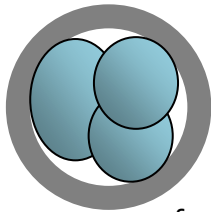


The ACE/NEQAS Embryo Grading Scheme is changing

From April 2017 UK NEQAS will introduce new early cleavage and blastocyst grading scheme.

Early cleavage embryo grading

ACE (Association of Clinical Embryologists, www.embryologists.org.uk) was concerned that, although many laboratories take part in the NEQAS scheme, the grading criteria were not universally applied, with the main difference being that some clinics graded embryos "as is" and some in a stage specific manner. So, what is the difference between these two different approaches to grading? Consider the diagram below of a day 2, 3-cell embryo.



Grading "as is," the embryo could be graded 3,2,4 (i.e. 3-cell, a large difference in cell size/evenness, no fragmentation).

Stage specific grading embryo could be graded 3,4,4 (i.e. 3-cell, cell size/ evenness that is ideal for 3-cell embryo on day 2, no fragmentation).

Embryologists from different labs could gain a very different understanding of the quality of this embryo (e.g. if it had been vitrified/frozen and was being transported to another clinic) if they didn't know which system the other clinic used. This is particularly relevant for those embryos that are naturally asynchronous, such as those with 3,5 and 7 blastomeres.

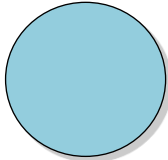
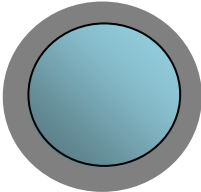
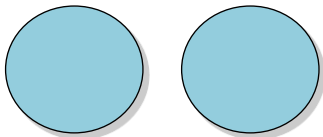
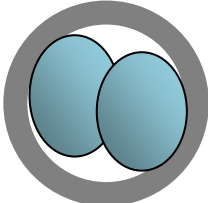
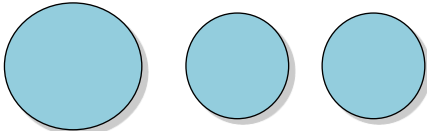
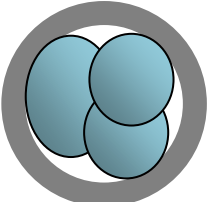
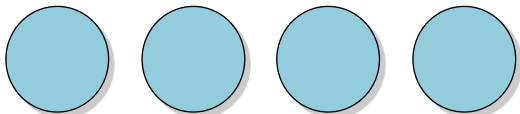
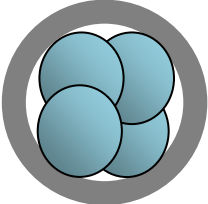
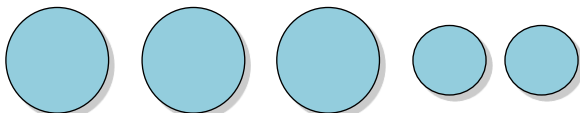
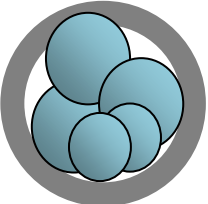
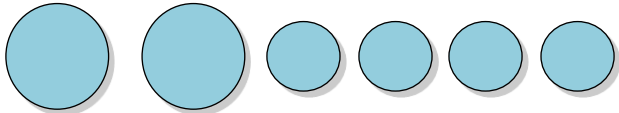
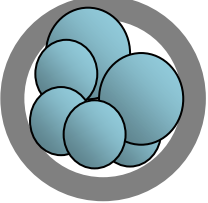
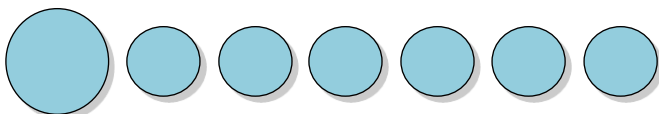
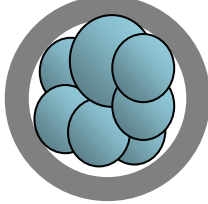
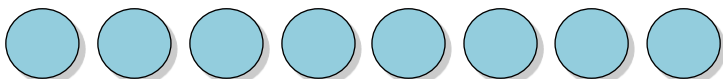
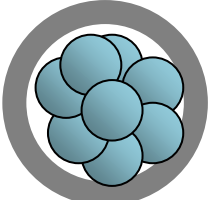
ACE and NEQAS have agreed that all embryos should be graded in a stage-specific way. This approach further aligns the grading with the ALPHA/ ESHRE recommendations (2011) and in time may lead the scheme to be adopted in more centres outside the UK.

An explanation of stage specific grading for cleavage stage embryos is given below:

Grades	Blastomere size	Fragmentation
4	Same as ideal stage specific embryo	<10%
3	Stage specific size for majority of blasts(i.e. slightly uneven sizes)	10-20%
2	majority of blasts different sizes	20-50%
1	Not stage specific	>50%

The move to a stage-specific grading system allows for higher numerical scores (e.g. 4,4,4) to represent good quality embryos and lower numerical scores to represent poor quality embryos, even in asynchronous embryos, e.g. 5,4,4 top quality and 5,1,1 poor quality.

The diagram below gives an illustration of the cell sizes in idealised embryos.

1-cell		
2-cell		
3-cell		
4-cell		
5-cell		
6-cell		
7-cell		
8-cell		

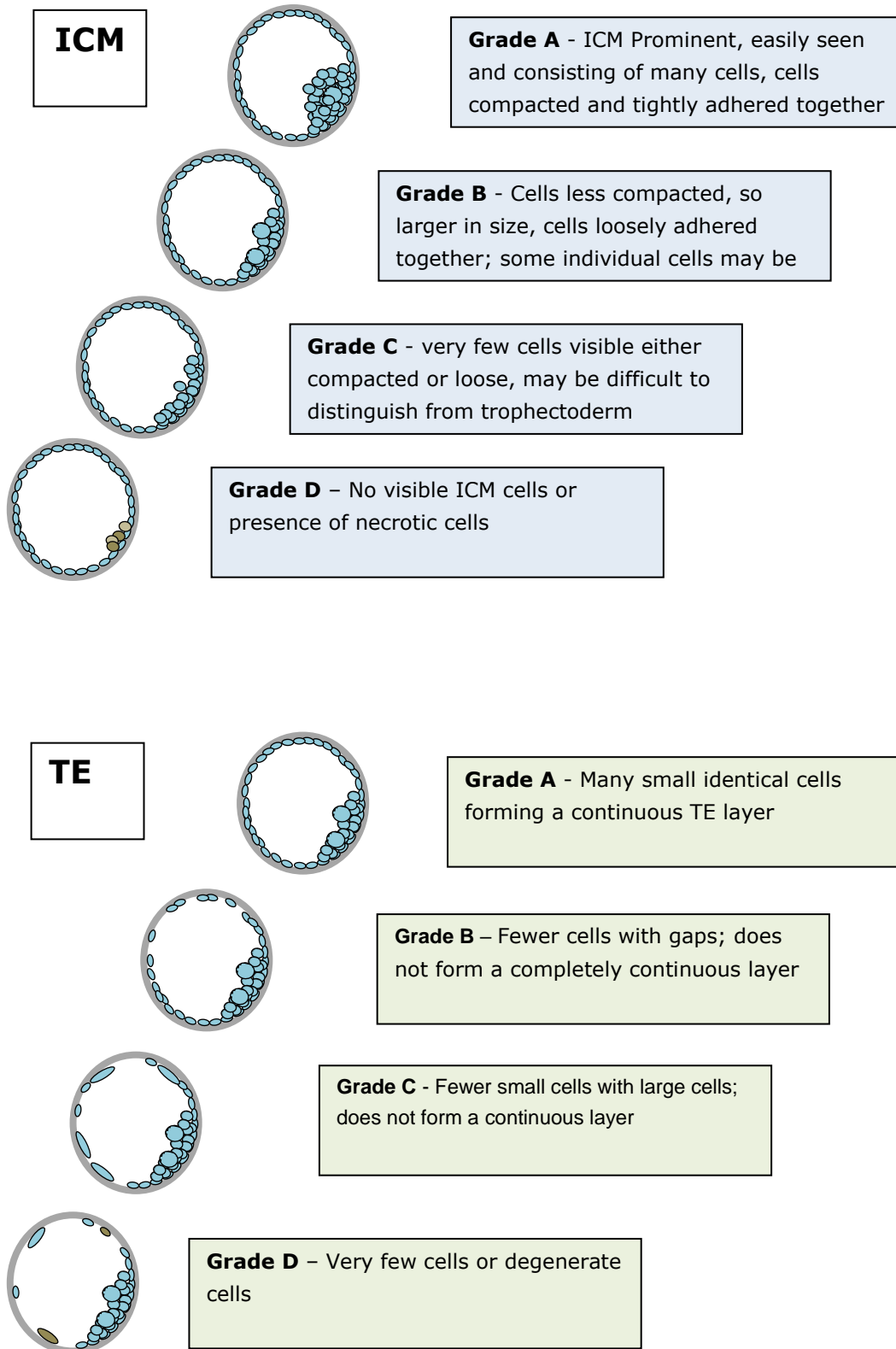
Blastocyst grading:

A survey also elicited comments about the current way of grading blastocysts, with many embryologists asking for a grade to be removed for the inner cell mass and an extra grade to be added for the trophectoderm. With this in mind the new scheme below will be adopted:

Expansion Score	Expansion Status	ICM/ TE score*	Inner Cell Mass (ICM)	Trophectoderm (TE)
6	Hatched blastocyst (the blastocyst has evacuated the ZP)			
5	Hatching blastocyst (trophectoderm has started to herniate through ZP)			
4	Expanded (blastocoel volume larger than the embryo, with thinning of ZP)	A	ICM prominent, easily seen, tightly adhered compacted cells	Continuous layer of small identical cells
3	Full blastocyst (blastocoel completely fills embryo)	B	ICM less prominent (cells appear compacted and larger in size, loosely adhered)	Fewer cells with gaps, not continuous
2	Blastocyst (blastocoel >50% volume of embryo)	C	Very few cells visible (cells similar to TE)	Fewer small cells with large cells, not continuous
1	Early blastocyst (blastocoel <50% volume of embryo)	D	No visible cells or visible cells are degenerate or necrotic	Sparse cells, large/flat/degenerate

*A numerical score from 4 to 1 may be used for statistical purposes or where a cumulative score is required e.g. where 4=A etc.

The blastocyst grading scheme is illustrated below:



References:

The Istanbul consensus workshop on embryo assessment: proceedings of an expert meeting. Alpha Scientists in Reproductive Medicine and ESHRE Special Interest Group of Embryology. Human Reproduction, Vol.26, No.6 pp. 1270–1283, 2011

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ACE Special Advisory committee for Embryology for UK NEQAS Reproductive Science