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References

1. **Johnson JC. Umbilical blood acid-base analysis. Clin Obstet Gynecol 1993;36:1-104.**

Therefore, if only one vessel is selected, it should be the umbilical artery rather than the vein. It is not helpful to obtain an isolated umbilical venous blood pH or gas because it may be completely normal when the arterial blood is acidemic.

2. **Strickland DM, Gilstrap LG, Hauth JC, Widmer K. Umbilical cord pH and pCO₂: Effect of interval from delivery to determination. Am J Obstet 1984;148:191-4.**

...within 95% confidence limits, the pH at 1 hour will be no more than 0.05 unit below the value at time zero, and the pCO₂ will be between - 6 and +9 torr of the value at time zero..... Thus it can be seen that no clinical advantage accrues from icing a specimen if it is to be analyzed within 1 hour of collection.

3. **ACOG Educational Bulletin #216, November 1995. Umbilical Artery Blood Acid-Base Analysis.**

... it seems logical that umbilical cord acid-base determination offers little in the evaluation of a vigorous term newborn with normal Apgar scores. Moreover, the routine use of umbilical cord blood gas analysis in all deliveries had not been shown to be cost-effective.

4. **Helwig JT, Parer JT, Kilpatrick SJ, Laros RK. Umbilical cord blood acid-base state: What is normal? Am J Obstet Gynecol 1996;174:1807-14.**

Full blood gas and obstetric data was available for 16,060 newborns. Of these 15,073 (94%) had a 5-minute Apgar score ≥ 7 . The median umbilical artery values with the 2.5 percentile values in parentheses were pH 7.26 (7.10), PCO₂ 52 mm Hg (74), base excess - 4 mEq/L (-11), and PO₂ 17 mm Hg (6).

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Notification to Users

These algorithms are designed to assist the primary care provider in the clinical management of a variety of problems that occur during pregnancy. They should not be interpreted as a standard of care, but instead represent guidelines for management. Variation in practices should take into account such factors as characteristics of the individual patient, health resources, and regional experience with diagnostic and therapeutic modalities.

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