Hypertension: Current Commentary

A Nudge Toward Universal Aspirin for Preeclampsia Prevention

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The July 2018 American College of Obstetricians and Gynecologists’ guidelines for aspirin prophylaxis for preeclampsia prevention represent a departure from prior, more stringent guidelines and extend eligibility for aspirin prophylaxis to a large proportion of pregnant women in the United States. However, these latest guidelines are predicated on a complex, risk-factor–based screening algorithm and ignore the reality that, outside of the setting of clinical research, effective implementation of risk-factor–based approaches consistently falls short. Herein we argue for transitioning to universal aspirin prophylaxis for preeclampsia prevention using the concept of libertarian paternalism, knowing that altering the choice architecture from an “opt-in” to an “opt-out” system will greatly increase the number of patients who receive the advantage of this inexpensive, safe, and beneficial preventative intervention.

(Obstet Gynecol 2019;133:725–8)
DOI: 10.1097/AOG.0000000000003167

In July 2018, the American College of Obstetricians and Gynecologists (ACOG) released an update of its Committee Opinion with new recommendations for aspirin use to prevent preeclampsia.1 This document replaced previous ACOG recommendations that limited aspirin prophylaxis to women with a history of preeclampsia in multiple prior pregnancies or a history of an early preterm delivery due to preeclampsia. Under these prior, more stringent guidelines, fewer than 1% of pregnant women in the United States qualified for aspirin prophylaxis.2 The American College of Obstetricians and Gynecologists’ new recommendations incorporate guidance from the U.S. Preventive Services Task Force that advocates for more widespread aspirin use. We have previously estimated that incorporating these more liberal guidelines increases the proportion of women in the United States qualifying for prophylaxis to 23%.2

Building on this U.S. Preventive Services Task Force framework, ACOG has stratified qualifying risk factors into “high” and “moderate”; any single “high-risk” factor qualifies women for aspirin prophylaxis starting between 12 and 28 weeks of gestational age (optimally before 16 weeks3) and continuing until delivery. In addition, providers are now encouraged to consider aspirin prophylaxis for women with more than one of the following “moderate-risk” factors: nulliparity, obesity [body mass index [calculated as weight in kilograms divided by height in meters squared] higher than 30], family history of preeclampsia, African American race, low socioeconomic status, age 35 or older, or other personal history factors (delivery of a small-for-gestational-age neonate, previous adverse pregnancy outcome, more than 10-year pregnancy interval). These changes represent a significant pendulum swing toward liberal aspirin use.

Based on the available literature on provider adherence to risk-based medical screening approaches, we are concerned that many pregnant women who stand to benefit from aspirin prophylaxis may not be availed of that benefit. In medical fields other than obstetrics, poor provider adherence to risk-based screening seems to be the norm, rather than the exception, for a wide variety of conditions, including injuries inflicted by child abuse, urinary tract infection, hypertension, colorectal cancer, and hepatocellular carcinoma.4–8 This poor adherence
extends to obstetric practice. Before adoption of universal screening for gestational diabetes, screening predicated on risk-factor assessment proved ineffectual owing to poor physician compliance. In one study, only 31% of patients whose risk profiles qualified them for evaluation for gestational diabetes were screened; in another, only 61% of eligible women were screened. Implementation of risk-based antibiotic prophylaxis to prevent early-onset neonatal group B streptococcus infection proved to be similarly ineffectual. For example, Lin et al reported that 30% of patients whose risk profiles indicated antibiotic prophylaxis did not receive it. The reality is that, outside of the setting of clinical research, effective implementation of risk-based approaches consistently falls short. In the current health care climate, where providers already feel pressured to get through all essential parts of the clinical encounter, trying to pack cumbersome screening protocols into overloaded visits decreases the likelihood that patients will be adequately screened and offered prophylaxis.

Electronic medical record–based decision support technology, or software programs designed to directly pull or screen information from the medical record, has been touted as a solution to combat overly complex risk-stratification approaches. However, these require an integrated electronic medical record, has been touted as a solution to combat overly complex risk-stratification approaches. However, these require an integrated electronic medical record, which nearly 50% of practices still do not have. Additionally, there has been little penetration of decision support technology into obstetric practice, and, although studies from other specialties have shown some improvement in physician performance with decision support technology, this performance has not been consistently tied to improved patient outcomes.

The primary concern with transitioning to universal aspirin prophylaxis is that it may unnecessarily expose women (and their fetuses) at low risk for preeclampsia to the cost, pill burden, and potential short-term and long-term adverse effects of the drug. Notably absent from the new ACOG recommendations are two fundamental, quantitative considerations. First, given the proven efficacy of aspirin, what is an acceptable number needed to treat to prevent one case of preeclampsia? With aspirin’s low cost (approximately $5 per pregnancy) and favorable safety profile—more than 20,000 pregnant women have been randomized to aspirin in clinical trials without demonstrable harm—an acceptable number needed to treat would be quite large. Arguably, it would be at least 500, which is the number needed to treat to prevent one case of preeclampsia in even the lowest risk women. And although long-term outcome data for exposed neonates are more limited than the reassuring short-term data, their relative paucity has not prevented ACOG from endorsing aspirin’s widespread use. Of course, no matter the rate of utilization, women with a known allergy or contraindication (eg, platelet aggregation disorder, severe liver dysfunction, history of gastrointestinal ulcer) to aspirin would not be eligible for prophylaxis.

Universal prophylaxis for pregnancy benefit is not without precedent. Folic acid supplementation for the prevention of neural tube defects was studied first in high-risk women and found to significantly lower the recurrence of neural tube defects, from 3.5% to 1%. This not only led the Centers for Disease Control and Prevention to recommend folic acid supplementation in all reproductive age women regardless of their risk status, but prompted the U.S. Food and Drug Administration to go further and mandate fortification of multiple cereal and grain products. Thus, this intervention was extended not only to all pregnant women, but also to a significant population of people (eg, men, women above childbearing age) who stand to receive no personal benefit.

The second consideration absent from the new ACOG guidelines is what proportion of pregnant women would meet the new criteria for prophylaxis? Given overlapping risk factors, it is difficult, if not impossible, to tease out this answer using available data. Yet, with current U.S. rates of nulliparity, obesity, African American race, and low sociodemographic status, in many settings it is likely that more than half of pregnant women qualify for aspirin prophylaxis under the new ACOG guidelines. If this is the case, and given the established benefits of aspirin prophylaxis, which outweigh the largely theoretical risks, the actual prevalence of risk factors becomes almost inconsequential.

It is possible that maternal risk perception may alter compliance; specifically, women who are told they are high risk may be more likely to initiate and remain compliant with prophylaxis than those who are not labelled. On its face, this concern has intuitive appeal, but in a wide-ranging PubMed, time non-restricted, all-language literature review including the terms “risk-perception,” “high risk,” “adherence,” “compliance” and “pregnancy,” we found no data to support this view. Thus, it seems inappropriate to create an environment that encourages providers to deny aspirin to women who might benefit from it in the hopes of inducing compliance in others. Furthermore, for risk stratification to be effective, risk must be reliably identified in the first place; for the reasons articulated above, this is unlikely to occur in practice.
If, as we have argued, universal prophylactic aspirin use would have substantial net health benefits, how then to accomplish broader and more consistent use? We advocate that the problem be viewed through the lens of the economic principle of *libertarian paternalism*. Derived from cognitive psychology and behavioral science, it is the concept that, with small changes in choice architecture (eg, the array of options available for an individual to choose from), one can influence the decision making of others. Behavioral economist Richard Thaler (who won the 2017 Nobel Prize in economics for this work) advocates for taking advantage of the strong human tendency to follow the status quo to alter decision-making processes. A famous example involves changing the default selection for organ donation. In the traditional “opt-in” method, people must take concrete actions to enroll and many who are willing to donate simply do not get around to doing so. An alternative tactic is an “opt-out” approach in which consent is presumed unless actions are taken to unenroll, thus communicating an explicit unwillingness to participate. Comparing differences in enrollment across locations that use these two strategies shows that this small change in default increases rates from 12% when opt-in is used to 99% where opt-out is employed. By changing the systematic ways in which choices are structured, humans can be “nudged” toward options that are better for themselves and others.

In the framework of the updated ACOG preeclampsia prevention guidelines, a substantial proportion of American women now qualify for, and could benefit from, prophylactic aspirin administration. Yet, it is likely that the inherent constraints of applying the risk-based opt-in approach significantly limit how many eligible patients will actually receive prophylaxis. Employing this concept of libertarian paternalism, a move to universal prophylaxis would essentially transition from an opt-in to an opt-out approach and guarantee broader prophylaxis. Such an approach would be highly cost effective, with an incremental cost-effectiveness ratio of $8,174 for each neonatal quality adjusted life year gained, and would substantially improve population pregnancy outcomes by reducing both preeclampsia and preterm birth.

Physicians are essential choice architects for their patients and can have an important effect on the care accepted by patients. However, we are also human, plagued by the tendency to follow the status quo. Prior experience with risk-based screening and treatment has demonstrated these imperfections, with significant proportions of at-risk candidates missing out on screening and indicated prophylaxis. It thus falls to governing organizations to be the overarching choice architects, nudging us all in the direction of optimizing access to beneficial interventions. Let’s employ a stronger stance to push providers toward global utilization of this safe and beneficial prevention strategy for a disease with significant morbidity and for which no other means of prevention is available.

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PEER REVIEW HISTORY
Received November 22, 2018. Received in revised form January 2, 2019. Accepted January 10, 2019. Peer reviews and author correspondence are available at http://links.lww.com/AOG/B308.

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