Implementing an electronic witnessing system into a busy IVF clinic – one clinic's experience.

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Background: RI Witness™ uses Radio Frequency Identification (RFID) technology to monitor all critical work carried out in the laboratory, creating a complete record of each stage of a patient's cycle.

Objective: we conducted an observational study evaluating the timing required for an *ex-novo* installation of an electroning witnessing system (RI Witness™) into a busy IVF clinic. The observed outcomes were: timing required to integrate and install the electroning witnessing system in the working area, for the setting and configuration of the working flow-chart and for the training of all the clinical embryologists. Once the system was fully integrated, we run the system in a "demo mode" until we ensure an effective in-house validation which entailed the adjustment of the system workflow according to our laboratory's existing protocols and a reduction of the system users errors to less than 1%. Mismatches derived from a simultaneous presence of two different patient samples in the working area were defined as "true mismatches", whilst mismatches derived from acceptable common errors (i.e. pre-allocated tags within the frequency range of the reader, but outside of the workstation) were defined as "secondary mismatches". Finally, we estimated the level of satisfaction to laboratory staff (5= very, 4= fair, 3= quite, 2= poor. 1= not at all).

Results: The installation and integration of the system (i.e. work area readers, controlling software, monitor, PC and barcode reader installation) required about 4 working days, while the training of all the laboratory staff was carried out during the subsequent week.

The validation period required one month (September 2012) when we carried out a total of 2099 witnessing steps involving 302 patients. In this period, a double manual witness was simultaneously performed. During this period, a total of 17 mismatches (0.81%) were recorded, of which 2 were considered as true human errors (0.09%) and required additional intervention. In the post-validation period (3 months), we carried out a total of 5921 witnessing step with 852 patients. The total mismatch rate was 0.66% (39/5921); excluding the secondary errors, we recorded a true human error rate equal to 0.10% (6/5921). Errors due to system configuration were recorded during and after the validation period (0.47 and 0.05, respectively). The user satisfaction index was 4.8.

Conclusions:

Our experience suggests that the integration of RI Witness™ in the daily routine is simple and fast and allows for an improvement in system usage after a short time. RI Witness™ recorded a constant true human error rate that is within the acceptability range. Moreover, the warning of mismatches allows for an immediate corrective intervention, safeguarding the reliability of the entire IVF process. Other benefits include the traceability of each step performed, a reduction of staff workload and distractions, thus increasing operator satisfaction.