



Interviews

EMJ team had the pleasure of interviewing two specialists: Mausumi Das, Consultant Gynaecologist and a Subspecialist in Reproductive Medicine, Hammersmith Hospital, Imperial College Healthcare NHS Trust, and Chelsea and Westminster Hospital NHS Foundation Trust, London, UK; and Signe Altmäe Department of Biochemistry and Molecular Biology, University of Granada, Spain, and Division of Obstetrics and Gynaecology, Karolinska Institutet, Stockholm, Sweden

Featuring: Mausumi Das and Signe Altmäe



Mausumi Das

Consultant Gynaecologist and a Subspecialist in Reproductive Medicine, Division of Reproductive Medicine, Department of Obstetrics and Gynaecology, Hammersmith Imperial College Healthcare NHS Trust and Chelsea and Westminster Hospital NHS Foundation Trust, London, UK

01 What led you to pursue a career in reproductive medicine?

I decided to choose reproductive medicine as my career because of the amazing opportunities it would give me to make a fundamental difference in someone's life. For me, there can be no greater joy than helping men and women conceive and fulfil their dream of having a family. While working as research fellow in reproductive medicine at Queen Mary, University of London, UK, I thoroughly enjoyed learning about the clinical and scientific aspects of infertility and reproductive endocrinology. While doing laboratory-based research on polycystic ovary syndrome (PCOS) for my research doctorate, I was attracted to the fact that reproductive medicine offers excellent opportunities for translational research so that we can offer our

patients pioneering treatments and state-of-the-art technologies. I found it fascinating that millions of babies have been born with the help of assisted conception techniques such as in vitro fertilisation (IVF) and intracytoplasmic sperm injection, and this simply would not have been possible without the development of IVF. I knew then that I wanted to pursue a career in reproductive medicine, and it has been an incredibly rewarding journey for me.

Reproductive medicine encompasses a wide range of specialties, including early pregnancy, reproductive endocrinology, PCOS, infertility, assisted conception, andrology, recurrent miscarriage, reproductive surgery, and management of the menopause. For me it has been a truly rewarding career choice and a privilege to be able to do what I love every day.

02 Your personal education and professional experience have involved you travelling to numerous destinations, such as Canada and the UK. Where do you believe you gained the most experience, and do you believe travelling was integral for you to make it to where you are today?

I completed my postgraduate specialisation in obstetrics and gynaecology in the UK, and was awarded a certificate of completion of training by the Royal College of Obstetricians and Gynaecologists (RCOG). During my obstetrics and gynaecology training in the UK, I gained wide ranging experience in various aspects of obstetrics and gynaecology. I subsequently undertook a 2-year RCOG accredited sub-speciality fellowship programme in reproductive medicine and surgery at the world-renowned McGill University in Montreal, Canada. As this was a busy, tertiary referral centre, I gained extensive experience and expertise in the management of subfertility, reproductive endocrinology disorders such as PCOS, and assisted conception. As it is a national referral centre for cancer patients seeking

fertility preservation, I gained considerable experience in managing patients with cancer undergoing fertility preservation prior to gonadotoxic treatment, and this is an area of special interest and expertise for me. As the McGill Reproductive Centre is a pioneer in the technique of in vitro maturation of oocytes, I developed a special interest in this field, especially as it is aligned to the work that I had undertaken for my research doctorate on the mechanisms influencing folliculogenesis in PCOS. I thoroughly enjoyed my fellowship programme in reproductive medicine at McGill University. Besides providing me with exceptional clinical experience and skills, the experience of working in a different healthcare system with people from different cultural backgrounds has helped me in my professional and personal development. I recently completed a Master of Public Health in Epidemiology from Harvard University, Cambridge, Massachusetts, USA, which provided me with advanced research and epidemiological skills that I can apply to address issues relating to patient care and population health research. I therefore truly believe that travelling abroad for my education and professional experience has helped me to expand my horizons, and has provided me with a unique set of experience and skills which has enabled me to provide the best possible care for my patients, and contributed significantly to my career as a reproductive medicine specialist.

03 You are currently the author of more than 30 peer-reviewed publications and book chapters in the field of reproductive medicine and infertility. What do you believe to be the current gaps in literature, and what topics merit greater attention?

The field of reproductive medicine has expanded rapidly, driven by the need to provide safe and effective treatment options for patients. Although these have led to new insights and discoveries, many fundamental



questions remain unanswered. There have been several advances in our understanding of the factors affecting embryo development, ranging from molecular and genetic mechanisms and the role of epigenetics to the effect of cancer and gonadotoxic agents. However, many aspects affecting embryo development remain unclear. Research is needed to identify optimal ovarian stimulation protocols in poor responders, and improve embryo culture and embryo selection techniques. Much of the available data is obtained from retrospective or small cross-sectional studies, limiting the validity of the findings. Well-designed, randomised studies will help to clarify these issues. Male reproductive health has often been neglected, and well-conducted studies to improve male fertility and

identification of better methods of sperm selection for assisted conception are key research priorities. Moreover, there is a need for superior sperm cryostorage systems, including better systems for cryopreservation of testicular tissue. The application of precision medicine to improve clinical outcomes merits greater attention. Artificial intelligence systems based on deep learning algorithms and artificial neuron networks are being developed. These technologies may help to optimise sperm and embryo selection for assisted reproduction treatments, so that embryos with higher developmental potential can be selected and transferred. Furthermore, research is urgently required to provide enhanced fertility preservation treatment options for male and female cancer patients. Finally, large population studies are required to generate robust data on the impact of environmental factors on sperm and ovarian function and fertility outcomes.

04 What are the most significant changes you have seen in the field of reproductive medicine and gynaecology during your time working in the field?

The past decade has seen some truly remarkable breakthroughs in the field of reproductive medicine and gynaecology. Improved methods of oocyte cryopreservation have led to better success rates following

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egg freezing and enhanced fertility preservation options for millions of women. Advances in embryo selection techniques have enabled reproductive medicine specialists to transfer a single embryo at a time, thereby reducing the chance of multiple pregnancy without compromising success rates. Ovarian stimulation protocols have been optimised to decrease the risk of ovarian hyperstimulation syndrome. Furthermore, progress has been made in optimising treatment regimens for older women and poor responders. Recent research has focused on providing better fertility preservation options for cancer patients about to undergo gonadotoxic therapies like chemotherapy and radiotherapy. Besides improved egg cryopreservation methods, there have been significant developments in ovarian tissue cryopreservation techniques along with in vitro maturation of oocytes. In an exciting development, doctors in Sweden reported in that a 36-year-old woman who had received a uterus from a 61-year-old friend, gave birth to a healthy baby in 2014. Although the procedure is still experimental, it offers hope to women without a uterus, or those who are not able to carry a pregnancy. In the field of male infertility, novel methods for selecting sperm for use in assisted conception have been introduced in recent years, although the optimum method for sperm selection is still unclear. Moreover, improvement in surgical sperm retrieval procedures such as microTESE have offered hope to thousands of men all over the world.

05 What are some points of emphasis you incorporate into practice to be the best consultant gynaecologist you can be?

Patients are at the heart of everything I do. I believe in a patient-centred approach, and involve patients in decision making about their care. I am curious and believe that medicine is a process of lifelong learning. I keep up to date and reflect on my practice regularly to ensure that I provide the best quality of clinical care to my patients. At the same time, I feel that it is important to be a good listener, to be compassionate and empathetic, and to have good communication and team working skills.

06 You are a member of several international learned societies, including the European Society of Human Reproduction and Embryology (ESHRE). How are the ESHRE and other societies using their position to educate surgeons, nurses, and trainees about the field of reproductive medicine?

International learned societies such as ESHRE and the American Society of Reproductive Medicine (ASRM) play a vital role in the advancement and practice of reproductive medicine. They achieve this by the sharing of information and knowledge, and by educating and training clinicians, nurses, embryologists, and reproductive medicine specialists of the future. They help to facilitate and disseminate research in human reproduction and embryology. They organise several educational courses throughout the year, and their e-learning platform is an excellent forum to keep abreast of the latest developments in the field.



The annual ESHRE conference is very well attended, and presents a great opportunity to attend state-of-the-art lectures, to network, and to exchange ideas.

07 Polycystic ovarian syndrome is one of the most common reproductive health diseases. Have you seen much improvement in its treatment over the last few years?

Although PCOS is one of the most common reproductive health disorders, there are still several challenges in its understanding and management. In recent years, greater emphasis has been laid on the long-term cardiovascular effects of PCOS and their management. Moreover, Type 2 diabetes and gestational diabetes are more prevalent in PCOS. Therefore, all women with PCOS should be screened for cardiovascular risk factors.

Lifestyle intervention focusing on weight management is recommended first in women who are obese, as it improves general health and reduces adverse outcomes such as coronary heart disease and stroke. There is some evidence to show that metformin may also improve cardiometabolic health in women with PCOS. Lifestyle modification and metformin may improve endometrial dysfunction and pregnancy outcomes in women with PCOS. Although some studies have suggested that inositol therapy may be useful, large, well-designed, randomised trials to assess its efficacy are needed. It has been shown that carefully monitored ovulation induction protocols can achieve good cumulative pregnancy rates while minimising multiple pregnancy rates. Clomiphene citrate is still considered to be the first line treatment for ovulation induction. Letrozole is being increasingly used

an alternative to induce ovulation in patients who have not responded to clomiphene, and may improve clinical pregnancy rates and reduce time-to-pregnancy. Gonadotrophin ovulation induction is used as second line treatment. IVF with the gonadotrophin releasing (GnRH antagonist) protocol is now commonly used to minimise the risk of ovarian hyperstimulation syndrome. A multidisciplinary team approach may help patients to follow lifestyle interventions and improve their cardiometabolic and reproductive health.

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08 How have you seen the advent of new technologies significantly impact the field of fertility preservation in recent years?

In recent years, there have been noteworthy advances in the field of fertility preservation, which have had a significant impact on the efficacy of fertility preservation options available to patients. Importantly, egg cryopreservation is no longer considered experimental. Improved oocyte cryopreservation techniques have led to vastly improved success rates following oocyte freezing. This has been especially important for women with cancer about to undergo gonadotoxic chemotherapy or radiotherapy. Furthermore, there have been major developments in ovarian tissue cryopreservation techniques,

and research is ongoing to improve the safety and efficacy of this technology. Studies have also described novel methods of aspirating immature oocytes from the excised ovarian cortical tissue followed by in vitro maturation of the immature oocytes. Researchers have recently explored the feasibility of restoring fertility through spermatogonial stem cells in men with testicular failure. In the future, progress in stem cell research may help to restore fertility in cancer patients.

09 What advice would you give to someone hoping to pursue a career in reproductive health? Which lessons, if any, do you wish you had been taught as a young student?

For those wishing to pursue a career in reproductive health, I would say that it can be a very rewarding career choice. Besides being personally extremely satisfying, one can make a very positive and meaningful impact on the reproductive health and wellbeing of millions of men and women. Shadowing a reproductive medicine specialist for a few weeks is a great way of finding out what a typical day is like in the life of a reproductive medicine specialist, and therefore an excellent way to find out if it is the right career choice.

I would tell young students that life is a rollercoaster, filled with countless opportunities and novel experiences. Time management and being well organised are crucial. There will be difficulties along the way and being resilient is important. Take all advice onboard because it will help you succeed. Enjoying what you do is the key to success!