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[Title] Suitability of WHO Criteria for Quality Assessment in Teenage Boys Undergoing Sperm Banking for Fertility Preservation Prior to Potentially Gonadotoxic Treatment.

[Background] Semen quality as classified by 2010 WHO criteria is validated against data from males aged 17 and older. A validated reference range does not exist in younger males.

[Methods] We present a series of 62 ≤ 17 year old males who stored sperm prior to gonadotoxic treatment between 2008 and 2017. Data were collected retrospectively and analysed by age, ethnicity and indication for banking using STATA 14 statistics software.

[Results] Mean age at storage was 16.0 years (SEM 0.2, range 13-17). 4.8% of males were aged 13, 5.8% were 14, 4.4% were 15, 15.6% were 16, 22.6% were 17. White British was the largest ethnic group (66.1%), South East Asian accounted for 3.6%. The indication for storage was cancer in 91.9%. (Sarcoma (31.0%), Lymphoma (27.6%), Testicular (17.2%), Leukaemia (13.8%), CNS (5.2%) and Renal, Thyroid and Unknown Primary (1.7%)).

Applying the 2010 WHO criteria, 20.5% of samples at storage met the normal parameters. Analysis according to age revealed that; 0% of samples from 13 and 14 olds reached normal threshold. 20.0%, 17.6% and 33.3% did so in 15, 16 and 17 year olds respectively.

The likelihood of meeting WHO criteria increased with each increasing year of age, OR 2.3 (95% C.I. 1.0-5.3). Ethnicity, diagnosis, and previous orchidectomy had no significant impact.

[Conclusion] Despite limitations, we confirm sperm storage is possible in males younger than 18 years old, and in this population, age at storage conveys the greatest bearing on whether the sample meets the WHO parameters.

Pre- and post-treatment analysis is complex for this age group, for whom the 2010 WHO criteria is not validated. Given the time lag between pre- and post-treatment semen analysis the impact of treatment may be underestimated if patients were classified as storing an abnormal sample when in fact their semen parameters were normal for their age group.