

Family donors are critical and legitimate in developing countries

Jean-Pierre Allain, Cees Th Smit Sibinga¹

Department of
Haematology, University
of Cambridge,
Cambridge, UK,
¹IQM Consulting
for International
Development of
Quality Management
in Transfusion
Medicine, Groningen,
The Netherlands

Abstract:

Introduction: For many years, family blood donors have been considered less safe than volunteer non-remunerated blood donors and actively discouraged by international organisations and affluent countries support agencies for developing countries. In addition to safety, pressure and coercion was considered unethical. However these assumptions were not supported by evidence. **Aims of the study:** To assemble recently collected evidence to reopen the assessment whether or not the ban of family blood donors is justified. **Methods:** Review of old and recent literature through Pubmed and references from identified articles. **Results and Discussion:** Viral marker data comparing confirmed seroprevalence in 1st time volunteer non-remunerated donors (VNRD) and family/replacement donors (FRD) corrected for gender and age, show no significant difference between the two groups. Evidence has been provided that for both VNRD and FAD benevolence is more appropriate than altruism. The two groups merge for psychological attitude to donation for which knowing someone needing transfusion is a powerful incentive to give blood. Excluding a life or death situation found in areas where severe blood shortage justifies replacement donation, pressures are exerted on both VNRD and FRD. There is no evidence of coercion of FRD. FRDs therefore meet all criteria for VNRD and are willing to become VNRD and to repeat donation. Ostracising FRD is illegitimate and damaging to the blood supply in resource poor areas. In some countries no difference is made between the two groups of donors representing similar populations asked to give blood in different circumstances. **Conclusions:** FRDs remain a critical source of volunteer, non-remunerated, blood meeting all classical criteria of VNRD that should be considered legitimate and indispensable at this point in time instead of discouraged.

Key words:

Altruism, benevolence, blood donors, blood donation, blood supply, coercion, ethics, pressure

Introduction

In recent years, several principles constituting the basis on which blood transfusion in affluent countries (volunteer only, unpaid, centralized, separate from hospitals) have been challenged in resource poor countries. In several instances, these principles supported by WHO and other international organizations were proven unsupported by evidence. Most of these principles often considered as dogmas were developed over 50 years ago in a post-World War II era by a group of European and North American pioneers of transfusion. They led the development of a code of ethics defining blood donation as an altruistic behavior, therefore, to be performed without payment to donors. In parallel, a flourish of affluent national nonprofit organizations advocating volunteer nonremunerated blood donation as the only acceptable source of blood developed. Such donor selection was advocated to prevent the social and economic selection of paid donors on the basis of both ethics and a significantly increased risk of infectious agent transmission attached to the latter.^[1] However, ethics or societal context or justification of policies have been developed strictly on the basis of affluent countries, specifically Western Europe, Australia, and North America under the assumption that recommendations and conclusions were universally

acceptable and therefore globally suitable. Human morals and values such as altruism vary significantly between human groups and what is good and legitimate for one group does not necessarily apply to others.^[2] As widely demonstrated for the failed export of Western models of democracy into other types of societies, export of Western blood donation models, even when endorsed by international bodies such as WHO, do not fit societies with largely different economic, cultural, and moral standards. As previously pointed out, in the limited field of transfusion, globalization of Western standards can be unintentionally counterproductive.^[3] Here, we re-examine the bases of blood donation models.

Methods

For the purpose of this review, systematic research has been conducted into the available literature through PubMed, as well as the reference lists of articles, that could be printed free of charge. A considerable part of the literature reviewed regarding the issues discussed in sub-Saharan Africa (SSA) was previously published by one of the authors.^[4] Additional data have been focusing in central and South America, as well as Asia. The data might differ from what is presented by WHO in its regular publication mostly because its source is

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Correspondence to:

Prof. Jean-Pierre Allain,
Department of
Haematology, Cambridge
Blood Centre Long Road,
Cambridge CB2 0PT, UK.
E-mail: jpa1000@cam.ac.uk

governments and Departments of Health, while here we focused on published literature mostly at the individual blood center level.

The place of family/replacement donors

The ethical battle between nonremuneration and remuneration (compensation) was loosely supported by recent evidence of the lower level of safety.^[1,5,6] This will not be the subject of the present article. In the middle of this dispute, reflected by a debate at the recent International Society of Blood Transfusion (ISBT) congress held in Amsterdam, June 2013 lie family donors (FD) and replacement donors (RD) often associated as family replacement donors (FRD) who provide the bulk of blood donations in resource poor countries for cultural and economic reasons.^[7] These types of blood donors are present in all continents (mainly in Latin America, Africa, and Central Asia) and constitute approximately 20% (19 M) of global blood collections ranging between a few to 100% of the blood supply in mostly middle and low human development index countries [Table 1].^[8,9] Nevertheless, they are ignored or actively discouraged by WHO and a range of governmental or nongovernmental organizations based in affluent countries.

Developing ethics in blood transfusion

The first attempt at defining ethics in blood transfusion took place in Paris in 1978 at the time ethics in medicine and Ethics Committees started being put into place.^[10] At that time the issues were: Donor safety, control of plasma derivatives, and definition of ethics rules and regulation possibly leading to legislation. Donor informed consents were drafted and preliminarily used. The use of drugs to improve the yield of cytapheresis was a particular concern. In pre-HIV Africa, hepatitis B virus (HBV) transmission was a concern although testing was considered unaffordable. “To the concept of noncommercialization is linked the principle of voluntary blood donation on the higher plane of human solidarity. This should not prevent, however, from finding means of dealing

with any inconvenience and discomfort. Formulas could be conceived which would lead certainly not to remuneration, but to compensation or at least to an adequate counterpart. The elements of the latter must be found and defined in accordance, morally, with medical ethics.” The issue of the type of donor was mentioned only for cytapheresis: “Family members are excellent donors because they are highly motivated, however, most donors are unrelated donors, who are enrolled as members of the donor panel. Occasionally friends or colleagues of the recipient who are especially motivated, are used.”

Altruism being challenged

The main pillar of the case for volunteer nonremunerated donors (VNRD)-only blood donation is altruism. However, the current ISBT codes of ethics, documents released by WHO or other international bodies do not utilize the word altruism but indicate that “blood donation shall be voluntary and nonremunerated.”^[11,12] This behavior has been equated to altruism by Titmuss and his followers, as well as by the abundant literature examining the phenomenon of blood donation.^[13] Altruism is defined in the Oxford English dictionary as: “Disinterested and selfless concern for the well-being of others.” This does not distinguish whether others are anonymous patients or a patient known to the donor or whether the patient is my daughter, my mother, my classmate, my co-worshipper, my work colleague or member of my community. In any case, the reality of pure altruism as conceived by the ISBT pioneers in the late 1970s and glorified by Titmuss has been challenged by experimental psychological studies mostly conducted in the USA, the UK, and Australia.^[14-16] These investigators demonstrated experimentally that, according to the theory of planned behavior, vision of self-identity, fitting a subjective social, and moral norm feeling of being in control to decide giving or not giving blood, preventing anticipated regrets of not donating were demonstrable benefits underlying giving

Table 1: Percentage of FRD in the blood supply of four continents

Country and published % FRD					
Americas	Africa <20%	Africa 20-79	Africa ≥80	Asia	Europe
Argentina - 93	Benin - 6	Algeria - 60	Angola	China - 0	Albania - 67
Bolivia - 89	Botswana - 0	Burkina Faso - 51	Cameroon - 80	India - 5-95	Greece - 53
Brazil - 100	Burundi - 0	Eritrea	Chad	Iran - 0	
Chile - 100	Central African Republic - 0	Gambia	Congo	Kuwait - 0	
Columbia - 81	Cote d'Ivoire - 0	Guinea - 61	Democratic Republic Congo	Kingdom of Saudi Arabia - 85	
Costa Rica - 51	Malawi	Kenya	Ethiopia	Oman - 26	
Cuba - 0	Namibia - 0	Morocco - 38	Gabon - 80	Pakistan - 93	
Ecuador - 64	R South Africa - 0	Mozambique - 50	Ghana - 80	Thailand - 65	
El Salvador - 90	Rwanda - 0	Tunisia - 50	Guinea Bissau	Turkey - 23-98	
Guatemala - 99	Senegal - 4	Zambia	Madagascar - 80		
Honduras - 77	Uganda		Mali		
Jamaica - 83			Mauritania - 97		
Mexico - 95			Sierra Leone		
Nicaragua - 59			Tanzania		
Paraguay - 98					
Peru - 81					
Surinam - 0					
Uruguay - 92					
Venezuela - 94					

The percentages given for Americas come from Cruz *et al.*^[60] and were collected in early 2000. Most numbers for Africa come from the report of the 1st workshop of transfusion in francophone African countries held in 2006^[61]. Other numbers are from individual publications posterior to 2000 listed in the reference list: Ahmed *et al.*, 2007^[9], Ameen *et al.* 2005^[62], Cuhna *et al.* 2007^[63], Dilsiz *et al.* 2012^[64], Dongdem *et al.* 2012^[51], Durro and Oyra 2011^[65], Fernandes *et al.* 2010^[66], Garg *et al.* 2001^[67], Jain *et al.* 2012^[68], Joshi *et al.* 2010^[69], Karki *et al.* 2008^[70], Kaur *et al.* 2010^[71], Marantidou *et al.* 2007^[8], Matee *et al.* 2006^[52], Nantachit *et al.* 2003^[72], Noubiap *et al.* 2013^[53], Nwogoh *et al.* 2011^[49], Pallavi *et al.* 2011^[36], Sharma *et al.* 2004^[43], Singh *et al.* 2009^[50], Singhvi *et al.* 2003^[73], Sonwane *et al.* 1990^[74], Stokk *et al.* 2011^[75], Sultan *et al.* 2007^[42], Uzun *et al.* 2013^[76]. Countries without specific percentage have been classified by WHO but no specific publication from the country is available. FRD: Family replacement donors, WHO: World Health Organization

blood for the first time or repeating blood donation. In addition, experimental evidence was provided that “although motivations for helping can appear altruistic, those motivations may be ultimately egoistic in nature.”^[17] In simple language, multiple studies consistently indicate that, “helping others is helping oneself” although “self-other overlap is also real in the genetic sense” particularly with related others such as siblings, parents, and offspring. In other words, whether others are unknown (as for VNRD) or known (as for FRD), helping oneself is a definite motivation for helping others such as by giving blood.^[18] At the psychological level, the apparent difference in motivation between VNRD and FRD falls into the same general scheme of behavior. In both types of donors, the psychological frame of donation is rather benevolence (a mixture of altruism and self-interest) dominated by the benefit called “warm glow” (I donate because it makes me feel good) while evidence of empathy for or reciprocity expected from the recipient was not found.^[19] The latter two potential mechanisms would most likely be demonstrable in the situation of FRD, who give blood because of empathy with the patients he/she knows and from whom some reciprocity might be at some point expected. A VNRD study conducted in Italy showed that donors who knew someone who needed transfusion or who had been transfused gave more blood units than those who did not.^[20] However, no psychological studies or evaluation have been done in the “banned” FRD. Other authors^[21] raised the issue of beneficence: An act that helps others. This concept appears more universal, irrespective of cultures, with the difference that it can be chosen or rejected by VNRDs but feeling more obligatory for FRDs who know the person to be helped.

Characterizing family (replacement) donors

According to the current ISBT code of ethics, FRD is nonremunerated but are assumed submitted to “coercion,” meeting the first but not the second element in the definition of what a blood donor should be. The ISBT code of ethics published in 1980 already indicated: “No pressure of any kind must be brought to bear upon the donor”^[22] and as modified in 2006: “No coercion should be brought to bear upon the donor”.^[12] In a recent document, advisers to WHO indicate: “In many countries, systems based on family/replacement donation often lead to coercion and place undue burden on patients’ families and friends to give blood.”^[23] This statement is essentially unjustified as unsupported by evidence and ethically unsound since the blood collected under the pressure of life or death outcome is the result of blood shortage related to the incapacity of governments and blood systems to ensure adequate health care for patients. Pressure, even coercion or payment could be considered acceptable when the survival of patients depends on the collected blood.

Family donors are often labeled family/RD, which is aggregating the origin of the donors “family” (by extension other individuals connected to a patient in need of a transfusion: Friends, colleagues, acquaintances who know the patient) and the circumstances of the donation “replacement” (when a live-saving blood will not be transfused unless replaced). FDs become “replacement” donors when the blood collected is a *sine qua non* for the patient to be treated or when the blood center requires the family/acquaintances to manage replacing the blood transfused in order to maintain supply.^[24] When the shortage is less pressing such as when the blood service has a bloodstock but insufficient supply to fully cover the clinical demand, donors are no longer taken for blood replacement but become simply contributors to the

blood supply as FRD. For simplicity and to abide to a 25-year-old nomenclature we will continue calling them FRD although Family/Acquaintance donors (FAD) would be a better term to designate FD outside the replacement situation. Neither of these two types of donors is remunerated and could be considered volunteer if it was not for the considerable pressure and emotional charge put on “replacement” donors that clash with the currently adopted ISBT code of ethics. The circumstances leading to the collection of replacement blood remain frequent in SSA as described.^[25-27] The development of VNRD motivation and retention programs promoted by governments or supported by affluent countries aid is providing some blood stock although a sizeable level of blood shortage remains in SSA countries.^[28] Such shortage could be considerably relieved if FRDs were mobilized in circumstances of volunteerism, anonymity and absence of coercion. Recent data collected in Ghana clearly indicated that a minority of “family” donors were submitted to pressure from patient families but were not only willing to donate when asked but also prepared to repeat donation in conditions classically attributed to VNRD.^[29] It can be argued that some FRDs might be reluctant to give blood for strangers or for patients admitted to another hospital. However, this concern has not been supported by evidence and was not mentioned by any FD in the Asenso-Mensah study.^[29]

Pressure versus coercion

It would be naïve to think that VNRDs are not under pressure although of different types. In SSA where VNRDs are mostly secondary school students, peer pressure is considerable so that in some schools over 70% of students present themselves for blood donation.^[30] This pressure is further increased when principals and teachers lead by giving blood themselves. Similarly, in religious communities, a pastor, a priest or an imam recommending giving blood during sermons or giving blood themselves, exert significant pressure on their flock. In Kumasi, Ghana where 20% of the population is Muslim, 30% of collected blood comes from Muslim donors encouraged by a proselytizing imam.^[30] Family pressure, patient pressure, peer pressure, religious pressure, community pressure, all are pressures whether VNRD or FRD.

The Oxford English Dictionary defines pressure as: “The use of persuasion or intimidation to make someone do something; the influence or effect of someone or something” and as a verb: “Attempt to persuade or coerce (someone) into doing something.” Coercion is defined as: “The action or practice of persuading someone to do something by using force or threats.” Seen in this light, one could legitimately consider that what should be ethically reproachable is the pressure exerted by a cash payment for giving blood that unethically selects the deprived and disadvantaged populations.^[31] One could consider that the television or newspaper advertisements or electronic personal messages blood centers broadcast, publish or send out to recruit donors can be classified as pressure.^[32] This pressure can utilize the channel of self-satisfaction: “Feel good about yourself: Give blood” advertised by the American Red Cross or the supererogatory channel: “Do something amazing: Give blood” as advertised by the English NHSBT.^[33] It is likely that these considerations explain the change of terms between the 1980 and 2006 ISBT code of ethics from “pressure” to “coercion.” Here, it could be argued that “replacement” donors are “coerced” by the risk of dying of someone they know. The pressure/coercion is then moral and emotional, not exerted by individuals, therefore not meeting the word definition.

As a result of this discussion, FRDs, as well as VNRDs, are both altruistic, and both submitted to pressures of various kinds but should not be considered as coerced. The study conducted in Kumasi, Ghana previously mentioned, clearly illustrates this point by showing that most FRDs gave blood “because they were asked” by patients or family members.^[29] Interestingly, several studies looking at reasons why nondonors with the typical VNRD profile reported the same answer: “Because I was not asked or because the opportunity did not present itself” (Healy, 2000). FD are clearly nonremunerated, noncoerced and as, if not more, altruistic than VNRDs.

Should family replacement donors be banned? Is it justified?

Hence, why is it, that WHO in its recent declaration in Melbourne, Australia stigmatized FD indicating: “[experts] Believe that family replacement and paid donation can compromise the establishment of sustainable blood collection from voluntary nonremunerated blood donors.”^[10] There is no evidence that this indeed takes place. In the follow-up document on self-sufficiency authored by a WHO expert group largely overlapping with the Melbourne group^[23] several statements are made:

1. Volunteer nonremunerated donors have been demonstrated to be at lower risk of HIV and other transfusion-transmissible infections than paid and family/RD”
2. “Such systems (family/replacement donation) will inevitably act as a barrier to enabling national blood systems to develop appropriately alongside countries’ overall health systems.”

These documents and statements deserve scrutiny at several levels. The first statement has to do with the issue of blood safety according to the type of donors. Similar to the debate between volunteer and paid donors in affluent countries, the debate between VNRD and FRD in developing countries has been smouldering for many years during which many publications from Africa and Asia concluded that indeed VNRDs were safer, hence the WHO advisers’ statement [Table 2]. When examined closely, the evidence does not support this view often considered as dogma.^[28] First, the statement associates paid and family/RD in terms of a safety risk for transfusion-transmissible infections when they should be clearly

separated; the first being motivated by monetary benefits while the second by benevolence. This illegitimate association originates from previous reports that some donors presenting as FD are in fact remunerated undercover by families who cannot or are reluctant to produce a genuine FD but need replacement blood for the patient to survive or to be treated. This practice is a direct consequence of blood shortage and tends to disappear when supply improves. Paid donations are illegal in nearly all developing countries because of clear evidence of the lower level of viral safety.^[9]

In addition, contrary to what the statement indicates, there is no supporting evidence of lower blood safety of genuine FD when comparison is conducted according to scientific epidemiological methods: Targeting first-time VNRD (the only group comparable to FRD because not biased by previously screening), using confirmed serological test results and correcting prevalence between groups for age and gender.^[4] This article reviewed available literature from SSA, but many articles from Asia proved to suffer from the same shortcomings [Table 2]. In articles published in the last 10 years on viral marker comparisons between VNRD and FRD in the Indian subcontinent, none carried out assay confirmation and only one examined the impact of age in epidemiologic data^[34-43] and Table 2. No studies account for the bias of repeat VNRDs in data analyses. However, two of these articles did not find differences between the two types of donors.^[36,40] The study stratifying for age found no difference between VNRD and FRD for HBsAg prevalence but significantly less in VNRD for anti-HCV though without confirmation.^[42]

In contrast, several studies appropriately conducted in Africa concluded at an absence of significant viral safety difference between first-time VNRD and FRD whether for HIV or HBV.^[43-48] Interestingly, the article by Diarra,^[45] concludes at higher safety of VNRD when biases are included in the analysis but at the same time provide a table comparing first-time VNRD and FD showing clearly no significant difference in confirmed viral marker prevalence. Other studies conducted without acknowledging the percentage of repeat VNRDs, without confirmation, without adjustment for age or gender in Africa or Asia showed an absence of significant

Table 2: Viral screening in VNRD and FRD in countries other than sub-Saharan Africa or post 2009

Reference	Country	Year collected	n donors	Prevalence (%)									
				Anti-HIV		Anti-HCV			HBsAg				
				Confirmed	VNRD	FRD	Confirmed	VNRD	FRD	Confirmed	VNRD	FRD	
[65]	Albania	1999-2009	52,767								No	8.1	8.6
[38]	India	2002-2006	5849	No	0.1	0.44	No	0.9	2.1		No	0.5	1.3
[66]	India	2007-2009	9599	No	0.03	0.1							
[67]	India	1994-1999	46,957	No	0.28	0.46	No	0	0.33		No	2.57	3.52
[68]	India	2009-2010	47,558	No	0.32	0.41	No	0.61	0.71		No	1.77	1.77
[36]	India	2004-2008	39,060	No	0.36	0.54	No	0.20	0.23		No	1.22	1.23
[40]	India	1999-2000	23,068	No	1.9	2.0	No	0.9	0.9		No	2.1	1.6
[50]	India	2005-2007	30,428								No	0.42	0.64 NS
[73]	India	1986-1988	35,395								No	1.37	2.96
[74]	India	1996-2001	12,240	No	1.56	2.11 NS	No	0	0		No	2.78	4.84
[70]	Nepal	2006-2007	33,255				No	0.7	0.4*				
[42]	Pakistan	2004-2005	13,888	No	0	0.06	No	1.44	1.56 NS		No	1.44	1.56 NS
[72]	Thailand	1998		Yes	0.67	0.72							
		2001		Yes	0.1	0.48							
[51]	Ghana	2009	6421								No	10.8	11.6
[53]	Cameroon	2012	543	Yes	1.5	5.4*	Yes	2.6	6.0 NS		No	8.8	10.9 NS
[75]	Mozambique	2009	679	No	8.9	12.7					No	8.6	11.8
				Yes	6.9	10.3 NS	Yes	0	0		Yes	8.6	12.7 NS

*Indicates statistical significance <0.05. Other references can be found in reference 4. NS: No statistical significance, FRD: Family replacement donors, VNRD: Volunteer nonremunerated donors

difference in HBsAg prevalence (the only one interpretable without confirmation) between VNRD and FRD although most authors claimed higher safety of VNRDs.^[42,45,49-53] Despite these major flaws in data interpretation (never mentioned by the authors), each article similarly concludes: “The results, which are in keeping with those of other studies, strongly indicate that RD are less suitable and that major emphasis should be made to encourage voluntary donors.”^[54] It is on such scientifically unacceptable basis that the myth of VNRD being safer than FRD was built.

It is understood that in terms of risk of viral transmission, <25 years donor blood is safer and young female blood (except for HIV in SSA) would be even safer irrespective of being FRD or VNRD. The stratification of blood safety according to age or gender would certainly be based on the solid epidemiological ground but not according to being FRD or VNRD. Ultimately, there is solid evidence that repeat donation is the key to blood safety as it generally decreases confirmed viral markers by a factor of 2-4 in Zimbabwe.^[55] The difficulty lies in that secondary school students who seem reluctant to repeat blood donation and in one study, the repeat rate ranged between 10% and 25% despite considerable efforts.^[30] In contrast, older adult donors such as recruited in the FM radio station programs in Ghana spontaneously repeat donation at a 60-65% rate.^[56] Therefore, donors at higher risk (the adults) provide the safest blood by repeating donation. This is why the blood program in Zimbabwe discards first-time donation and collects only subsequent donations.^[55] Since 50-90% of VNRD donations in SSA are from first-time donors, such strategy would, therefore, be totally impractical in most developing countries, particularly in SSA.

No evidence has been provided in support of the second statement. There is evidence to the contrary that FD are essentially the same population as VNRDs but solicited for blood donation in different circumstances and constituted of donors of different age groups with little overlap.^[29]

This review suggests strongly that WHO and its “expert” group continues to support their position of VNRD-only by opinions and convictions rather than by incorporating in their analyses and reasoning the multiple layers of new knowledge accumulated in the past 10 years. Dogmatic positions may have serious negative consequences for those who are not operating in affluent countries. Most developing countries that have followed the VNRD-only policy have not reached the commonly defined target of 10U/1000 inhabitants,^[28,54] even when massively supported by external funding (Ala *et al.*, 2012). Such target may have been reached if mobilizing FAD had been philosophically and pragmatically permitted adding, as experienced in Kumasi, Ghana, an extra 20-30% blood donations collected from FD without evidence of compromising blood safety permitted to reach the 10U/1000 target for the past 3 years without external funding.^[30] As suggested, a significant proportion of these FRDs is willing to become repeat donors when specific tools to retain them have been developed.^[29,57] In Brazil, 30% of repeat donors come from the 50% of FD translated into approximately 10% of first-time FD becoming repeat donors.^[58] Further to affecting the blood supply and survival of patients, being inclusive of FRDs would have decreased the cost of transfusion, made it more affordable and, therefore, more sustainable in many resource poor countries.^[3,7]

Conclusions

The conclusion of this short review is that there is no ethical or safety reason to exclude FAD from participating in the blood supply. The motivations of FRDs are no more and no less altruistic than their VNRD counterpart, except that it appears stronger when someone known is the target or the trigger of blood donation.^[19] These considerations totally justify the position adopted in South America, particularly in Brazil, where first-time VNRD and FRD are included in the same category of voluntary, nonremunerated donors, clearly separated from paid donors.^[59] Many elements assembled in the past few years point clearly to an absence of epidemiological and social difference between first-time VNRD and FAD. Once blood collection obtained by moral coercion resulting of blood shortage as seen in several SSA countries is excluded, all ethical requirements formulated by ISBT or WHO are met by FAD. This inclusion should not be considered as going backward but as going forward in light of old data being scientifically scrutinized or of new, convincing evidence.

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