

Assessing the Uptake of Core Outcome Sets in Randomized Controlled Trials for Preterm Birth



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BACKGROUND

In developed nations, the leading cause of perinatal morbidity and mortality is preterm birth (PTB). In 2019, there were over 16 million PTBs with more than 650,000 associated deaths. Due to the high prevalence and significant burden posed by PTB, efficacy of interventions must be assessed via clinical trials to improve both maternal and neonatal outcomes.

The American College of Obstetricians and Gynecologists (ACOG) created a clinical practice bulletin to predict and prevent spontaneous PTB, using findings from various randomized controlled trials (RCTs). However, RCT outcomes are often inconsistently reported, which may lead to unreliable data and potential reporting bias. Such reporting may result in an inability for clinicians to adequately compare interventions. Therefore, core outcome sets (COS) were created to standardize outcome measurement and close the gap in the variance of RCT results.

A COS standardizes outcome measures within RCTs to compare interventions to one another. COS assesses treatment profiles, subsequently leading to higher quality research and better patient care. Despite a COS' well-intentioned goal of patient care, across major medical journals, COSs were not used in 98% of trials. Determining the adoption of outcomes of PTB COS will improve treatment decisions and research quality. Usage of the PTB COS, published in January 2016 by the Global Obstetrics Network (GONet), has not yet been analyzed in isolation. Thus, the goal of this study is to analyze the uptake of COS within PTB clinical trials for patterns of use and highlight any gaps in adoption.

METHODS

On June 26, 2023, we conducted a systematic search on phase III/IV trial registry entries regarding PTB interventions via ClinicalTrials.gov and International Clinical Trial Registry Platform (ICTRP). Inclusion criteria were the following: subjects were patients receiving an intervention for PTB, study enrollment began within five years prior to publication of PTB COS to June 26, 2023, and evaluated the effectiveness or efficacy of interventions. Authors screened and extracted data in masked, duplicate fashion. Qualifying trials were analyzed for the percentage of adopted outcomes from PTB COS.

RESULTS

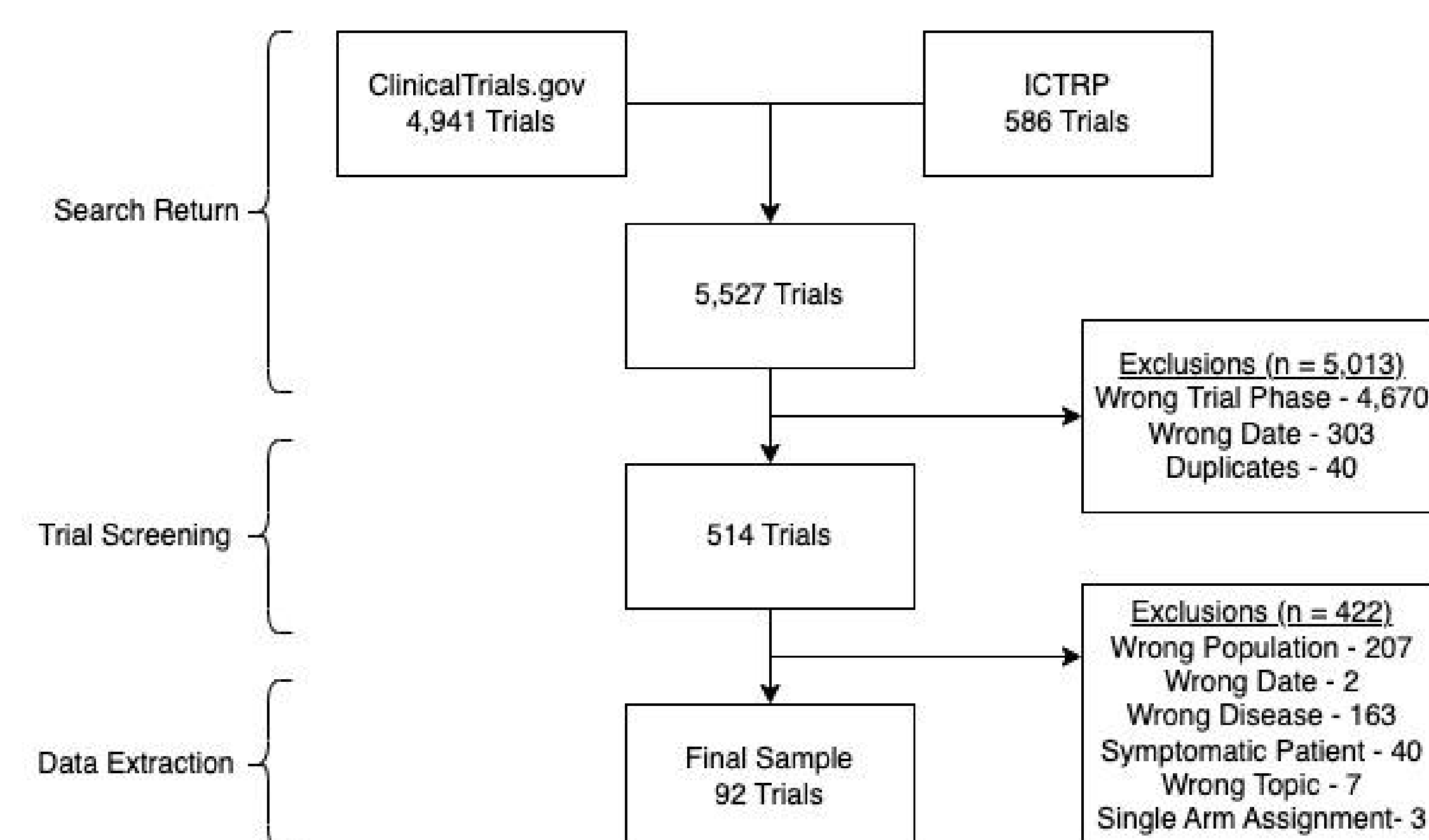


Figure 1: Flow diagram for study inclusion. 92 trials were included for final analysis.

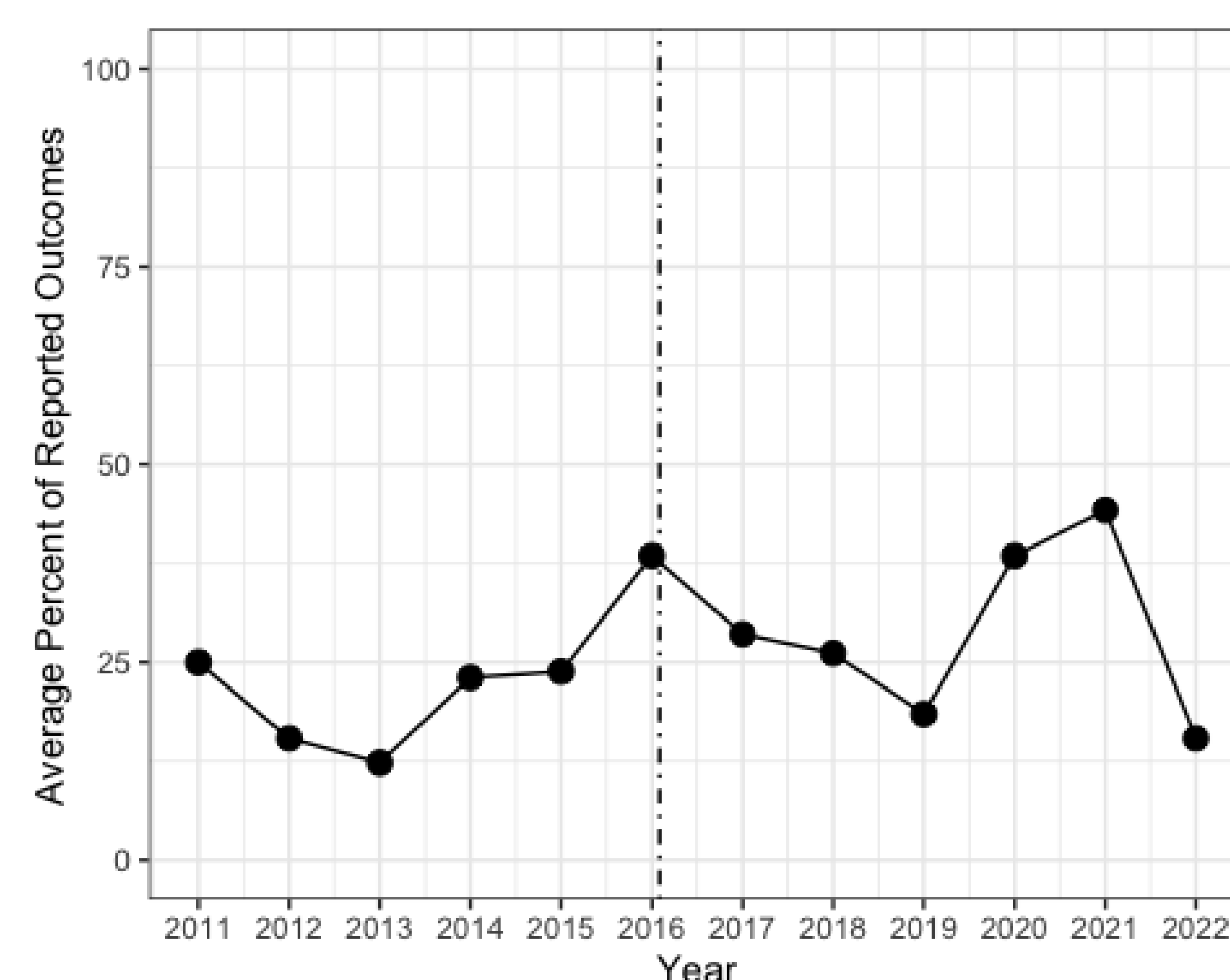


Figure 3. Average percent of reported outcomes per year
The greatest average percent of reported outcomes per year was in 2021 at 40.0% with the lowest average percent of reported outcomes being 12.5% in 2013. We noted an upward trend towards increased average reported outcomes.

Table 1. Frequency of Maternal Outcome Set Uptake

Outcome Set Domain and Item	N = 92
Maternal Mortality, n (%)	
No	83 (90.2)
Yes	9 (9.8)
Prelabor Rupture of Membranes, n (%)	
No	78 (84.8)
Yes	14 (15.2)
Maternal Infection or Inflammation, n (%)	
No	70 (76.1)
Yes	22 (23.9)
Harm to Mother from Intervention, n (%)	
No	77 (83.7)
Yes	15 (16.3)

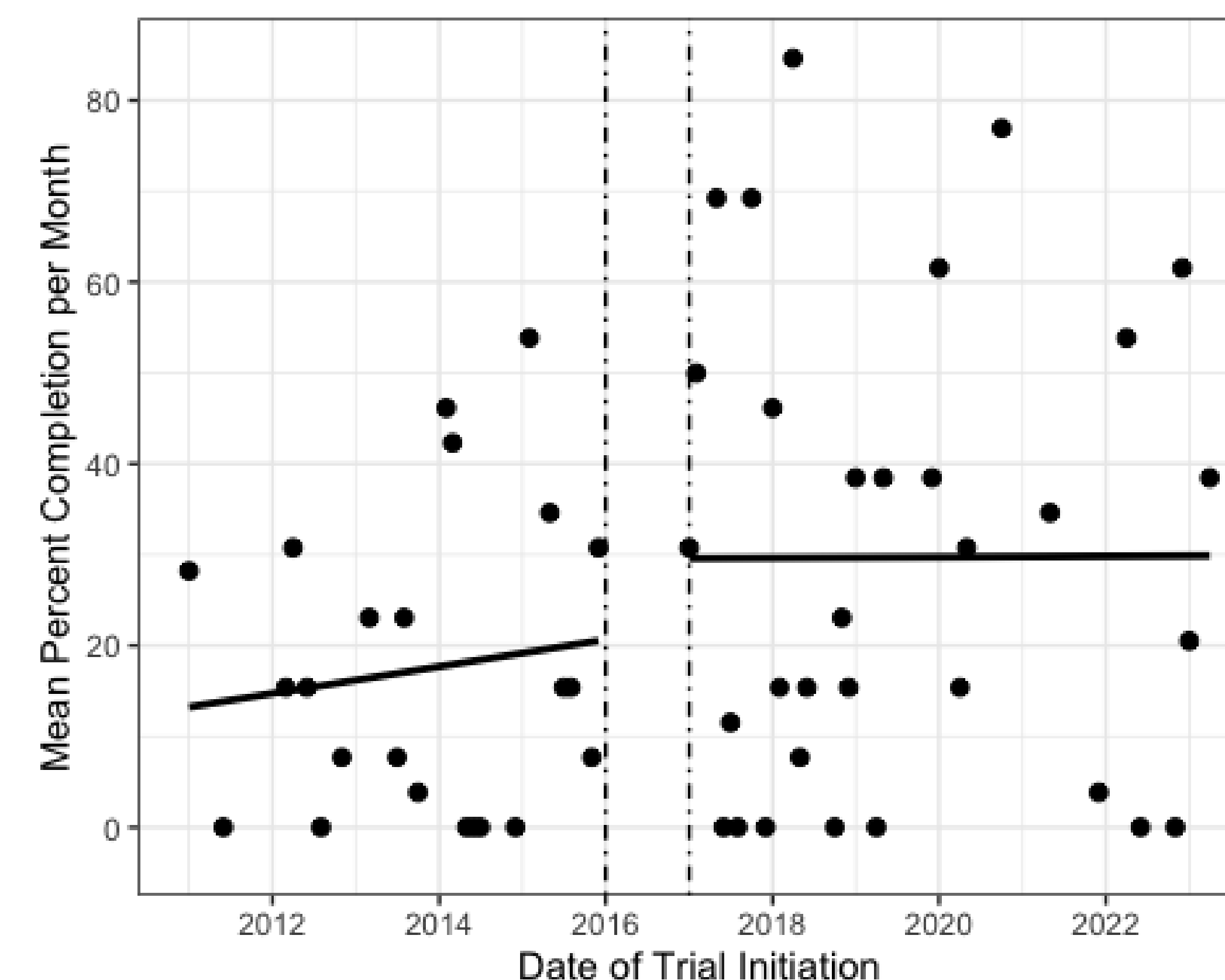


Figure 2. Preterm Birth Regression Analysis
In January of 2011 trialists reported 14.1% of outcomes. The data shows a monthly increase of .05% (P = 0.725, CI = [-0.25, 0.35]) before PTB COS publication. No months recorded trial outcome reporting above 60%. An increase of 18.51% was seen in the first month (P = 0.034, CI = [1.40, 35.62]) following PTB COS publication. The increase was followed by a decrease in outcome reporting of 0.19% per month (P = 0.34, CI = [-0.58, 0.20]), There were 6 months where trialists reported over 60% of outcomes. After PTB COS publication, our data demonstrates a slight monthly increase of 0.001% (P = 0.99, CI = [-0.30, 0.3.1]). Figure 3 shows the regression analysis in visual format, allowing a grace period of one year for COS uptake to occur.

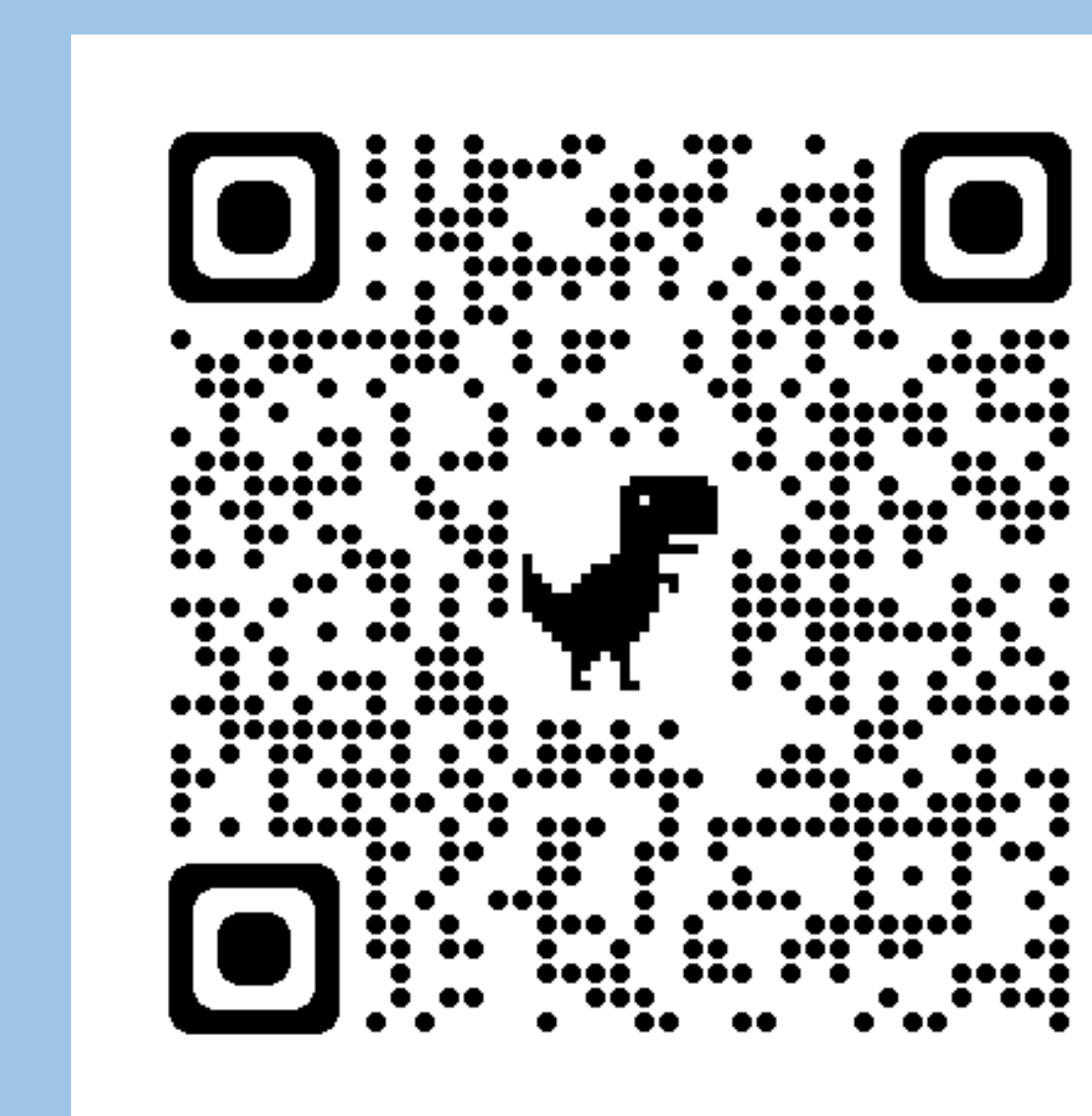
Table 2. Frequency of Neonate Outcome Set Uptake

Outcome Set Domain and Item	N = 92
Offspring Mortality, n (%)	
Yes	50 (54.3)
No	42 (45.7)
Offspring Infection, n (%)	
No	66 (71.7)
Yes	26 (28.3)
Gestational Age at Birth, n (%)	
No	63 (68.5)
Yes	29 (31.5)
Harm to Offspring From Intervention, n (%)	
No	79 (85.9)
Yes	13 (14.1)
Birth Weight, n (%)	
No	53 (57.6)
Yes	39 (42.4)
Early Neurodevelopmental Morbidity, n (%)	
No	55 (59.8)
Yes	37 (40.2)
Late Neurodevelopmental Morbidity, n (%)	
No	89 (96.7)
Yes	3 (3.3)
Gastrointestinal Morbidity, n (%)	
No	69 (75.0)
Yes	23 (25.0)
Respiratory Morbidity, n (%)	
No	51 (55.4)
Yes	41 (44.6)

CONCLUSION

Our study assessed adherence of PTB trials to their respective COS and found inconsistent outcome measurement throughout our sample. The median percentage for COS outcome reporting was under 25%, with little improvement after COS publication. COS introduction has shown potential to improve international reporting across different fields of medicine. The PTB COS uptake may be inhibited by a lack of outcome measurement standardization, lack of COS guideline awareness, and lack of stakeholder involvement. To improve outcome measurement, we recommend requirements to use the PTB COS and standardization of outcome measurement tools.

REFERENCES



AFFILIATIONS

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