Instructor in Medicine
Harvard Medical School
Chief Statistician
Brigham and Women's Hospital

GARY CURHAN, MD, SCD
Professor of Medicine
Harvard Medical School
Professor, Department of Epidemiology
Harvard T.H. Chan School of Public Health

HENRY A. FELDMAN, PHD
Associate Professor, Department of Pediatrics
Harvard Medical School
Principal Biostatistician, Clinical Research Center
Boston Children's Hospital

GARRETT FITZMAURICE, SCD
Professor of Psychiatry (Biostatistics)
Harvard Medical School
Professor, Department of Biostatistics
Harvard School of Public Health
Director of Laboratory for Psychiatric Biostatistics
McLean Hospital

CHASE H. HARRISON, PHD
Associate Director, Harvard Program on Survey Research
Harvard University
Preceptor in Survey Research, Faculty of Arts and Sciences
Harvard University

BRIAN C. HEALY, PHD
Assistant Professor of Neurology
Harvard Medical School
Instructor, Department of Biostatistics
Harvard T.H. Chan School of Public Health

SUSAN Z. KORNETSKY, MPH
Director of Clinical Research Compliance
Boston Children's Hospital

JESSICA PAULUS, SCD
Assistant Professor of Medicine
Tufts University

BENJAMIN RABY,
Associate Professor of Medicine
Harvard Medical School Director
Pulmonary Genetics Center
Brigham and Women's Hospital

SUSHRUT S. WAIKAR, MD, MSC
Associate Professor of Medicine
Harvard Medical School
Constantine L. Hampers Distinguished Chair in Renal Medicine
Director of Translational Research, Renal Division
Brigham and Women's Hospital

HARVARD MEDICAL SCHOOL
Global and Continuing Education

csrt_pt@hms.harvard.edu
hms.harvard.edu/oge

4 Blackfan Circle, 4th Floor
Boston, MA 02115

