Comparing Shields' 2018 Category II electronic fetal monitoring (EFM) algorithm to actual management when umbilical cord arterial pH was less than 7

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INTRODUCTION

We previously compared Clark's EFM Category II algorithm (*AJOG* 2013) to EFM interpretation and actual management of deliveries with an umbilical cord pH less than 7 and found that while 47 percent of deliveries were expedited in actual management, only 30 percent would have been expedited by the Clark algorithm.

We proposed to similarly study the Shields Category II algorithm.

OBJECTIVES

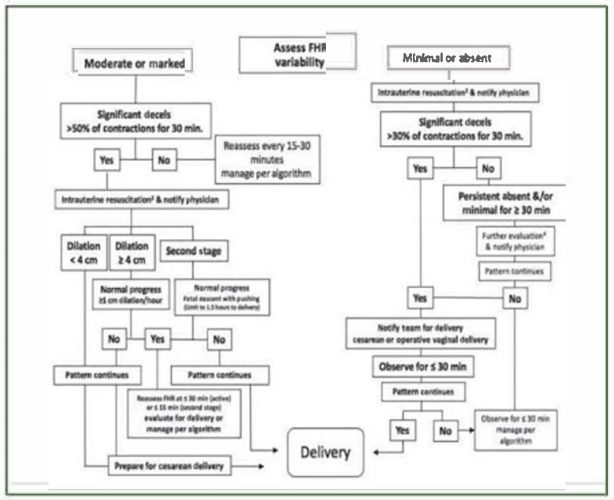
The study aimed to evaluate how the Shields Category II Algorithm compared with actual labor management practices, and determining whether the algorithm could be a useful tool for guiding labor management.

METHODS

IRB approval was obtained. A retrospective cohort study was performed on deliveries with umbilical cord arterial pH < 7. Two groups were identified in actual management:

1. expedited delivery (urgent/emergent operative vaginal delivery or cesarean section) and
2. non-expedited delivery

We then reviewed all fetal heart tracings (FHTs) to determine if the Shields algorithm would have recommended expedited delivery or not. Data was analyzed using Chi-squared test for independence and Fisher's Exact Test.



RESULTS

30 deliveries were identified with severe fetal acidemia.

47 percent were actually delivered in expedited fashion. The Shields algorithm recommended expedited delivery in 60 percent.

Of actually expedited deliveries, the algorithm agreed with expediting delivery 92 percent of the time, 57 percent of which would have been delivered even earlier.

Of actually non-expedited deliveries, the algorithm would have expedited 25 percent of those.

CONCLUSION

The Shields 2018 Category II FHT algorithm had a higher sensitivity for predicting severe fetal acidemia (umbilical cord arterial pH less than 7) and recommending expedited delivery.

Although only 60 percent of deliveries would have had expedited delivery recommended based on the Shields algorithm, only 47 percent were delivered in expedited fashion in actual management.

KEY REFERENCES

Shields LE, Wiesner S, Klein C, Pelletreau B, Hedriana HL. A Standardized Approach for Category II Fetal Heart Rate with Significant Decelerations: Maternal and Neonatal Outcomes. *Am J Perinatol*. 2018;35(14):1405-1410.

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