A social justice perspective on access to human rabies vaccines

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driven ‘Global Strategic Plan’ to achieve zero human deaths from Rabies Control (GARC) came together to launch a country-based initiative. The role of PEP provision is essential for the elimination of canine rabies, but here we focus on the underserved populations where dog vaccination is rare [2]. Follow-up to a rabid dog bite, prompt post-exposure prophylaxis (PEP) is the only way to ensure the invariably fatal onset of rabies is prevented [3]. Modelling suggests that without scaled up dog vaccination and current PEP access, over 1 million people will die of dog-mediated rabies by 2035 [4]. Mass dog vaccination is essential for the elimination of canine rabies, but here we address the role of PEP provision.

In June 2018, the World Health Organization (WHO), the World Organisation for Animal Health (OIE), the Food and Agriculture Organization of the United Nations (FAO) and the Global Alliance for Rabies Control (GARC) came together to launch a country-driven ‘Global Strategic Plan’ to achieve zero human deaths from dog-mediated rabies by 2030 [5]. This was recently given a massive boost when Gavi, the Vaccine Alliance, announced their decision to invest in human rabies vaccines for PEP [6]. While nation states are key to rabies elimination, the importance of Gavi’s role cannot be underestimated. Unlike any other global or state actor, Gavi can directly address an otherwise intractable market failure in the inadequate supply of rabies PEP. In this commentary, we employ the Capabilities Approach to identify the barriers to PEP access that lead to this market failure and, as a result, unnecessary deaths and suffering. We show the role that Gavi can play in reducing exposure of PEP supply to market forces as a matter of social justice, and hence redress the inequity underlying human rabies deaths.

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concern for middle and high income countries. The Capabilities Approach is a normative theory of social justice that places a fundamental value on health and equity and advocates a fairer distribution of health capabilities. Traditional health policy making in contrast is largely dominated by a utilitarian approach, advocating social arrangements to maximise aggregate utility without directly taking account of distributional concerns [9]. This justifies large inequalities if an improvement in aggregate welfare is the end result [10]. This is the reason why rabies deaths occur mostly in LMICs and in the poorest communities even though these deaths are preventable through timely access to PEP. The Capabilities Approach provides a framework for including factors affecting an individual’s ability to access PEP in multiple and diverse contexts. In addition to the availability of PEP, it takes into account structural factors such as socioeconomic status, access to education, ability to travel or geographical location, country infrastructure, and other aspects of service provision that may have a role. In this way, the Capabilities Approach reveals the mechanisms by which inequity and injustice is manifested, which we outline below for PEP access to prevent human rabies.

Deep-rooted structural barriers across individual, national and global scales underpin the problem of limited PEP access. Strategies advocated by the World Bank, such as structural adjustment programmes and the introduction of user charges have widened health inequalities and inadvertently weakened service provision [11]. Bite victims in many LMICs face out-of-pocket costs of at least $10 per vaccine dose [12], and oftentimes over $100 for a multi-dose course [13]; costs that are prohibitive for poor households. Health insurance schemes attempt to mitigate these costs, but only a small fraction of LMIC citizens have effective health insurance [14]. Moreover, these costs are compounded by travel; vaccines are usually only available in urban centres and in some countries only capital cities [12,13,15–19].

The lack of proper organization is also a key issue. Many LMICs still lack a national rabies programme [19]. At the same time, policies of decentralization have led many countries to devolve cost recovery responsibilities to local authorities. Much healthcare priority setting at the subnational level is often ad hoc [20]. Local budgets are usually allocated to cheaper medicines at the expense of less frequently used but, in the case of rabies, life-saving vaccines [12]. Thus without adequate PEP pre-financing (or aligned cost recovery), bite victims are either deferred to central hospitals for forecasting, procuring, distributing and monitoring rabies vaccines are mostly non-existent, inconsistent, and unresponsive lines. Gavi investment has strengthened health systems and transparency supply chains for many vaccines, whereas systems for forecasting, procuring, distributing and monitoring rabies vaccines are mostly non-existent, inconsistent, and unresponsive [12,16,19]. Strengthened health systems improves equity and access to healthcare, and contributes towards long-term sustainable development. Bite victims will be able to overcome structural barriers to PEP access and fulfill their capability to health through avoidance of death from rabies.

The case for Gavi investment from a utilitarian cost-effectiveness perspective has been made elsewhere [4]. Using the Capabilities Approach, we make a normative argument by showing how the status quo of PEP supply is an unjust one. We have shown how those most at risk and in most need of rabies vaccines, face structural barriers which constrain their capabilities to a good health free from rabies. These barriers have also constrained their agency and political voice to advocate for change. Until recently, no powerful actors have led on policy change that could facilitate improved PEP access. Indeed, neither governments nor pharmaceuticals are incentivized to drive this change under current market forces. To overcome this persistent market failure in LMICs, Gavi’s investment could bring health system benefits such as increased capacity for surveillance of human rabies exposures, deaths and accountable use of PEP that has been neglected for rabies. It also should create a translational opportunity for training healthcare workers to implement the new guidelines. Gavi investment has strengthened health systems and transparent supply chains for many vaccines, whereas systems for forecasting, procuring, distributing and monitoring rabies vaccines are mostly non-existent, inconsistent, and unresponsive [12,16,19].

Making PEP free at point of care, as routine vaccines are, would immediately circumvent financial constraints on individuals and governments, and also reassure vaccine suppliers operating in LMICs. Beyond this, Gavi’s investment could bring health system benefits such as increased capacity for surveillance of human rabies exposures, deaths and accountable use of PEP that has been neglected for rabies. It also should create a translational opportunity for training healthcare workers to implement the new guidelines. Gavi investment has strengthened health systems and transparent supply chains for many vaccines, whereas systems for forecasting, procuring, distributing and monitoring rabies vaccines are mostly non-existent, inconsistent, and unresponsive [12,16,19].

The latest WHO position on rabies creates an opportunity for harmonisation and global action [3]. The WHO now recommends a new dose sparing abridged intradermal regimen that uses just 0.6 mL of vaccine per course (less than all other regimens). It is completed in just one week [24]. Policies have been aligned to improve access to PEP [3]. The economic case is clear; adoption of WHO policies would be cost equivalent to the status quo [4]. Indeed current vaccine production could meet projected demand, reaching millions more people, through a switch to the recommended abridged intradermal regimen. But for social justice to be achieved and the WHO position to be realized, market shaping is required to overcome structural barriers and facilitate improved health seeking and adherence that would save many lives [4].

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While we recognise that the impact of global health initiatives play out in highly complex local realities, Gavi’s investment now potentially transforms a source of structural inequity in rabies...
prevention into an example of global health policy making that harnesses the potential that the SDGs offer [25] - an intervention that addresses both upstream and downstream causes of ill health. Improved PEP access should allow countries to redistribute resources within the health system. Moreover, drawing upon a collaborative One Health approach [26], we foresee more countries effectively leveraging on existing knowledge, tools and technology that others have already shown to be effective for rabies elimination [5]. This ought to catalyze mass dog vaccination programmes to eliminate rabies from source populations - the most equitable of solutions.

Declarations of interest

None.

Funding acknowledgements

KH and STM are supported by the Wellcome Trust (207569/Z/17/Z and 110330/Z/15/Z).

References

[1] Lankester F, Hampson K, Lembo T, Palmer G, Taylor L, Cleaveland S. Implementing Pasteur’s vision for rabies elimination. Science 2014;345:1562–4.
[2] Hampson K, Coudeville L, Lembo T, Sambo M, Kieffer A, Attlan M, et al. Estimating the global burden of endemic canine rabies. PLoS Negl Trop Dis 2015;9:e0003786.
[3] WHO. Rabies vaccines and immunoglobulins: WHO position. Wkly Epidemiol Rec 2018;16:201–20.
[4] WHO rabies modeling consortium. The potential impact of improved provision of rabies post-exposure prophylaxis in Gavi-eligible countries: a modelling study. Lancet Infect Dis 2018;18:30512–7.
[5] WHO, FAO, OIE, GARC. Zero by 30: The global strategic plan to end human deaths from dog-mediated rabies by 2030; 2018 <http://www.who.int/rabies/United_Against_Rabies/en/>.
[6] Gavi – the Vaccine Alliance. Gavi Board starts framing Alliance’s approach to 2021–2025 period. 2018 <https://www.gavi.org/library/news/press-releases/2018/gavi-board-starts-framing-alliance-s-approach-to-21-25-period/>.
[7] Sen A. Capability and wellbeing. In: Nussbaum M, Sen A, editors. The Quality of Life. Oxford: Clarendon Press; 1993. p. 30–53.
[8] Sen A. Equality of what? In: McMurrin S, editor. The Tanner Lectures on Human Values. Salt Lake City: University of Utah Press; 1980. p. 196–220.
[9] Alkire S, Chen L. Global health and moral values. Lancet 2004;364:1069–74.
[10] Ruger JP. Health and social justice. Oxford: Oxford University Press; 2009.
[11] Tichener M, Sridhar D. Universal health coverage, health systems strengthening, and the World Bank. BMJ 2017;358.
[12] Changalucha J, Steenson R, Grieve E, Cleaveland S, Lembo T, Lushasi K, et al. The need to improve access to rabies post-exposure vaccines: lessons from Tanzania. Vaccine 2019;37(51):A45–53.
[13] Mindekem R, Lechenne MS, Naissegar KS, Oussiguere A, Kebkiba B, Moto DD, et al. Description and comparative cost efficiency of post-exposure prophylaxis and canine mass vaccination against rabies in N'Djamena, Chad. Front Vet Sci 2017;4:38–.
[14] Acharya AK, Vellakkal S, Taylor F, Massett E, Satija A, Burke M, et al. The impact of health insurance schemes for the informal sector in low- and middle-income countries: a systematic review. World Bank Res Observ 2013.
[15] Rajeev M, Edosoa G, Hanitrinaina C, Admirandimby SF, Guis H, Ramiaadrasoa R et al. Healthcare utilization, provisioning of post-exposure prophylaxis, and estimation of human rabies burden in Madagascar. Vaccine 2018;35264-410X (18)31520-2.
[16] Wambura G, Mwatondo A, Mathew M, Nsimiyu C, Wentworth D, Hampson K, et al. Rabies vaccine and immunoglobulin supply and logistics: challenges and opportunities for rabies elimination in Kenya. Vaccine 2019;37(51):A28–34.
[17] Ly S, Bucy P, Heng NY, Ong S, Chhor N, Bourhy H, et al. Rabies situation in Cambodia. PLoS Negl Trop Dis 2015;9(12):e0005697.
[18] Li AJ, Sreenivasan N, Siddiqui UR, Tahmina S, Ponnor K, Sovann L, et al. Descriptive assessment of rabies post-exposure prophylaxis procurement, distribution, monitoring, and reporting in four Asian countries: Bangladesh, Bhutan, Cambodia, and Sri Lanka. 2018–2017. Vaccine 2019;37(51):A14–9.
[19] Wathanka D, Tsofa B, Barasa E. Evaluating healthcare priority setting at the meso level: a thematic review of empirical literature. Wellcome Open Res 2018;3:2.
[20] Hampson K, Abela-Ridder B, Bharti OK, Knopf L, Lechenne M, Mindekorn R, et al. Modelling to inform prophylaxis regimens to prevent human rabies. Vaccine 2019;37(51):A166–73.
[21] Warrell MJ, Warrell DA, Suntharasamai P, Viravan C, Sinhaseni A, Udomsakdi D, et al. An economical regimes of human diploid cell strain anti-rabies vaccine for post-exposure prophylaxis. Lancet 1983;2:301–4.
[22] Robeyns I. The capability approach: a theoretical survey. J Human Dev Research 2018;3:2.
[23] Waithaka D, Tsofa B, Barasa E. Evaluating healthcare priority setting at the meso level: a thematic review of empirical literature. Wellcome Open Res 2018;3:2.
[24] Dye C. Expanded health systems for sustainable development. Science 2018;358:1337–9.
[25] Cleaveland S, Sharp J, Abela-Ridder B, Allen K, Buza J, Crump J, et al. One health contributions towards more effective and equitable approaches to health in low- and middle-income countries. Philos Trans Roy Soc B-Biol Sci 2017.