

COMMENT

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# How to improve newborn outcomes in 60 s—delay clamping the umbilical cord

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## Abstract

Deferred umbilical cord clamping (DCC) has been employed with wide variation in the United States over the last few decades. This practice has the potential to improve infant health and outcomes at the population health level. Education campaigns and policy interventions can promote DCC use in a safe manner.

**Keywords** Deferred cord clamping, Birth, Infant, Infant mortality

## Introduction

Despite rapidly-developing evidence that deferred umbilical cord clamping (DCC) improves newborn outcomes, there is wide variation around this practice for the nearly 4 million births in the U.S. each year [1, 2]. Given that the U.S. ranked 33 out of 38 OECD countries for infant mortality in 2019 with 5.7 deaths per 1,000 live births, the need for better perinatal care is pressing [1]. Broader adoption of deferred cord clamping represents one important quality improvement opportunity to improve newborn cardiovascular, neurological, and endocrine outcomes. This commentary summarizes the recent history of DCC implementation, the benefits and risk of DCC, and provides recommendations for increased adoption in the United States.

## Assessment of Benefit and Risk

In the modern medical era, it became common practice to clamp and cut the umbilical cord shortly after the birth of a newborn. However, a growing body of evidence

has established benefits to DCC [1]. It is a simple and free intervention that allows for the autotransfusion of placental blood before clamping [1]. The practice is endorsed by the American College of Obstetrics and Gynecologists (ACOG), American Academy of Pediatrics (AAP), Neonatal Resuscitation Program (NRP), and World Health Organization (WHO) [2]. There is wide variation in the use of DCC with a lack of standardized treatment protocols [2]. Based on well-designed randomized clinical trials and clinical wisdom, the implementation of standardized DCC protocols would provide both short- and long-term health benefits.

The first randomized-controlled trial performed in 1988 supported an acute benefit of DCC. There was a decreased likelihood of periventricular-intraventricular hemorrhage (IVH) [1]. Since then, trials have indicated many incremental health benefits, such as increased neonate hemoglobin levels. Lower transfusion rates improve outcomes and decrease the cost of care [3].

The benefits of DCC are more pronounced and evident in preterm births, such as a reduction in intraventricular hemorrhage (IVH) and overall increases in blood flow, stroke volume, and cardiac output [1].

While there are numerous acute health benefits with DCC, until recently literature was unclear about long-term benefits. One trial found modest neurodevelopment improvements 4 years post-birth [4]. Infants with the

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intervention had better fine motor functions compared to an immediate cord clamping group [4]. Most benefits start at the one-minute mark and diminish after three minutes [5]. To this day, no universal guidelines exist on the timing of delay. For instance, the WHO utilizes a 60-second threshold for DCC, while ACOG recommends 30–60 s [2, 6].

### Trends

The 2012 ACOG Committee Opinion popularized DCC in the United States. Prior to this, surveys estimate that less than 4% of obstetricians had a DCC policy at their hospital. By 2016, the percentage rose to 28.1% [2]. After the 2017 ACOG committee publication, this metric further rose to 85.5% by 2019 [2]. The threshold for DCC in all surveys was greater than 60 s. The dissemination of hospital policy correlates with increases in the use of DCC, but not always in a proportional manner [2]. There is a gap between the prevalence of hospital policy and obstetrician practice [3]. Public education campaigns facilitate patients' ability to advocate for beneficial interventions prior to birth.

Obstetricians and other participating clinicians are more likely to perform DCC on preterm infants [2]. This is due to initial ACOG recommendations that stressed the importance of DCC in preterm infants. The pattern of increase is aligned with the evidence and literature at the time, highlighting the capacity for large-scale incremental physician practice change. European studies found that interdisciplinary guideline development and communication between policymakers, hospital administration, and physicians were vital in increasing DCC rates [2]. Recommendation adherence is better achieved through collaboration and physician involvement rather than top-down, zero-input methods.

### Recommendations

The literature shows a wide variation in the use of deferred cord clamping in the United States. With proper informed consent and decision-making, DCC should be a standard and common practice during most births. Although a majority of hospitals have a DCC policy, thousands of infants do not receive it every year [7]. Resistance to changing clinical wisdom is common for physicians and patients alike. A multilateral patient and physician campaign is required to create large-scale practice pattern change.

Public health education is a necessary component to increasing the use of DCC. The CDC currently collects data on most U.S. hospitals via the Maternity Practices in Infant Nutrition and Care (mPINC) assessment. The 2022 mPINC survey includes a question referring to DCC, "How many healthy newborns at your hospital have their umbilical cord clamped more than one minute

after birth?" [8]. While the CDC has been collecting this data for at least 4 years, results by hospital are not available for patients. Instead, hospital ratings organizations, such as the Leapfrog Group, should add DCC to their online, public data release. Armed with this information, parents can choose hospitals where DCC is a regular practice. Patients, however, may face challenges in selecting hospitals that consistently implement DCC, underscoring the importance of nationwide DCC adoption. In hospitals that do offer DCC, clinicians should explain the benefits and risks of DCC in a shared decision-making process.

The implementation of DCC requires changes to physician education. A qualitative study of provider input found five drivers of change: trusting colleagues, believing the evidence, honoring families, achieving personal certainty, and preserving the integrity of the parents and baby [7]. The most prevalent driver, trusting colleagues, had three caveats: colleagues as sources of information, watching a colleague's practice, and colleagues as experts sharing their research [7]. This can be achieved on the hospital system level but also through professional societies, research conferences, and peer-review publications. Physician collaboration and involvement in the development of policies is essential. The use of federal and state policy is better positioned as a secondary arbitration to close the last marginal gaps in DCC use.

### Conclusion

It is important to continue DCC and further expand vital maternity care practice in all birthing institutions. Deferred cord clamping and other evidenced-based practices provide protective benefits to infants and birthers. These small steps can lead to more meaningful overall improvements in neonatal and infant morbidity and mortality. Data on DCC use in hospitals should be publicly available for easy viewing by prospective patients. Deferred cord clamping beneficial and should be standard practice for births in the United States.

### Abbreviations

DCC	Deferred Cord Clamping
mPINC	Maternity Practices in Infant Nutrition and Care
IVH	Intraventricular Hemorrhage
ACOG	American College of Obstetrics and Gynecologists
AAP	American Academy of Pediatrics
NRP	Neonatal Resuscitation Program
WHO	World Health Organization
CDC	Centers for Disease Control and Prevention

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