

## Parenteral Nutrition in Nursing and Pregnancy:

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### Introduction:

Generally speaking IV nutrients are incredibly safe in pregnancy and nursing. In most cases mom isn't nutritionally replete anyway so both mom and baby are aided by the IV. I have done many hundreds of IV's in pregnant and nursing women, as well as in babies and pediatric patients, so I have made a careful study of this topic. As safety and positive outcomes are paramount in medical practice this is an area that deserves much thought and consideration. Following that clinical experience and study it has been both my scientific enquiry and my patients outcomes that support the idea that appropriate parenteral nutrition in pregnancy and nursing is not only safe but also necessary in many cases.

### Concerns:

The two main issues considered in this population are balance of nutrients provided in the formula and potential for overdose. Regarding the issue of "overdose" it is completely improbable if the ordering physician follows accepted dose and administration guidelines. The cases of parenterally induced damage to mom or baby are so beyond the pall of what a reasonable physician would order that they are a nonissue in acceptable medical practice.

The topic of "fetal storage" of particular trace elements is often raised in this setting. While it is true that in the third trimester the fetus increases storage of copper and iron this is biologically necessary so that baby can grow quickly after birth. (These stores are diminished or even lacking in the infant born preterm). As a guideline if the mother is replete with iron and copper one can use formulas with low doses of copper (1-3 mg) and either no or low dose (50-100 mg) iron formulas. In every case we have seen a series of one to five IV's with copper and or iron are tolerated well - even in replete moms.

Balance is important for the nutrients and is all related to dose where safety is concerned. If one has a low dose low volume IV the balance of various vitamins and minerals is not a significant factor (the "Myers' Cocktail" is an example). In a higher volume IV bag the normal balance and dosing of Vitamins or Amino Acids found in standard IV formulas is both safe and acceptable. Iron is given ONLY per the strict established guidelines for its administration and only in cases where repletion is necessary.

The minerals calcium, magnesium and potassium are potentially contractile so in pregnancy are dosed to tolerance. Normally our clinical experience dictates that we start with a magnesium to calcium ratio of 1:1 to 2:1 which is well tolerated by both mother and fetus. Of particular note are the studies referenced below where significant doses of magnesium are given to the mother before labor with not only safety for mother and neonate but also improved antioxidant status in the newborn. Zylinska describes this in a trial where the mean total dose of MgSO<sub>4</sub> before delivery was 73.5 grams given parenterally (a dose many times higher than any used in outpatient parenteral nutrient therapy). With regard to potassium it may either be omitted or added using the general rule of no more than 2 mEq per 250 mL of IV solution and is quite safe at those doses.

Although less of a concern in the mind of patients the use of parenteral hydration is another significant help to pregnant women. In our practice we commonly use hydrating infusions of not only saline or

dextrose but isotonic nutrient solutions. In the setting of nausea and vomiting of pregnancy these can bring great comfort and also reduce complications in pregnancy.

### **Summary:**

While the use of parenteral nutrients in the setting of pregnancy and nursing may seem to be dangerous or an “unstudied” practice, a review of the associated scientific literature and our clinical experience would argue that neither is the case. The need for nutrients in mother and fetus / baby is not at issue, and if one applies standard parenteral dosing practices there are no significant safety issues either.

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