

## e-Seminar #26

# Phase III In Silico Trials of new treatments for osteoporosis using exascale computers

2 September 2022 2pm CEST / 1pm BST (1h duration)

Register for free here: <https://register.gotowebinar.com/register/4468654270853507088>

In this seminar I will review the challenges we are facing in transforming a digital twin in healthcare solution called BoBCAT, which predict the force required to fracture any bone from a CT dataset of the subject, into BoneStrength, a full-blown In Silico Trial to simulate phase III clinical trials of new anti-resorptive drugs, medicines prescribed to treat osteoporosis.

We will introduce the computational structure of BoBCAT and quickly review its extensive technical and clinical validation. Then we shall report on the use of statistical atlases to expand a collection of 100 patient-specific models into a cohort of over 1000 virtual patients. We will describe the calculation of the Absolute Risk of Fracture at time zero, the disease progression model, and how we are now using Markov Chain Monte Carlo to provide a more realistic simulation of an actual clinical trial.

Last, we will review the possible approaches to implement treatment models, and how these would inevitably require an exascale-class supercomputer to run.

This is the 26<sup>th</sup> in a series of online e-Seminars organised by CompBioMed.

Watch the full series at [www.compbioed.eu/training/](http://www.compbioed.eu/training/)



**Marco Viceconti** has a PhD in Bioengineering and has been developing In Silico Medicine technologies for over 20 years. He is full professor of Industrial Bioengineering at the Alma Mater Studiorum - University of Bologna, and Director of the Medical Technology Lab at the Rizzoli research hospital. Before he founded and led for seven years the Insigneo Institute for In Silico Medicine at the University of Sheffield (UK).

Moderated by Tim Weaving, UCL

