Oxytocin use during active labor: too much of a good thing?

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Patient injury from an adverse drug event is the most common type of inpatient adverse event, and oxytocin–being used in >50% of deliveries in the United States–is one of the most commonly used medications in obstetrics.[1] Oxytocin use is problematic because there are no universal or evidence-based standards for dosing and individual patient response.[2] Oxytocin is typically administered for induction or augmentation of labor but its utilization can be highly variable and often subject to the preferences of an individual physician.[3] The potential for harm associated with this drug is often underappreciated,[1] and the implementation of conservative and clearly delineated policies can potentially affect overall communication, medicolegal liability, and patient outcomes.[1,4,5]

Although considered safe when administered judiciously, the inappropriate use of oxytocin, specifically related to dosing regimens that cause or fail to recognize excess uterine contractions and resultant poor fetal oxygenation, is a common and serious problem. According to a survey of liability cases, approximately 50% of paid liability claims involve alleged misuse of oxytocin.[6] For these reasons, oxytocin is considered 1 of the 12 most dangerous medications in a hospital.[7] Checklists for oxytocin have been shown to reduce the maximum infusion rate without lengthening labor or increasing operative interventions, while also reducing the rate of adverse outcomes in newborns.[4]

Given the potential risks of oxytocin use, it is appropriate to investigate fully whether the drug offers value in all present contexts of use. In this issue of the journal, Diven and colleagues report results from a prospective trial of women undergoing induction of labor at term who were randomly assigned to routine oxytocin use or to oxytocin discontinuation once active labor was established. The paucity of evidence regarding appropriate use of oxytocin in the setting of labor induction or augmentation demands its study. Diven and colleagues contribute successfully to this limited fund of knowledge. The authors should be congratulated for performing a trial of this caliber at a single institution. While their finding that discontinuation of oxytocin in the active phase of labor did not increase cesarean delivery rates, the associated increase in chorioamnionitis rates and in length of active phase of labor cast doubt on the wisdom of a blanket recommendation to discontinue oxytocin after labor has been established.

In addition to the primary outcomes, the study demonstrates the difficulties in conducting quality research. Concerns addressed by the authors include matters such as failure to execute the assigned protocol: oxytocin was not discontinued in 24% of subjects randomized to discontinuation. Of the subjects randomized, 46% had oxytocin restarted as allowed by the protocol, due to lack of cervical change or decrease in contraction frequency. Therefore, only 20%, or 25 patients who entered the study randomized to the discontinuation arm actually completed the study with strict adherence to discontinuation. The remainder had cesarean deliveries prior to onset of active labor or never received oxytocin. The protocol described limits the study of discontinuation of oxytocin, but confers generalizability, as it mimics real-life obstetrics.

Feasibility is perhaps the most important aspect of conducting clinical research, and is often determined by the medical team executing the protocol, not those whose idealistic visions determined the protocol design. In addition to difficulties in protocol execution, the practical matters of performing research that is not obstructive to the operation of a busy labor and delivery service are highlighted by this study. For example: *I have office hours today, I can't enroll a patient in a study. Why don't you just increase her pit so we can call her cesarean delivery and get a room open . . . triage is full?* In an ideal world, the question posed by Diven and colleagues could be best answered in a purely experimental setting, but that setting for clinical obstetrics is nonexistent, and perhaps is not a realistic goal.

There are additional areas of concern. This study was not blinded. Had it been, adherence to the protocol could have been enhanced. Consideration to using oxytocin to achieve active labor, then switching medication infusions for oxytocin vs placebo may have made for a more robust study. However, such deviation from standard care may have precluded institutional review board approval and practitioner buy-in. The latter would have a definite impact upon enrollment if the protocol was perceived to limit clinical judgment. Study enrollment was also truncated at 30 months due to enrollment challenges as well as a perception that the protocol was prolonging length of labor inductions. The pressure to not inhibit efficiency of a busy service is palpable to everyone who participates in research. The findings here suggest a prolonged active phase of labor in the discontinuation arm. When translated into dollar signs and through put issues over months to years, that 1.2 hours demonstrated may have an impact that is larger than suggested.

The use of oxytocin for labor induction and augmentation has been understudied, and safety issues beg for more objective data to support practice patterns. Diven and col-

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leagues have endeavored to provide us with this evidence, but perhaps more importantly, they identify reasons why such evidence may be hard to come by. ■

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