

O-020 - RESIDUAL NEWBORN SCREENING SAMPLES: HOW LONG ARE THEY USEFUL FOR RETESTING WHEN STORED IN UNCONTROLLED CONDITIONS?.

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INTRODUCTION: The main justification for retaining residual newborn screening (NBS) samples is to document that a specimen was collected, received, and properly analyzed; and to make available a suitable material for retesting when a previous NBS result must be validated. Reanalysis of the original dried blood spot (DBS) specimen may be the only way to ascertain and document if a specimen mix-up or others events have taken place. However, little or inconsistent information is available about how long residual DBS are useful for retesting, especially when storage is made in uncontrolled conditions (UCC) of temperature and humidity.

OBJECTIVE: To present the results of retesting DBS from newborns diagnosed with Phenylketonuria (PKU), Congenital Hypothyroidism (CH), Cystic Fibrosis (CF), Galactosemia and Congenital Adrenal Hyperplasia (CAH) in the period 1995-2017, stored in UCC, in order to demonstrate how long they are useful to reconfirm a previous abnormal NBS result. **MATERIALS AND METHODS:** DBS from newborns with PKU (94), CH (71), Galactosemia (157), CF (68) and CAH (141) collected since 1995 until 2017, stored in cardboard boxes at room temperature in UCC of humidity were retested for Phe, TSH, IRT, Galactose and 17OH-Progesterone. Results were compared to those obtained at the NBS time. **RESULTS:** 90% of DBS with Phe in the range 6-20 mg/dl stored since 2005 onwards kept a concentration > cut-off (2.5 mg/dl). 96% of specimens with TSH>200.0 μ UI/ml showed abnormal values (\geq 11.0 μ UI/ml) after 12yrs of storage. 86% of samples with IRT in the range 150-250 ng/ml presented values above the cut-off (70.0 ng/ml) after 3yrs. On average, Galactose decreased only just 15% in samples stored during 20 yrs, but it showed a rise in samples from newborns diagnosed with UDP-Gal-4-Epimerase Deficiency, probably due to the UDP-Galactose hydrolysis. 17OH-Progesterone kept abnormal values after 10 yrs when their initial values were \geq 34 nmol/l. **CONCLUSIONS:** As a general rule, DBS stored in UCC showed a decrease in the analytical recovery proportional to the storage time, being the magnitude of this effect highly dependent on the analyte stability. Analytes like Phe, TSH, Galactose and 17OHP-progesterone can keep abnormal values for more than 10 yrs.