Found footage from Europa
695

Adapting science to climate adaption
696

LETTERS | BOOKS | POLICY FORUM | EDUCATION FORUM | PERSPECTIVES

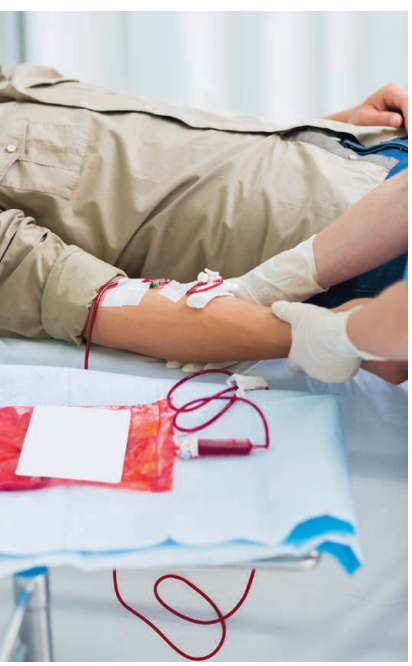
LETTERS

edited by Jennifer Sills

In Defense of WHO's Blood Donation Policy

THE WORLD HEALTH ORGANIZATION (WHO) HAS LONG RECOMMENDED VOLUNTARY NONremunerated blood donation (VNRBD) as the foundation for safe, reliable, and adequate blood supplies. In their Policy Forum "Economic rewards to motivate blood donations" (24 May, p. 927), N. Lacetera *et al*. argue that "the most relevant empirical evidence shows positive effects of offering economic rewards on donations" and suggest that WHO should consider changing its policy. On behalf of the Health Systems and Innovation Cluster of WHO, I disagree.

Lacetera *et al*. do not distinguish between unacceptable economic rewards for blood donation (such as US$15 or $25 supermarket vouchers) and acceptable small tokens (such as a free cholesterol test). The WHO VNRBD policy permits the use of small tokens of appreciation for blood donors (*1*, *2*), a stance consistent with the Nuffield Council on Bioethics's "Intervention Ladder," a useful tool for analyzing the ethical acceptability of different forms of encouragement for donating bodily material in various circumstances (*3*). Folléa *et al*. compares each of the six "rungs" of this "Intervention Ladder" with the definition of VNRBD of the Council of Europe (*1*, *4*). The Oviedo Convention (*5*), a binding international legal instrument developed by the Council of Europe, is also consistent with this policy.



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Lacetera *et al*. argue that the WHO position is based on uncontrolled studies and nonrandom samples. The use of evidence in public health decision-making is more complex than in clinical practice (*6*) and needs to draw on sources beyond the traditional hierarchy of study designs while addressing equity, transferability, acceptability, patient preferences, and social values. Reliance on evidence of different grades of robustness rather than exclusively on randomized controlled trials (RCTs) is not unusual for health policy studies. An overemphasis on RCTs poses important ethical and logistic problems and may incur avoidable deaths, particularly in resource-poor settings (*7*).

A change in VNRBD policy would require evidence across a range of contexts in different settings that addressed safety, donor recruitment, impact on social cohesion and solidarity, effect on concomitant VNRBD programs, and avoidance of the exploitation of the poor and vulnerable, as well as the assessment of potential negative health and social side effects on a large scale.

VNRBD leads to a safer blood supply. Evidence shows significantly lower prevalence of transfusion-transmissible infections among voluntary nonremunerated donors than among other types of donors (*8*–*10*). Volkow *et al*. have shown that injection drug users from two Mexican-U.S. border cities rarely donate in Mexico, where payment for donations is banned, but do so across the border in the United States, where payment is allowed (*11*). These donors tend to deny their risk behavior, putting the blood supply at risk. The U.S. General Accounting Office Testimony of 1997 showed that test-positive rates for commercial plasma donors were 2 to 20 times higher than those for volunteer whole blood donors across a range of tests (*12*).

VNRBD also improves the supply of blood (*8*–*10*, *13*). In a review of self-reported motivators and deterrents for blood donation, donors indicated that monetary incentives were unwanted, whereas nondonors indicated that these would be inadequate to motivate them to donate (*14*). Abolghasemi *et al*. reviewed over 20 epidemiological, economic, and psychological studies from the past four decades and concluded that offering money or cash-equivalent incentives may have negative effects on both blood safety and blood donor contributions (*15*). When systems of paid and voluntary blood donation coexist, people who might otherwise donate voluntarily may opt to receive payment for their blood, crowding out voluntary blood donor programs (*8*).

Lacetera *et al.* ignore an important consideration underlying VNRBD: donor protection. By providing underprivileged populations in need of money with financial incentives to donate, the commercial collection of blood, plasma, and cellular blood components could exploit the poor and vulnerable, in opposition to the directives of the Universal Declaration on Bioethics and Human Rights (*16*).

Numerous examples from both developed and developing countries, including Sri Lanka and Kenya (*17*, *18*), show that VNRBD can provide a strong foundation for sustainable blood systems. Research in this field should focus on how to protect and further strengthen VNRBD programs.

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Response

DHINGRA STRESSES THE DIFFERENCE BETWEEN rewards and tokens of appreciation for blood donations. She points to the Nuffield Council guidelines, which explicitly warn that any benefits that "encourage those who would not otherwise have contemplated donating to consider doing so" should be scrutinized because they might be harmful [(*1*), page 7]. The incentives in the studies that we reviewed are deemed consistent with the ethical and professional standards of the blood banks offering them. These studies show that economic rewards can motivate people to make donations that would not have occurred otherwise, without negative consequences on safety. Our conclusion thus stands: Existing guidelines should be reconsidered to recognize a role for incentives in generating additional, safe donations.

Randomized controlled trials (RCTs) are not the only form of evidence that should inform policy. However, when available, RCTs are the current best practice. Equally important, it is not merely the RCT nature of the studies that we reviewed that makes them compelling; it is also critical that evidence is based on actual behavior of people in response to actual incentive offers, and on large representative samples. For socially desirable activities, relying on self-reported motivations or laboratory settings can be misleading. Dhingra's example highlights this concern; a free cholesterol test favored by respondents in surveys had no effect when actually offered to blood donors in the field, whereas a hypothetical lottery ticket not favored by respondents increased donations when actually offered (*2*, *3*). The remarkable aspect of the reviewed evidence (both RCT and observational) is the consistency of findings despite the different contexts (United States, Italy, Switzerland, and Argentina), types of items offered, and types of data.

Uncontrolled studies that do not meet these standards—such as most of those reviewed in van der Poel *et al.* (*4*) as well as the others that Dhingra cites—should be taken with great caution (*5*). Indeed, there is no existing evidence meeting the highest current standards to support the claim that voluntary donation increases safety and supply, and none of the studies that Dhingra cites causally identify the effects of unconditional economic incentives on safety on representative samples and for actual blood donations.

Dhingra also implicitly equates paying cash with the incentives that we studied; this is inaccurate. As emphasized in our article, the effects on safety and quantity may differ across different incentives and conditions. Paying donors cash, as done for plasma donations at private blood banks, is one strategy that we did not examine. What we did study is the effect of offering items (typically with values below minimum wage) to potential donors for presenting to make a whole blood donation, regardless of whether they actually donate or are found ineligible. These strategies could yield quite different results.

Finally, we agree that ethical principles should also guide discussion about blood donations. Societies define what kind of transactions, and in what form, are and are not ethically acceptable. Some of these views may change over time, as the *Flynn v. Holder* decision allowing compensation for bone marrow suggests (*6*), whereas others remain unchanged (*7*). We believe that these debates benefit from the availability of relevant empirical evidence that includes, in the case of blood donations, the use of representative samples, actual donation behavior using standard collection procedures, and causally identified short- and long-term effects on both donations and safety.

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Letters to the Editor

Letters (~300 words) discuss material published in *Science* in the past 3 months or matters of general interest. Letters are not acknowledged upon receipt. Whether published in full or in part, Letters are subject to editing for clarity and space. Letters submitted, published, or posted elsewhere, in print or online, will be disqualified. To submit a Letter, go to www.submit2science.org.

Returning to the Colombian Amazon

IN HIS NEWS FOCUS STORY "VENTURING back into Colombia" (2 August, p. 450), A. Regalado described new opportunities for research and unprecedented threats to biodiversity, as "no-go zones"—particularly the Colombian Amazon—become increasingly stable. As directors of an international cooperative program, Partners for Conservation in the Colombian Amazon (*1*), which aims to strengthen graduate education and research, we offer three suggestions for charting the return of science to the Colombian Amazon.

First, the return path should address critical gaps in biodiversity science in Colombia. Biodiversity publications accounted for roughly 30% of Colombian scientific production during the past two decades (*2*). However, an analysis of 5264 indexed publications on Colombian biodiversity (published between 1990 and 2011) indicated that conservation studies were rare (9%) and Amazonian departments were poorly represented (less than 10%) (*2*). The Amazon region and conservation-oriented research are immediate priorities for biodiversity science in Colombia.

Second, the return path should strengthen regional academic institutions, such as the Universidad de la Amazonía in Caquetá province. Colombia has many strong institutions in large cities, including Bogotá, Medellín, and Cali, but regional universities serve more students from Amazonian provinces. Academic programs in regional universities give limited attention to biodiversity conservation or interdisciplinary studies, often because they lack relevant capacity. Degree programs in applied biodiversity science are immediately needed at regional universities, along with support for further faculty training.

Finally, the return path should make biodiversity science part of peace building in the Colombian Amazon. The fate of natural areas—epicenters of civil conflict for decades and bastions of biodiversity—has been conspicuously absent from ongoing peace negotiations (*3*). Scientists must collaborate with leaders and Amazonian peoples that have cultural and livelihood ties to biodiversity. To safeguard natural resources in a possible post-conflict scenario, we must build broad awareness that Amazonian biodiversity is an irreplaceable resource for Colombia.

Universidad de la Amazonía.

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CORRECTIONS AND CLARIFICATIONS

Perspectives: "Blooms bite the hand that feeds them" by H. W. Paerl and T. G. Otten (25 October, p. 433). On the right side of the figure, the label above the downward arrow should be "Increased CO_2"; the label below the downward arrow should be "CO_3^{2-}/HCO_3^-". The HTML and PDF versions online have been corrected.

Policy Forum: "Probiotics: Finding the right regulatory balance" by D. E. Hoffmann *et al*. (18 October, p. 314). In reference 11, the correct URL is www.law.umaryland.edu/ProbioticsWhitePaper. The HTML and PDF versions online have been corrected.

News: "Great presenters: Lighting up the auditorium" by J. Cohen (special section on Communication in Science, 4 October, p. 78). Although Bonnie Bassler discusses *V. fischeri* and symbiosis in presentations she gives about her work, her lab focuses on the closely related, but free living, *V. harveyi*. The HTML and PDF versions online have been corrected to reflect this.

Reports: "Constitutive μ-opioid receptor activity leads to long-term endogenous analgesia and dependence" by G. Corder *et al*. (20 September, p. 1394). On page 1396, Fig. 1O should be cited instead of Fig. 1M. On page 1397, fig. S5 should be cited instead of fig. S4. HTML and PDF versions online have been corrected.

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