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Preface

New reproductive technologies

Infertility is defined as 'failure to conceive within 12 months of unprotected sexual intercourse' and affects tens of millions of women worldwide. Infertility remains stigmatizing both in women and in men, and affects social relationships, health and even life expectancy. Familiar with the long-term, often devastating, consequences of infertility in the developing world, the World Health Organization consequently labelled infertility as a disease of the reproductive system. Since the first successful introduction of in-vitro fertilization in 1978, medical support of infertile couples has developed tremendously. Now a wide array of technologies is available to infertile couples and individuals, including cryopreservation of oocytes and embryos, intracytoplasmic sperm injection, donation of gametes and embryos, preimplantation genetic testing and, in recent years, cryostorage of ovarian and testicular tissues sampled from adult and prepubertal individuals.

The clinical application of many of these technologies always spreads globally in an epidemic-like fashion. In many instances, proper testing of potential risks was completely lacking or neglected. Confronted with such a rapid spread of treatment modalities, several national and supranational registries were established to record the prevalence and outcome of assisted reproductive technology (ART). Although still far from being perfect or complete, these data sets provide an overview of long-term trends, but must now be tailored towards true surveillance and vigilance. The excellent examples given by quality control in other medical disciplines, such as pharmacovigilance, haemovigilance and others, should demonstrate the way forward. Also, surveillance and vigilance in ART should be the domain of experts, health authorities, and also patients themselves.

The increasing availability of reproductive technologies is no longer limited exclusively to infertile couples, but now extends to individuals with genetic disorders, as in preimplantation genetic testing, to people with cancer, as in gamete and gonadal tissue freezing, and to people with delayed family planning for social reasons. Increasingly, the limits of the so-called reproductive life span are crossed by reproductive technology. Extraction and freezing of spermatogonial stem cells from testicular tissues of prepubertal boys is a such an example. Replacement of ovarian tissues as a form of natural hormonal substitution after menopause is another. Although these examples still reside at the experimental stage, it is expected that reproductive technologies will continue to expand, in treatment numbers and beyond the reproductive life span. Some day, reproductive medicine may develop towards an active management of family planning, occasionally perhaps even starting during early childhood.

The greater diversity of treatment modalities, together with an ever more active management of fertility preservation, necessitates networking with other medical disciplines. Many institutions offering reproductive technology already closely collaborate with medical genetics and oncology. Other

disciplines are following, such as gynaecological, bariatric and paediatric surgery, and rheumatology. In addition, reproductive physicians should assist infertile couples to conceive and also seek interaction with feto–maternal medicine, which aims to prevent complications preconceptionally, such as pre-eclampsia.

Within this context, the opportunities and challenges provided by the new technologies in reproductive medicine must be made familiar to other medical disciplines. Some of the chapters in this Issue of *Best Practice and Research Clinical Endocrinology and Metabolism* have been selected for that reason. Other contributions focus on novel strategies in ART, such as the management of follicular development in the ovaries, the selection of spermatozoa based on their genomic condition and the prevention of multiple gestation through elective embryo transfer. We are very grateful to all contributors, the publisher and, most particularly, to Maysoon Delahunty, Managing Editor, who was always very supportive throughout the process.

Christian De Geyter, Division Chief and Research Group Leader
University Hospital, Basel, Switzerland
E-mail address: Christian.DeGeyter@usb.ch

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