A patient requiring *in vitro fertilisation* (IVF) to have a child receives such treatment in one or more treatment cycles. The first major stage of a treatment cycle is the egg collection, either from the patient herself or from an egg donor. The batch of eggs are then fertilised outside of the body and, if viable, these freshly created embryos can be transferred to the uterus of the patient. Any viable embryos that are not transferred in that treatment cycle can be frozen and stored for use in a later treatment cycle (known as a “frozen embryo transfer”) where they are thawed and then transferred to the uterus.

On one conceptual level, these treatment cycles can be considered as self-contained entities because they take place at distinct times, separated by time intervals that can range from months to years, and each cycle can result in the live birth of a child. On another conceptual level, later treatment cycles involving transfer of thawed embryos can be considered as related to earlier treatment cycles involving transfer of fresh embryos if the embryos transferred in both cycles originated from the same batch of eggs. In this sense, related cycles can be grouped in a hierarchy, where the cycle in which eggs were collected and embryos stored being regarded as the ancestor of the cycle in which the related embryos were thawed.

We need to track the usage of each unique batch of eggs collected so we need to link together each cycle that used embryos created from the same batch of eggs into one set of related cycles, identifying the level of each related cycle in the hierarchy. In addition, we need to keep a running total of how many embryos are left in storage after each related treatment cycle has been completed.

Can you specify

1. what information would need to be collected in order to;

* allow all cycles for a particular patient to be linked together
* further subdivide the above grouping into sub-groups related to a single unique egg collection for each particular patient
* help identify each cycle’s level in the hierarchy
* compute a running total of the number of embryos left in storage after each treatment cycle thawing embryos that were originally created from a particular batch of eggs

1. a T-SQL query/script that uses this information to

* group together each set of cycles related to a particular egg collection for a particular patient
* identify each cycle’s level in the hierarchy
* compute a running total of the number of embryos left in storage after each treatment cycle thawing embryos that were originally created from a particular batch of eggs

Assume that a particular patient has more than one treatment cycle where eggs are collected, and each particular batch of eggs collected for each particular patient results in embryos being stored and thawed in subsequent treatment cycles.