Aneuploidy screening: the global state of art.

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Context: Globally preimplantation genetic diagnosis (PGD) and preimplantation genetic screening (PGS) are rapidly advancing diagnostic approaches. Objective: To assess the number of tests and indications in international registers in order to track current clinical trends in PGD and PGS. Methods: 6 registers were compared, from the Consortium for Preimplantation Genetic Diagnosis (of ESHRE, Europe), the European IVF Monitoring (EIM), the Australian and New Zealand Assisted Reproduction Database (ANZARD), the Society for Assisted Reproductive Technology (SART, USA), the Center for Disease Control (CDC, USA) and the International Committee for Monitoring Assisted Reproductive Technology (ICMART). Patients: All patients with PGD and PGS who were reported in registries globally. Interventions: PGD and PGS. Main outcome measures: Number and pregnancies of PGD and PGS cases related to IVF or ICSI cases. Results: In Europe PGD was reported in 44% of all countries using in vitro fertilization (IVF) treatment (2009) and worldwide in 47% (2006). In Europe over 5000 tests were performed (2009), in the USA over 8000 (2012) and worldwide over 11,000 (2006). This corresponds worldwide to 1% of all IVF treatments reported, in the USA to 5%. In Europe 42% of all tests were for familial chromosome anomalies or monogenic conditions and 58% for aneuploidy screening with PGS, in the USA 28% for the first and 52% for the second, with an additional 20% for social sexing. The clinical pregnancy rate per oocyte retrieval with PGD or PGS was 26% (range 24-33%) in Europe and 33% worldwide. Conclusions: In about half of all countries reporting IVF data PGD or PGS was performed. The results are acceptable for classical PGD, for PGS the clinical benefits were discussed controversially.