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## Obituary

## Jacques F. Acar (1931–2020)

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Jacques Fouad Acar passed on March 27th 2020 at the age of 88. He was taken by the COVID-19 disease at Hôpital Saint Joseph, Paris, France, where he had spent more than 30 years diagnosing and treating patients. Jacques F. Acar was our master, inspiring so many clinical microbiologists and infectious disease specialists in France but also around the world.

Born in Dakar, Senegal, he lived during his younger years in Africa and went back there, after his MD thesis, for military service. He vividly remembered the yellow fever outbreak in the 1940s and 1950s and the success of vaccination. He recounted: “I was drawn towards infectious diseases already early in my life. I date my interest back to my childhood in Dakar, Senegal, when the recent great and killer epidemic of yellow fever was still in all memories: with all the fear and the 12 months of the city quarantine (no boats and no relation with the rest of the world). The virus was just isolated, and a vaccine

was in development. The discussions in my family were passionate: infectious diseases were part of the blend of nature, beauty and dread.”

Jacques F. Acar's medical career was exemplary and can be taken as a model for young trainees. He started as an assistant in infectious diseases in 1962 at Claude Bernard Hospital in Paris, the French hospital that was dedicated to patients with infections until 1988. He then trained in experimental research in microbiology with two pioneers in antibiotic studies, Yves Chabbert at the Service de Bactériologie Médicale in the Pasteur Institute, Paris, and Maxwell Finland at Harvard Medical School, Boston, USA. The great Yves Chabbert, his major mentor, transmitted to him the need to blend knowledge in clinical microbiology and in ‘general microbiology’ in the sense of that coined by Cornelius van Niel, Jacques Monod, Ellie Wollmann, François Jacob, and Roger Stanier. In fact, the compulsory reading of *The Microbial World* of Stanier et al. was an obligation that Chabbert imposed on Jacques Acar on the occasion of one of his first encounters. Familiarized with this scientific approach to extended clinical microbiology, he was promoted professor of clinical microbiology at Université Pierre et Marie Curie, Paris (now Sorbonne Université), where he worked for 30 years. In his later years he also became an expert in the ‘One Health’ perspective, particularly how animal health is linked to human health, and he remained active and even passionate—looking forward to understanding the interactive ecology of pathogenicity and antibiotic resistance—until the day of his death.

Looking back at his scientific achievements, we appreciate his providing us with a deep understanding of microbes, their relationship with disease, and their response to antimicrobial treatment. He published, together with his collaborators, what trainees today consider as having been ‘known forever’, such as, among other things, the clinical cross resistance between penicillins and cephalosporins in MRSA [1], the cross resistance between antibiotics of different families due to porin alterations in Gram-negative bacilli [2], the efficacy of combination therapy with fluoroquinolones and rifampicin for *Staphylococcus aureus*

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osteoarticular infections [3], the post-antibiotic effect [4], the conservation of synergy between trimethoprim and sulfamethoxazole in the case of resistance to sulfamethoxazole [5], the failure to cure patients with typhoid fever in the case of a first-step quinolone resistance [6], the reduced activity of glycopeptides against staphylococci [7,8], the notion of evolution of new  $\beta$ -lactamases [9], and the occurrence of *Bartonella* infections in homeless people [10].

From 1960 to 2013, most of Jacques F. Acar's publications reflected his curiosity about, and his anticipation of, new challenging topics in clinical microbiology and infectious diseases, from endocarditis to mediastinitis, without neglecting common infections such as appendicular peritonitis and urinary tract infections. His favoured pathogens were *S. aureus*, then *Nocardia* species, Gram-negative bacilli and also *Streptococcus pneumoniae* [11], including all the nutritionally deficient forms of staphylococci and streptococci [12,13], which were not that well known at the time. He was keenly interested in every new antimicrobial, testing and retesting most of them against the bacterial isolates that were routinely banked at his two laboratories at Saint Joseph and Broussais hospitals [14].

Noteworthy is also his creation of the first team dedicated to 'antimicrobial stewardship' in France which he managed at Saint Joseph and Broussais hospitals; every day, weekends included, seniors, juniors, clinical microbiologists and infectious disease trainees of his ward and he himself visited patients for whom cultures of blood or other relevant specimens (CSF, pus, surgical site etc.) were positive. The two hospitals were separated by only a small gate, through which the microbiologists from one hospital laboratory went to meet their counterparts to discuss all new cases of infection they had encountered.

He foresaw clearly what the successful use of antimicrobials would require: first, in-depth investigation of the *in vitro* activity of new compounds by MIC testing along with an evaluation of synergy and antagonism with other antimicrobials as well as measurement of PK/PD parameters and post-antibiotic effects; second, learning how to treat patients and which type of infection would benefit from a new therapy; and third, observation and deciphering of resistance in all its forms.

Outside of his ward and laboratories, Jacques F. Acar was above all a European microbiologist, shaping the fledgling European Society of Clinical Microbiology (ESCM) that became the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) with the inclusion of Infectious Diseases in 1993. With Jacques F. Acar as the first President of ESCMID, 1993–1995, several important milestones were reached. The society became influential across Europe, and the biannual European Congress of Clinical Microbiology and Infectious Diseases (ECCMID) became the most popular European conference in clinical microbiology and infectious diseases. In 1997, he assisted his colleague and friend Ian Philips in creating the bases for the European committee for antimicrobial susceptibility testing (EUCAST) which became a successful entity for the regulation of the usage of antimicrobial agents, assisting the European Medicines Agency (EMA). EUCAST was reshaped in 2001 by Gunnar Kahlmeter but kept the idea of grouping microbiologists from different countries with common expertise and defined goals. Looking beyond Europe, Jacques F. Acar was a founding member of the International Society of Infectious Diseases (ISID), and he was active until recently in the American Society of Microbiology, among others as ambassador for French microbiologists.

After he retired from his University and Hospital duties, Jacques F. Acar spent his time with global projects fighting the rising threat of antimicrobial resistance (AMR). He changed his focus from human to animal health, a pioneer, again, in the new 'One Health' paradigm. He mandated the AMR surveillance in bacterial isolates from animals and food, repeating what he did decades ago for

human medicine when he created, with his friends and colleagues Fernando Baquero and Giuseppe Cornaglia, the European Study Group for Antibiotic Resistance (ESGAR) of ESCMID. He has been a forerunner in performing international AMR surveillance in the animal field [15]. Until the last months, he remained an active member of the Advisory Group on Integrated Surveillance of Antimicrobial Resistance (AGISAR) and a senior expert at the World Organization for Animal Health (OIE) for which he published his last thoughts on AMR [16].

Throughout his professional life Jacques F. Acar was a permanent source of motivation for his young colleagues in clinical microbiology and infectious diseases. Many of them remember him as a challenging character and mind, as he was always asking: what is the new case today? What can you do next to improve our knowledge to the benefit of the patient? What would you publish on this case? He encouraged them with a permanent enthusiasm and warmth promoting medical/clinical microbiology 'at the bedside', connecting work at the bench and interaction with clinicians. Indeed, Jacques F. Acar always tried to bring together clinical microbiologists and infectious diseases specialists under one umbrella, all around the world, with the same passionate sense of friendship, and in the best interests of the patient.

Finally, it must not be forgotten that in 1995 Jacques F. Acar became the first Editor-in-Chief of the journal *Clinical Microbiology and Infection* (CMI), a project that had been under discussion for 3 years at that time and that has evolved since into one of the leading journals in the field, with an impact factor by now of 7.117. He was also an independent thinker, interested by considering the 'truth' beyond fashion and appearance, and recommending the value of 'thinking' to reach an equilibrium, perpetual consideration of the scientific facts and needs. Deep friend of his friends, compassionate with everybody, one of his favourite readings was the poetic *Book of Job* (complaining that most people in our days are unaware of it). He will also be remembered for his singing with a baritone voice and his love of culture, art and opera as well as for his fondness for world travel and the treasures he gathered along the way.

Our sincere condolences go to all his family. He will be forever with us.

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