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Testing for ABO using umbilical cord blood samples and avoidance of false positive test results due to Wharton's Jelly

A blood banker in Georgia reports that when testing newborn babies for their ABO group using umbilical cord blood samples, they frequently **observe 'false' agglutination with both the anti-A and anti-B sera when doing the testing in tubes.** They know that the ABO results are incorrect because the babies are eventually shown not to be group AB. She wants to know what might explain the occurrence of false positive ABO results when testing newborns, and what can be done to prevent this problem.

In the experience of a California pathologist, the most likely cause for the problem described by the Georgian blood banker is **contamination of specimens by Wharton's Jelly.** Wharton's Jelly is a gelatinous substance within the umbilical cord, composed of cells that originate in the original egg and sperm of conception. It is largely made up of mucopolysaccharides (hyaluronic acid and chondroitin sulfate). As a mucous tissue it protects and insulates umbilical blood vessels. Wharton's jelly, when exposed to temperature changes, collapses structures within the umbilical cord and thus will provide a physiological clamping of the cord, an average of 5 minutes after birth. In some cases, such as in water birth with the cord immersed, the Wharton's jelly reaction will occur much later. Depending on how the umbilical cord is handled at birth, from time to time the Jelly can coat newborn cord cells and cause a child's type to appear to be group AB. If a baby types as group AB using an umbilical cord blood sample, it is **prudent to recheck the ABO grouping by washing the cells several times and re-testing,** to make sure that all of the Wharton's Jelly has been removed. Better yet, it is not a bad idea to ALWAYS WASH CORD BLOOD AT LEAST 4 TO 5 X'S BEFORE DETERMINING THE TYPE OF THE BABY. **If a neonate falsely tests Group AB using capillary or venous blood samples,** the possibility of **polyagglutination** of the neonates red cells might be considered. Finally, when testing patients (including neonates) for ABO group, it is best to **use only FDA licensed reagents.**

Please submit comments to the [e-Network Forum](#).

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Addenda:

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