

Institute of Aerospace Medicine

Institute Seminar, November 21, 2017, *Abstract*

Prof. Dr. Adam Cohen

Director

Centre for Human Drug Research (www.chdr.nl), Leiden, The Netherlands

Clinical Pharmacology ready for lift-off into method space

There is an intriguing paradox going on in drug development and pharmacology. We are acutely aware that there is a need for medicines that deal with the precise problem of an individual patient, rather than with the average of a group. This is called personalized or precision medicine. This is a good initiative. Only, we lack quantitative methodology to see if a medicine works in an individual patient. This method paradox is prevalent throughout clinical specialties. For instance, despite years of research and many marketed drugs, we have nothing more sophisticated to test if a depressed patient is better than a 17-point questionnaire, administered infrequently. We manage transplant patients with increasingly targeted and complex combinations of medicines and we monitor the treatment by waiting for an infection or a lymphoma to occur, relying only on blood levels of some of the individual medicines.

This is reflected in drug development where we do a considerable amount of the early testing using observational methods not dissimilar to those used when drug development started in 1785.

At CHDR there are many areas where an attempt is made to remedy this. CNS effects-pain-immunology can be easily quantified. In this lecture, we will also cover work on performance fitness of doctors and on-road and simulator driving. Additionally, the trial can now move to the patient's home and there will be coverage of a trial management system generating apps for patient reported outcomes. Physiological monitoring with CHDR REMOS will eventually link drug development to remote places, even to outer space.