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A Case Study by UMC Utrecht

About the Client:

We are a hospital department of UMC Utrecht and have been around since at least 1970. We started out as a Private Centre for genetic testing and in 1999, we were integrated in the Academic setting of the UMC Utrecht.

The Genome Diagnostics Section of the UMC Utrecht Department of Genetics specializes in prenatal and postnatal diagnostics of a large number of hereditary, congenital and acquired disorders. In accordance with ISO 15189 accreditation, the Section uses the most advanced analysis methods and new tests are continuously being developed.

Next to patient care, the Genome Diagnostics Section is involved in scientific research in close collaboration with the sections of the Department of Medical Genetics and with other departments of the university hospital within the clinical domains of the hospital. The Genome Diagnostics Section is officially recognized by the Dutch Society of Clinical Genetic Laboratory Diagnostics as a training institute for clinical laboratory geneticists.

Synopsis of case output prior to automation with ASI:

1. Past circumstances or before the integration of ASI systems, our facility had the following diagnostic solutions and we were able to produce the following output per week/ month:

   Karyotyping and FISH of amnion, chorion, blood, bone marrow and tissue samples

Material	Average input per month	Average output per month	Average output by % per month	Upon ASI automation – Average output increase
blood	74	54	73%	88%
bone marrow	82	79	96%	99%
Prenatal samples	7	7	100%	100%

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2. Some of our past challenges included the following: Slow turn-around-time and lack of standardization. Subsequently, we wanted to transition or decided to integrate the ASI solution in order to achieve the following results:

   In 2018 we collaborated with a Centre for pediatric oncology. Since then, our workload for bone marrow analysis has grown by 30% and since these are more complex cases- we needed a faster system for karyotyping and FISH analysis to maintain output. In 2004, we had already integrated the ASI system but were due for a big update. We decided to go for the automated scanning system of ASI in order to reduce our work pressure. Because of the urgency of bone marrow and prenatal samples, we experienced a decline in output of the postnatal samples.

   With the new automated scanning system of ASI we now see that since the implementation, our output success rate has improved from 73% to 88% for the postnatal samples and that even for our bone marrow samples (for which the output rate was already 97% within the national standard) has increased to 99%. We believe that in time our average output of our blood samples will be at least 90% of our input.

   Although we have highly qualified personnel, we found that standardization was an issue. With the automated scanning system it is now possible to always have the best metaphases for analysis and there is no discussion of whether there are better metaphases to be found. The scanning system picks up all metaphases and is capable of placing them in sequence of length and banding quality.

3. Upon the integration of ASI's system, our facility will be able to carry out more tests and additional analysis which are integral to our growth and commitment to quality medical services.

4. With the integration of ASI's chromosome analysis and FISH scanning system, our organization now has a friendly user interface, faster scanning and standardized analysis. We are still validating if multiple tests on one platform (karyotyping and FISH) is working for us.

Study conducted by UMC Utrecht lab manager

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