

Appendix:
T/Gen and the Embryo Guideline

Figure A-1 shows the flowchart of a pilot guideline that makes recommendations as to the appropriate number of embryos to transfer when performing in vitro fertilization. This is an internal guideline developed at the Brigham and Women's Hospital. The guideline logic depends on three factors: the number of previous attempts at in vitro fertilization, the age of the patient, and the number of "8-cells" among the embryos that have been harvested for implantation. (An "8-cell" is an embryo that has advanced to the stage of having eight distinct cells.) Here again, the clinical details of the guideline are not relevant to the present work.

Figure A-2 shows the conditions that apply, along with two constraints. With no constraints, these generate 24 combinations of conditions. Notice in Figure A-1, however, that not all three possible value ranges for 8-cells are treated independently. On the left side of the flowchart, the logic tests whether or not "8-cells = 0?", and on the right side of the flowchart, the logic tests whether or not "8-cells < 3?". As a result, it is not necessary to generate all three of the possible values for 8-cells. On the left side of the flowchart, one can just generate "8-cells = 0" and its negation, and on the right side of the flowchart, one can do the same with "8-cells >= 3".

These constraints can be defined as shown in Figure A-2. The first constraint, for example, says in effect that "if more than two attempts have been made," then generate only the first condition ("8-cells = 0") and its negation, rather than all three values of the condition set. Using these constraints, T/Gen generates the 16 combinations.

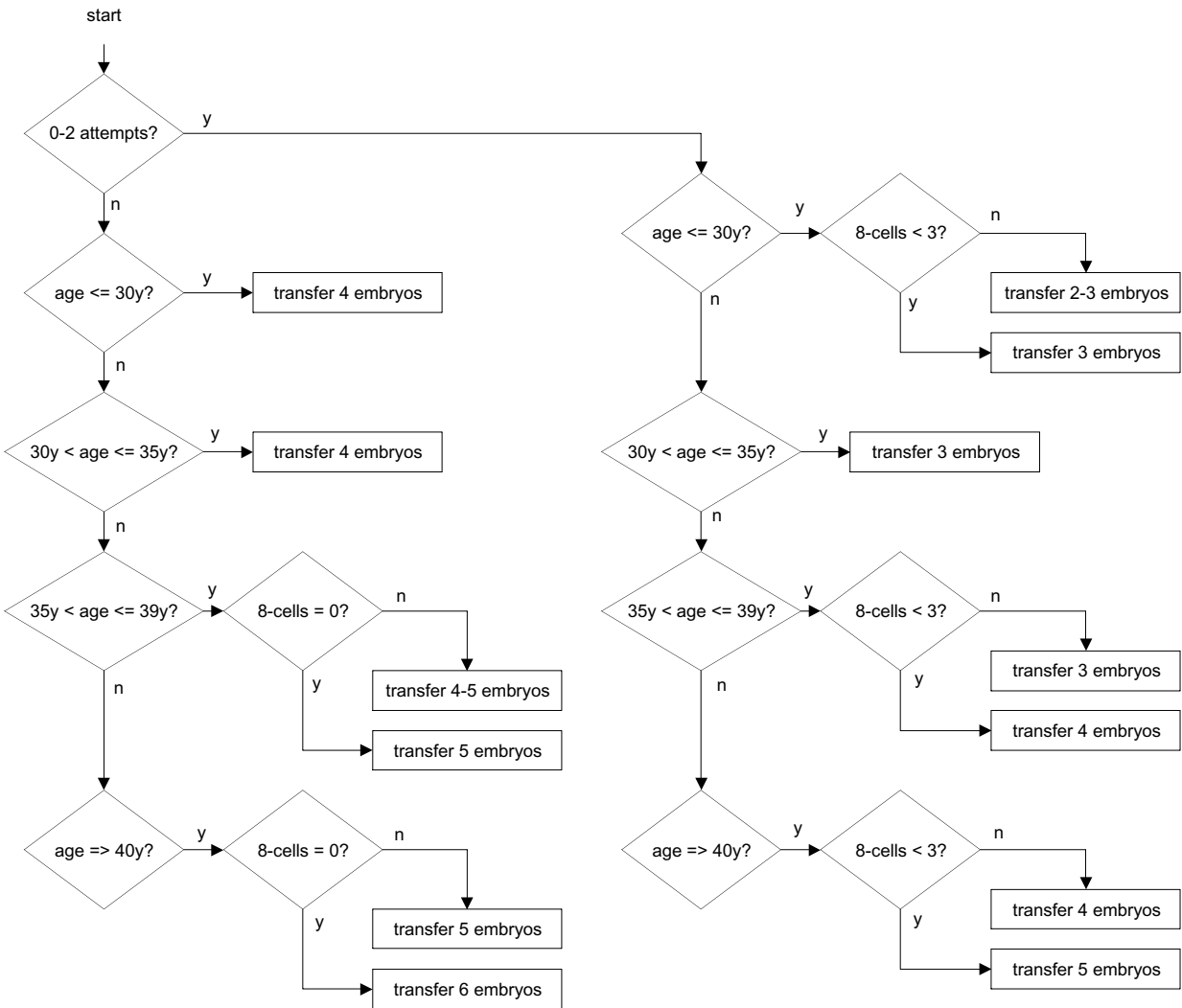


Figure A-1. A flowchart of the Embryo guideline.

1. [zero to two attempts], [more than two attempts]
2. [age <= 30y], [31y <= age <= 35y], [36y <= age <= 39y], [age >= 40y]
3. [8-cells = 0], [0 < 8-cells < 3], [8-cells >= 3]
---- negate_first_if [more than two attempts]
---- negate_third_if [zero to two attempts]

Figure A-2. Condition sets for the Embryo guideline, with two constraints.