tB-tSB and a variable based on novel morula classification. To maximise the output, a proxy value was derived for missing datapoints. The model was built using logistical regression and validated using fivefold cross validation with the data split as 80% training and 20% test.

Main results and the role of chance: An algorithm was developed including the five significant variables identified with an AUC of 0.685 demonstrating reliable prediction of live birth. Without morphological variables, the AUC was 0.674 demonstrating the improvement in the prediction value by including the derivative of the trophectoderm and morula grade. This resulted in ten classes of algorithm scores, 1-10, giving a live birth rate from 2% to 46%, irrespective of patient variables, for chance of live birth.

Limitations, reasons for caution: Successful application of the algorithm is reliant on stringent quality assurance for maintenance of accurate annotation and grading, and may not be transferable between laboratories with different SOPs.

Wider implications of the findings: The addition of a trophectoderm and morula grade in combination with morphokinetic parameters, increases the predictive value of the algorithm in relation to live birth outcome. Using proxy values allows maximization of data for model generation, and allows the model to be applied when missing values are present.

Trial registration number: not applicable

P-164 Mulitcentre derived time lapse algorithms developed using 6228 transferred embryos with known birth outcome incorporating novel morphological and morphokinetic markers

R. Smith[1], B. Petersen[2], A. Barrie[3], S. Montgomery[4], S. Duffy[4], L. Best[5], S. Thirlby-Moore[6], A. Wachter[7], L. Kellam[8], A. Campbell[1]

[1]CARE Fertility, Embryology, Nottingham, United Kingdom ;
[2]BMP Analytics, N/a, Viby, Denmark ;
[3]CARE Chester, Embryology, Chester, United Kingdom ;
[4]CARE Manchester, Embryology, Manchester, United Kingdom ;
[5]CARE London, Embryology, London, United Kingdom ;
[6]CARE Birmingham, Embryology, Birmingham, United Kingdom ;
[7]CARE Beacon, Embryology, Dublin, Ireland ;
[8]CARE Nottingham, Embryology, Nottingham, United Kingdom

Study question: Can incorporation of novel markers of morphology with known temporal events successfully rank embryos to enable prediction of propensity for live birth?

Summary answer: Incorporation of variables for trophectoderm and morula grading demonstrably enhanced the model to rank embryos in order of potential for live birth.

What is known already: Models built using morphokinetic markers of development are widely used to rank embryos within a cohort. Such models include defined temporal parameters which are closely related to morphological grade. However, morphological grading by an embryologist is subjective and is not strongly correlated to outcome. Combining with defined kinetic events has been suggested to improve prediction of outcome.

Study design, size, duration: Data from 6228 known live birth outcome embryos from 8 UK clinics between 2011 – 2018 were investigated using an exploratory approach to identify novel markers of development.

Participants/materials, setting, methods: Five significant variables were defined, a derivative of time to start of blastulation; a derivative of trophectoderm grade; a kinetic variable utilising t3, t4, t5 and t8; an interval variable of