

# Diversity of Clinical Practice of Uterotonics during Cesarean Section in Japan: a Cross-Sectional Survey



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## INTRODUCTION

- It is considered that giving uterotonics after delivering neonate during cesarean section (CS) is a routine practice for preventing postpartum hemorrhage (PPH).
  - In Japan, PPH is still primary cause of maternal death (1).
  - We do not have particular guidelines indicating type of uterotonics, amount of the agents and administration route after delivery.
  - We assumed that heterogeneous practices in CS would be the leading causes of PPH.
- We conducted a cross-sectional questionnaire study to elucidate how uterotonics are diversely used during CS in Japan.

## METHODS

A cross-sectional questionnaire study

**Object:** Members of the Maternal-Fetal ICU Liaison Council of Japan, which consists of directors of obstetric department in a perinatal center\*

**Study period:** Circulated in August 2019, and collected by October 2019

**Survey data:** clinical data, manpower, and how to administer uterotonics during CS

**Statistical analysis:** Performed using a t-test for continuous variables, and a significant difference was determined when  $p < 0.05$ .

\*Perinatal center is certified by the Health Ministry as a facility for pregnant women and newborns requiring advanced medical care.

## RESULTS

- We eventually obtained replies from 52 facilities with a response rate of 31.3%.
- The characteristics of facilities are depicted in Table 1.
- Majority of facilities routinely administered uterotonics during CS. (Fig. 1 a)
- Obstetricians took the lead of uterotonics administration. (Fig. 1 b)
- The most common first-line uterotonics was oxytocin, and four fifths of facilities selected methylergometrine as the second-line. (Fig. 1 c, d)
- Oxytocin was mainly administered by intravenous route; however, intramyometrial (IMM) injection was also common route of administrating oxytocin in Japan (overall intravenous oxytocin 66.7% versus IMM oxytocin 47.9%). (Fig. 1 e)
- 18.8% of facilities routinely used methylergometrine during CS (Fig. 1 e)
- Facilities giving oxytocin by IMM or IM administered significantly higher dose of oxytocin than those giving oxytocin without IMM or IM ( $9.3 \pm 4.6$  IU vs.  $6.1 \pm 4.0$  IU,  $p=0.016$ ). (Fig. 2)

Table.1 Characteristics of facilities			
<b>Number of deliveries/year</b>		<b>Number of anesthesiologists</b>	
<501	16 (30.8%)	<6	6 (11.5%)
501-1000	26 (50.0%)	6-10	11 (21.2%)
1001-1500	9 (17.3%)	11-15	14 (26.9%)
1501<	1 (1.9%)	16-20	3 (5.8%)
<b>Number of cesarean sections/year</b>		20<	18 (34.6%)
<151	7 (13.5%)	<b>Number of obstetric anesthesiologists</b>	
151-300	23 (44.2%)	full-time employment	11 (21.2%)
301-450	14 (26.9%)	part-time employment	1 (1.9%)
451-600	3 (5.8%)	non-existent	40 (76.9%)
no answer	5 (9.6%)	<b>The person in charge of anesthesia for cesarean section</b>	
<b>Number of obstetricians</b>		Only anesthesiologists	43 (82.7%)
<6	4 (7.7%)	Only obstetricians	0 (0%)
6-10	16 (30.8%)	Mainly anesthesiologists, but occasionally obstetricians	6 (11.5%)
11-15	13 (25.0%)	Mainly obstetricians, but occasionally anesthesiologists	3 (5.8%)
16-20	7 (13.5%)		
20<	12 (23.1%)		

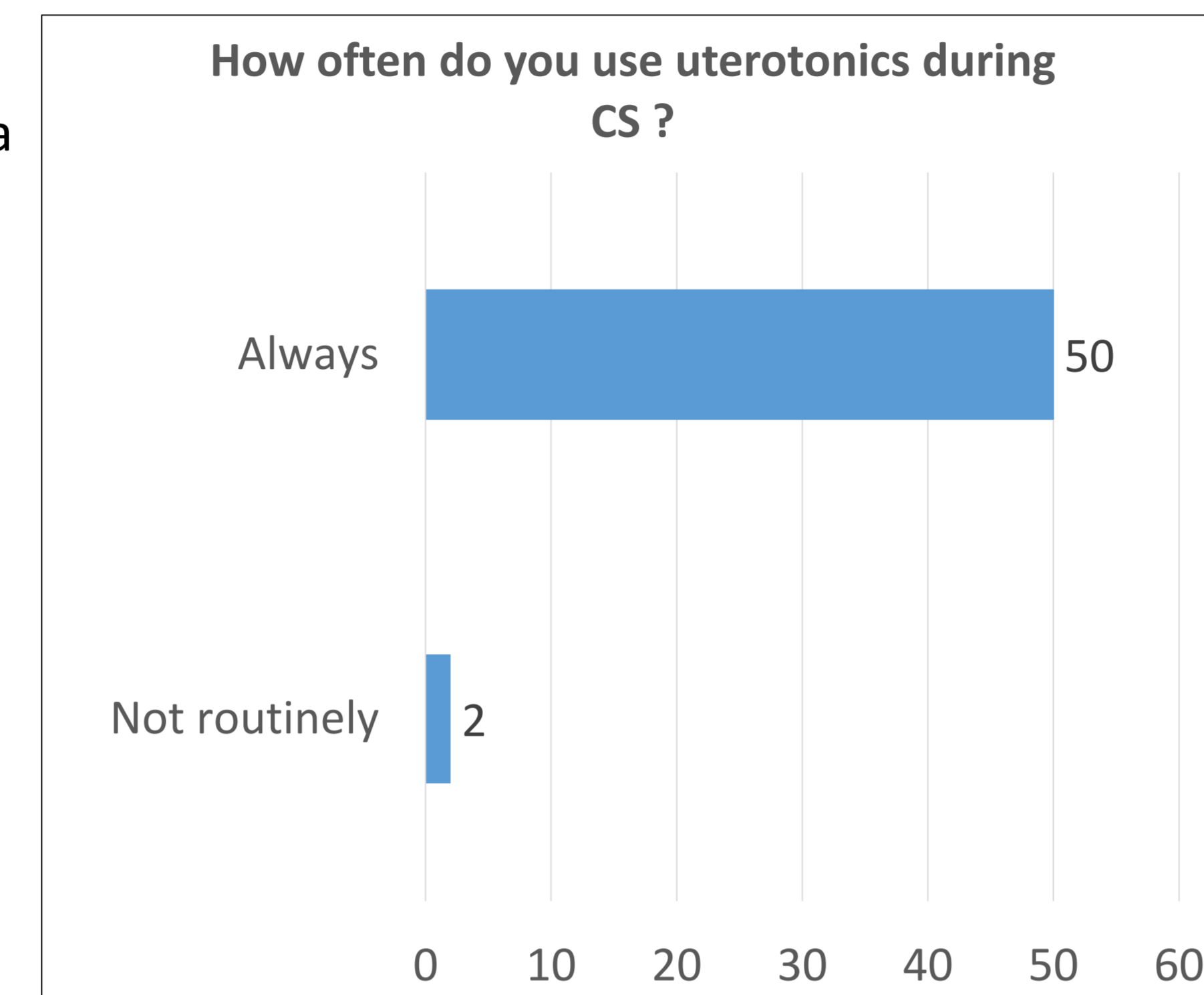


Fig. 1 a

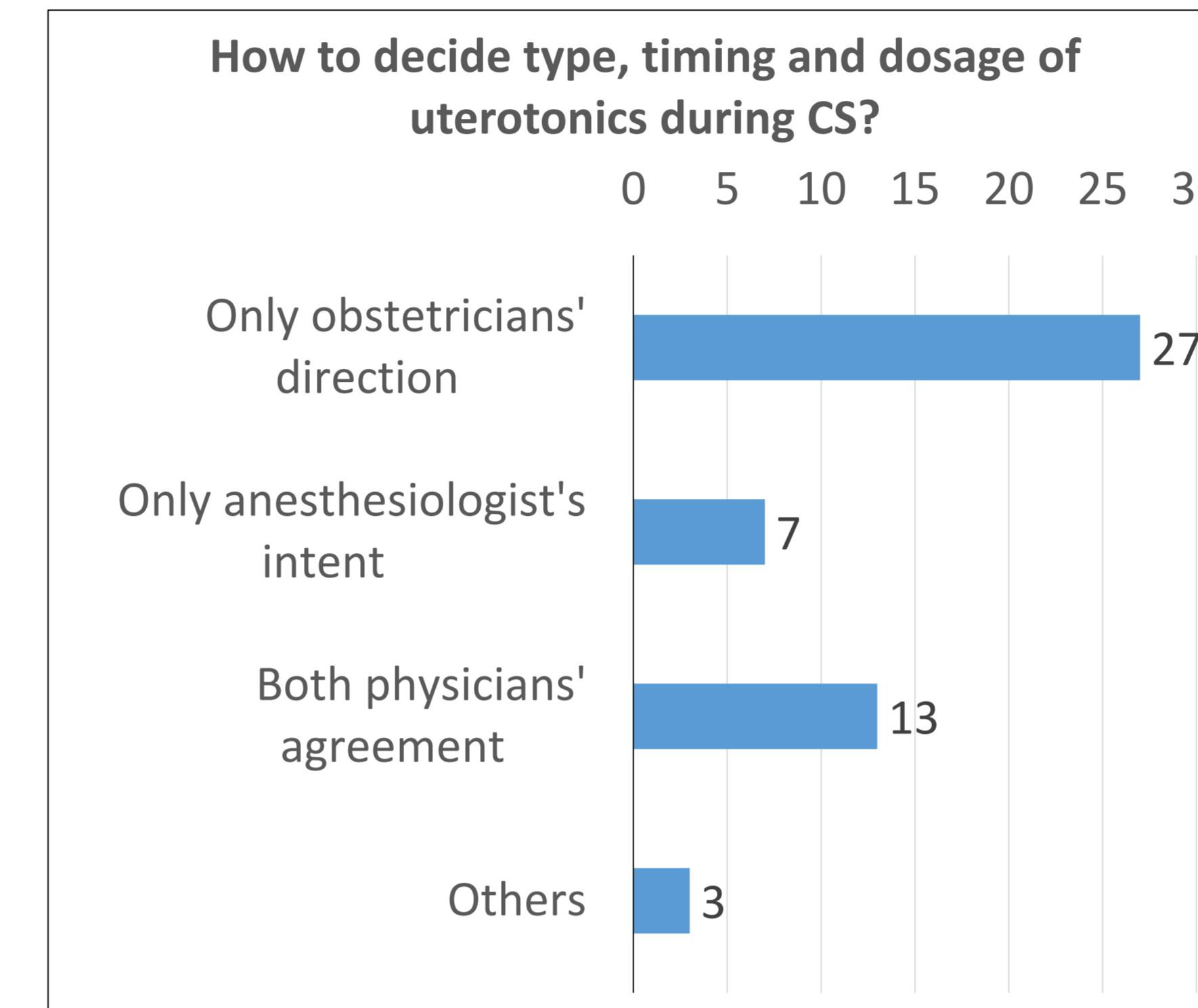


Fig. 1 b

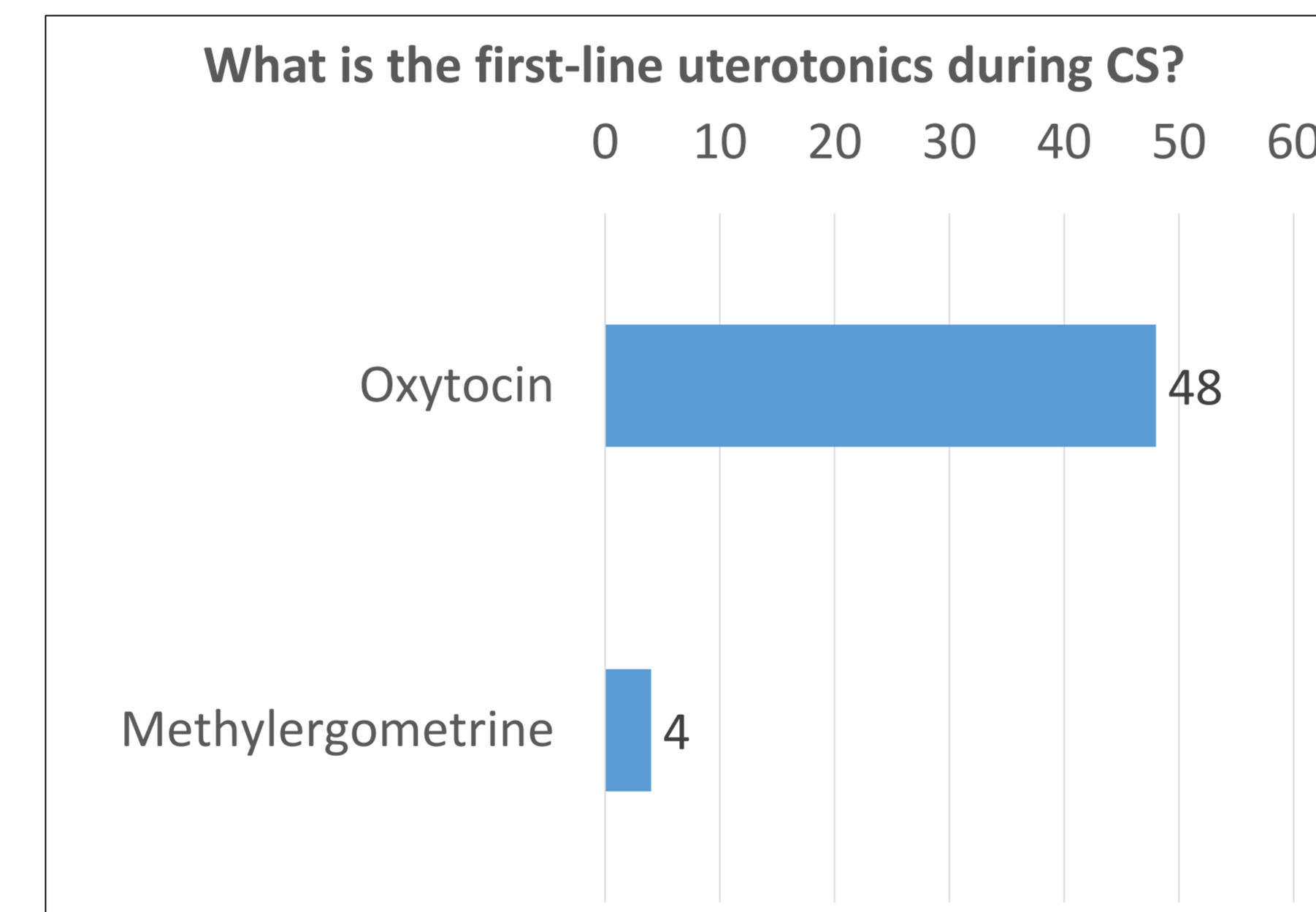


Fig. 1 c

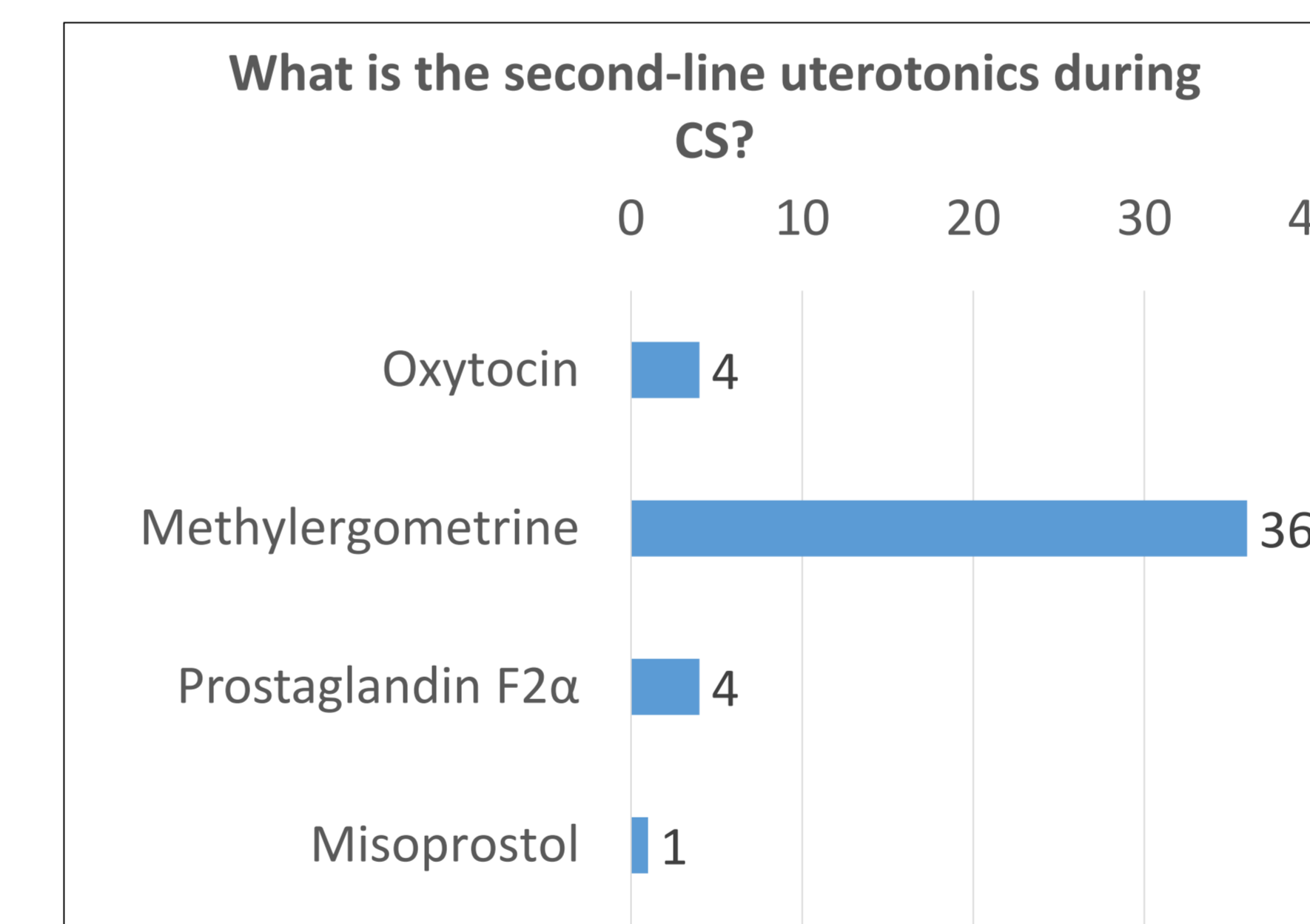


Fig. 1 d

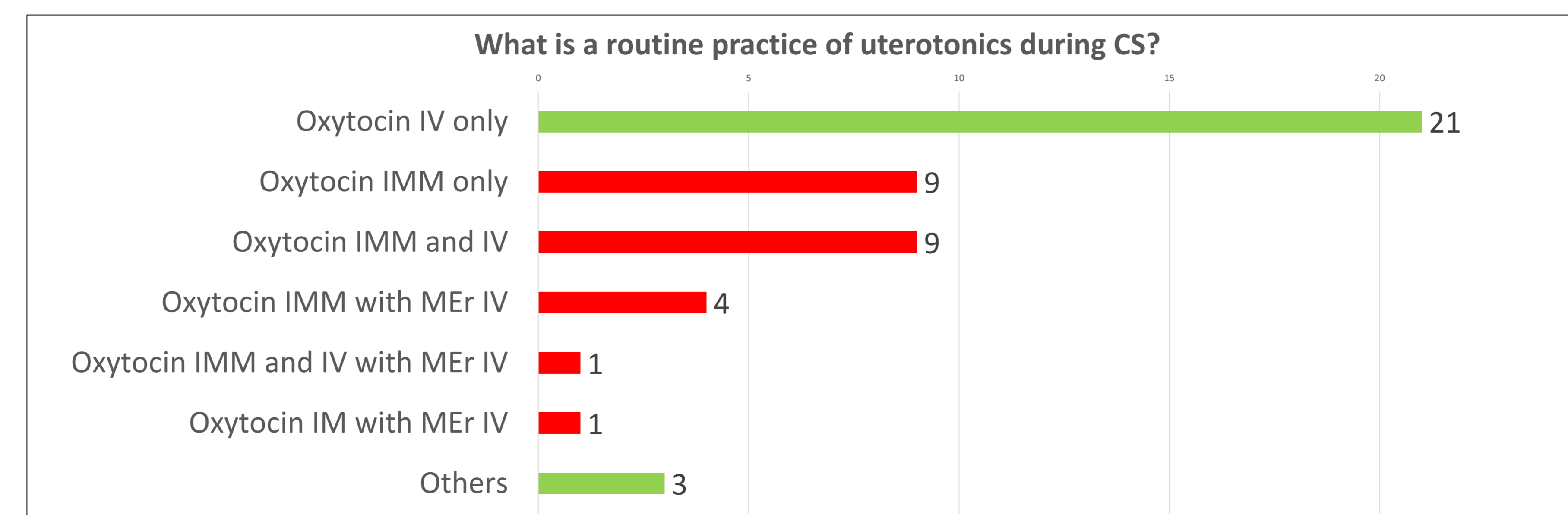


Fig. 1 e

IV = intravenous; IMM = intramyometrial; IM = intramuscular; MEr = Methylergometrine

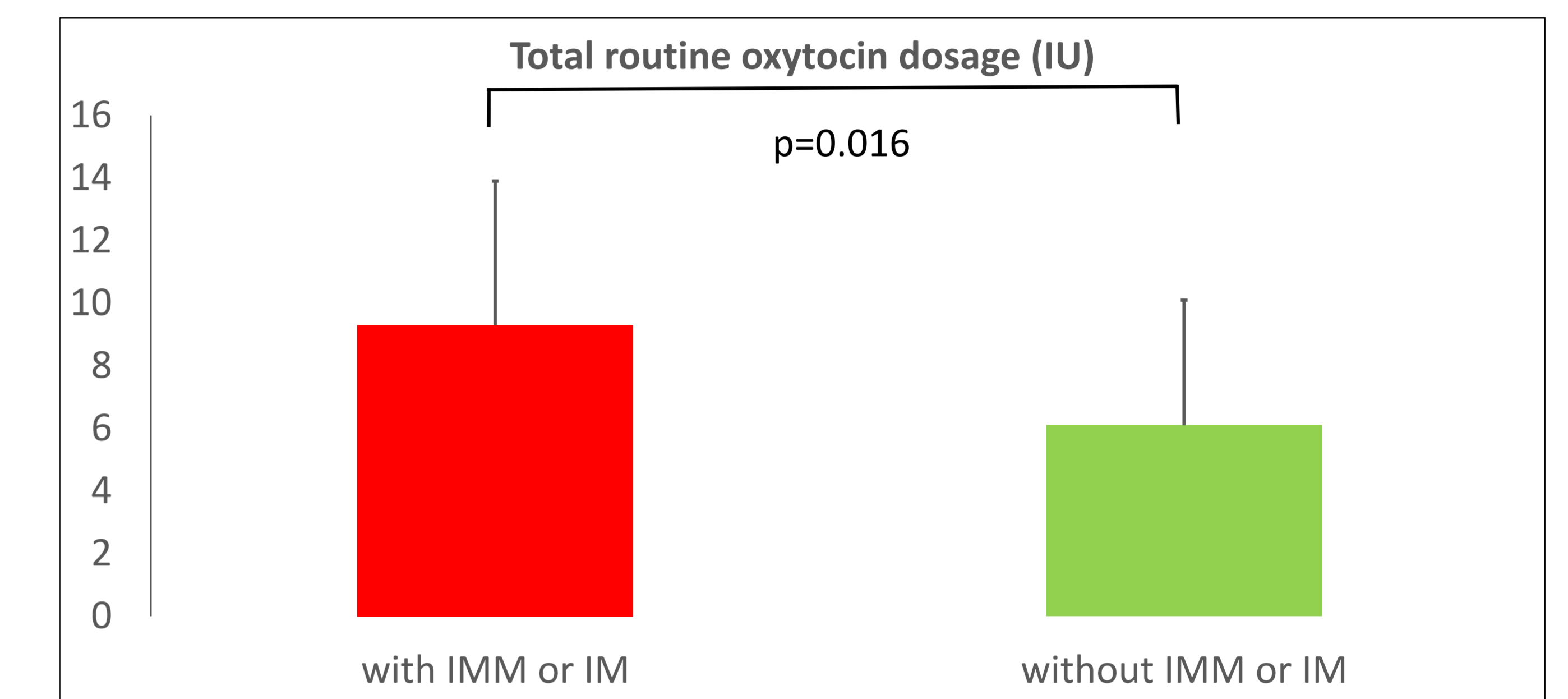


Fig. 2

## DISCUSSION

- Oxytocin is administered in a variety of ways, and half of facilities choose IMM route.
- Studies in other countries have shown oxytocin is administered in a variety of ways (2,3).
- Facilities giving oxytocin by IMM or IM administered higher dose of oxytocin than those giving oxytocin without IMM or IM.
- Given uterotonics via IMM route requires higher dose than those from intravenous route to obtain similar uterine contraction during CS and the onset of action is slower (4,5), so intravenous route must be more preferable.
- Oxytocin intramuscular injection is recommended only in situations where intravenous administration is not possible (6).
- In recent years, a practice of achieving effective uterine contractions with minimal dosage has been proposed to reduce the side effects of oxytocin (6).
- Facilities that administer oxytocin IMM or IM may tend to use it on an empirical basis.
- Evidence-based guidelines would be necessary to be developed.

## CONCLUSION

- Most perinatal centers select oxytocin as a first line, but oxytocin is administered in a wide variety of ways, including IMM injection in Japan.
- These perinatal centers giving oxytocin by IMM or IM administered significantly higher dose of oxytocin than those giving oxytocin without IMM or IM.

Reference

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The authors have no conflict of interest to declare.