

SUPPLEMENTARY MATERIALS

Supplementary Material 1. Search strategy for the meta-narrative review

MEDLINE

1	exp COVID-19/
2	(2019 Novel Coronavirus Disease or 2019 Novel Coronavirus Infection or 2019-nCoV Disease or 2019-nCoV Infection or COVID-19 Pandemic* or COVID-19 Virus Disease or COVID-19 Virus Infection or COVID19 or Coronavirus Disease 2019 or Coronavirus Disease-19 or SARS Coronavirus 2 Infection or SARS-CoV-2 Infection).ti,ab,tw.
3	1 or 2
4	exp Vaccines/
5	vaccine*.ti,ab,tw.
6	exp Vaccination/
7	immunization, active.mp.
8	4 or 5 or 6 or 7
9	equit*.mp.
10	equal*.mp.
11	access.mp.
12	allocat*.mp.
13	distribut*.mp.
14	rollout.mp.
15	9 or 10 or 11 or 12 or 13 or 14
16	global.mp.
17	international.mp.
18	world.mp.

19	worldwide.mp.
20	16 or 17 or 18 or 19
21	3 and 8 and 15 and 20
22	limit 21 to (english language and yr="2020 - 2021")

Embase

1	exp coronavirus disease 2019/
2	(COVID-19 or 2019 Novel Coronavirus Disease or 2019 Novel Coronavirus Infection or 2019-nCoV Disease or 2019-nCoV Infection or COVID-19 Pandemic* or COVID-19 Virus Disease or COVID-19 Virus Infection or COVID19 or Coronavirus Disease-19 or SARS Coronavirus 2 Infection or SARS-CoV-2 Infection).ti,ab,tw.
3	1 or 2
4	exp vaccine/
5	vaccines.ti,ab,tw.
6	exp vaccination/
7	immuni#ation.mp.
8	4 or 5 or 6 or 7
9	equit*.mp.
10	equal*.mp.
11	access.mp.
12	allocat*.mp.
13	distribut*.mp.
14	rollout.mp.
15	9 or 10 or 11 or 12 or 13 or 14
16	global.mp.

17	international.mp.
18	world.mp.
19	worldwide.mp.
20	16 or 17 or 18 or 19
21	3 and 8 and 15 and 20
22	limit 21 to (english language and yr="2020 - 2021")

CINAHL

TI,AB = (COVID-19 OR 2019 Novel Coronavirus Disease OR 2019 Novel Coronavirus Infection OR 2019-nCoV Disease OR 2019-nCoV Infection OR COVID-19 Pandemic* OR COVID-19 Virus Disease OR COVID-19 Virus Infection OR COVID19 OR Coronavirus Disease 2019 OR Coronavirus Disease-19 OR SARS Coronavirus 2 Infection OR SARS-CoV-2 Infection) AND (vaccin* OR immuni?ation) AND (equit* OR equal* OR access OR allocat* OR distribut* OR rollout) AND (global OR international OR world OR worldwide)
Filters: Year (2020, 2021), Language (English)

Web of Science

TS=((COVID-19 OR 2019 Novel Coronavirus Disease OR 2019 Novel Coronavirus Infection OR 2019-nCoV Disease OR 2019-nCoV Infection OR COVID-19 Pandemic* OR COVID-19 Virus Disease OR COVID-19 Virus Infection OR COVID19 OR Coronavirus Disease 2019 OR Coronavirus Disease-19 OR SARS Coronavirus 2 Infection OR SARS-CoV-2 Infection) AND (vaccin* OR immuni?ation) AND (equit* OR equal* OR access OR allocat* OR distribut* OR rollout) AND (global OR international OR world OR worldwide))
Filters: Year (2020, 2021), Language (English)

Supplementary Material 2: Summary of articles included in the meta-narrative review

First author, Year	Country	Type of publication	Research tradition(s)	Concept of vaccine equity and recommendations on how it can be achieved	Meta-narrative(s)
Pre-introduction of approved COVID-19 vaccines					
Liu, 2020	USA	Perspective/ Opinion/ Commentary	Ethics, Public Health/ Medicine	This article analyses four allocation paradigms: ability to develop or purchase; reciprocity; ability to implement; and distributive justice, and synthesises their ethical considerations to develop an allocation model to fit the COVID-19 pandemic. It aims to stratify countries into groups based on three principles: ability to provide care, ability to implement, reciprocity. Further, it provides an algorithmic scoring system that can be used to balance utilitarian and egalitarian values in country-by-country vaccine allocation.	Frameworks and mechanisms for vaccine allocation
Bollyky, 2020	USA	Perspective/ Opinion/ Commentary	Law	Vaccine equity is considered in the context of global governance. The focus is on the need for a coordinated global plan—for manufacturing capacity, financing, and distribution infrastructure necessary to meet global needs in a fair, public health-driven manner.	Global health law
Ogbogu, 2020	Canada	Perspective/ Opinion/ Commentary	Ethics	The article discusses the concept of vaccine equity through the lens of practical justice. It states that equity lies in the process of development, not in the distribution. The authors assert that to truly achieve vaccine equity, there must be open access to research outputs, equal distribution of benefits and burdens of research, and integration capacity building and access to research resources in biotechnology research projects conducted in developed countries.	Ethics and morality

Emanuel, 2020	USA, UK, Australia, Canada, Netherlands, Ethiopia, Argentina, Norway, Singapore	Perspective/Opinion/Commentary	Ethics, Law, Philosophy, Public Health/Medicine	The focus is on the fair distribution of vaccines across countries. The authors propose the Fair Priority Model, which proceeds in three phases: reducing premature deaths, reducing serious economic and social deprivations, and returning to full functioning. The authors argue for Fair Priority Model to supplement the WHO and COVAX's Proportional Allocation Scheme. Mainly, it advocates prioritising countries that are more severely affected, rather than pure proportional distribution.	Frameworks and mechanisms for vaccine allocation
World Health Organization, 2020	International	Policy document	Public Health/Medicine	This document describes the WHO Secretariat's proposal for the allocation of COVID-19 vaccines among countries, specifically in the context of the COVAX Facility access mechanism. Phase 1 focuses on proportional allocation for all countries. Once 20% of population per country is covered (i.e., Tier 1), Phase 2 of the allocation process will progressively expand access using weighted allocation based on risk assessment.	Frameworks and mechanisms for vaccine allocation
World Health Organization, 2020	International	Policy document	Public Health/Medicine	The framework discusses in detail the allocation of COVID-19 vaccines based on six values principles, the promotion of: human well-being, equal respect, global equity, national equity, reciprocity, and legitimacy. Global equity takes into account the special epidemic risks and needs of all countries and ensures that all countries commit to meeting the needs of people living in countries that cannot secure vaccines for their populations on their own. It specifies the need for special attention to LMICs. It considers COVID-19 vaccines a public good.	Reparative justice, Ethics and morality
National Academies of Sciences, Engineering,	USA	Book chapter	Public Health/Medicine	The concept of vaccine equity is discussed from the perspective of a single country—the USA, in the form of recommendations for the US government. It states the need for the USA to undertake the leadership role in	Frameworks and mechanisms for vaccine allocation

and Medicine, 2020				ensuring equitable vaccine allocation, including collaboration with COVAX and the WHO and sharing 10% of their vaccine supply.	
Gostin, 2020	USA	Perspective/ Opinion/ Commentary	Law	This article explores the global health law reforms necessary to the progressive realisation of universal vaccine access. This will require: facilitating funding and benefit sharing, easing intellectual property protections, and harmonising national vaccine regulations. The article also examines the human rights foundations of global health law, conceptualising vaccination access as a universal human right.	Global health law, Ethics and morality
Garfinkel, 2020	Germany, France	Editorial	Public Health/ Medicine	The article considers vaccine equity in a broad purview, calling for an equitable, epidemiologically informed distribution policy. The authors consider various issues and ultimately call for the need to mitigate between global health, national and commercial interests.	Global health law, Frameworks and mechanisms for vaccine allocation
Lie, 2020	USA, Norway	Perspective/ Opinion/ Commentary	Public Health/ Medicine	This article proposes a middle ground policy concerning COVID-19 vaccine distribution based on two premises: cosmopolitanism and vaccine nationalism. It discusses the Fair Priority Model and the WHO model and their ineffectiveness in the 'real world' due to their disregard for national borders. It argues that the COVAX partnership provides a framework that approximates the right balance between national responsibilities for health and international commitments to global justice.	Vaccine nationalism

Ferguson, 2020	USA	Perspective/ Opinion/ Commentary	Ethics	Vaccine equity is considered with the concept of justice. While many are condemning 'vaccine nationalism' as an obstacle to equitable global distribution, the authors argue that limited national partiality in allocating vaccines will be a component of justice rather than an obstacle to it. A good form of vaccine nationalism prioritises one's own without denying or ignoring duties derived from a principle of equal worth, according to which all persons, regardless of citizenship or identity, equally deserve vaccine-induced protection from COVID-19. The authors call for these competing obligations to be recognised, such that sound ethical frameworks can then be designed for achieving justice in the global distribution of a coronavirus vaccine.	Vaccine nationalism
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Post-introduction of approved COVID-19 vaccines

Herlitz, 2021	Sweden, Israel, USA, UK, Ghana	Editorial	Public Health/ Medicine	The main discussion centres on fair distribution of COVID-19 vaccines. The authors offer three suggestions to strengthen existing proposals for fair vaccine allocation: they should address health problems for individuals, explicitly focus on both direct and indirect health effects of COVID-19, and assist countries with their vaccine distribution, production and consumption.	Frameworks and mechanisms for vaccine allocation
So, 2021	USA	Perspective/ Opinion/ Commentary	Public Health/ Medicine	Vaccine equity is discussed based on the WHO's equitable distribution model which is based on ensuring that COVID-19 vaccine doses are distributed proportional to population, prioritising high-risk groups. Equity is discussed practically—as a facilitator to ending the pandemic. The path to equity comprises 3 pillars that the article discusses in detail: vaccine candidate effectiveness, ensuring financing for healthcare systems, and enabling efficient delivery.	Frameworks and mechanisms for vaccine allocation

Wouters, 2021	UK, USA, Thailand, Singapore	Review	Public Health/ Medicine	This article gives a comprehensive overview of the global rollout of COVID-19 vaccines. Challenges to vaccine production at scale, affordable pricing, and widespread deployment are discussed, with a focus on policy implications. The authors highlight national procurement strategies (i.e., purchasing vaccines directly from developers and not via COVAX, a practice which began with high-income countries) as one of the most significant threats to equitable allocation. Vaccine hesitancy is also discussed.	Frameworks and mechanisms for vaccine allocation
Vanni, 2021	UK	Perspective/ Opinion/ Commentary	Law	The article focuses on intellectual property and 'vaccine imperialism' in the context of COVID-19. The author contends that the development discourse often touted by developed nations to help countries in the Global South 'catch up' is empty when the essential medicines needed to stay alive are deliberately denied and weaponised, and calls for an overhaul of the "dysfunctional global IP system".	Global health law
Šehović, 2021	UK, South Africa	Perspective/ Opinion/ Commentary	Law	This article focuses on global health security. The second and third sections discuss the inequities being perpetuated in the development and distribution of COVID-19 vaccines, and means to address these inequities. Main recommendations include knowledge and technology transfer, as well as advancing the human rights front, including through international human rights law and International Health Regulations (IHR).	Global health law
International AIDS Society–Lancet Commission on Health	USA, Malaysia, South Africa, Jamaica, Lebanon, Switzerland,	Perspective/ Opinion/ Commentary	Ethics, Public Health/ Medicine	Vaccine equity is considered primarily from a human rights approach, based on the right to the highest attainable standard of health. COVID-19 vaccines must be seen as global public goods; a substantial proportion of vaccines manufactured for high-income countries should	Ethics and morality

and Human Rights, 2021	Kenya, UK, Brazil, Russia, Lithuania			be made available to LMICs, concentrating on those vaccines with the best data on effectiveness for all.	
Saksena, 2021	USA	Perspective/Opinion/Commentary	Ethics, Law	The article focuses on prioritising countries in the Global South. It argues against the concept of COVID-19 vaccines as a global public good. It states the need to account for historical inequities and not to follow cost-effectiveness analysis as they rarely include formal considerations of distributional impact and equity. It proposes the idea of setting up quotas for LMICs similar to the national allocation framework proposed by the National Academies of Sciences, Engineering and Medicine in the USA, which recommends the prioritisation of racial minorities. The article also highlights the need to act against artificial scarcity created by patent monopolies to reach a truly global access to vaccines.	Reparative justice
Katz, 2021	USA, England, South Africa	Perspective/Opinion/Commentary	Public Health/Medicine	Global vaccine equity is not explicitly described in the article but is assumed as equal distribution based on the percentage of vaccines allocated to different countries. The article considers striving for vaccine equity as a moral obligation and a practical goal for ending the pandemic. It recommends investing in multilateral partnerships with a shared commitment to develop a global allocation strategy.	Vaccine nationalism, Ethics and morality

Sharma, 2021	USA	Perspective/ Opinion/ Commentary	Public Health/ Medicine	The article discusses vaccine equity from the point of morality and practicality (political feasibility), comparing two different models—the WHO allocation framework versus targeted distribution. A fair vaccine allocation mechanism for COVAX would involve distributing doses to those in greatest need, given that this would do most to reduce harm and minimise disparities; a targeted distribution in proportion to a country's need would be morally correct but in practice would not avert the highest number of deaths taking into account political feasibility. The article further discusses different angles to equitable distribution and attempts to differentiate between equitable and equal distribution.	Frameworks and mechanisms for vaccine allocation, Ethics and morality
United Nations Committee on Economic, Social and Cultural Rights, 2021	International	Policy document	Public Health/ Medicine	The document discusses vaccine equity in view of the UN Sustainability Goals and human rights. It states the international obligation to ensure other states receive vaccines due to their inability to produce them and openly criticises vaccine nationalism. It intends to set guidance for managing the private entities rights with the States' obligations to strive for global public health. It urges States to maximise the production and equitable deployment of vaccines using the flexibility of TRIPS agreements internally as well as voluntary licensing, technology pools, and waivers.	Global health law
Binagwaho, 2021	Rwanda, USA	Editorial	Ethics, Public Health/ Medicine	The issue of vaccine equity is considered from a more practical viewpoint, particularly in terms of the need for an effective and equitable global distribution mechanism. The authors recommend maintaining commitments to global solidarity through COVAX, sharing of technologies by pharmaceutical companies, and ensuring logistical capacity for mass vaccination.	Frameworks and mechanisms for vaccine allocation

Jecker, 2021	USA, Ghana	Perspective/ Opinion/ Commentary	Ethics, Philosophy	Vaccine equity is discussed through the lens of bioethics. Drawing on the African ethic of <i>ubuntu</i> , the authors elaborate the ideas of syndemic and solidarity and argue that these ideas lend support to global health alliances to distribute vaccines beyond national borders. They emphasise the importance of prioritising LMICs, which have the least ability to obtain vaccines on their own, and people at high risk of infection or of severe disease and death.	Ethics and morality
O'Leary, 2021	Australia, Hong Kong	Editorial	Ethics, Public Health/ Medicine	The concept of vaccine equity is discussed in the view of morality. It gives equal value to all human lives, urging the global community to look back on vaccine nationalism critically. It promotes vaccine cosmopolitanism by stating: "global is local and local is global can be put to practice by social work around the world, by implementing vaccine equity."	Ethics and morality
Bolcato, 2021	Italy	Perspective/ Opinion/ Commentary	Ethics, Law, Public Health/ Medicine	This article analyses, as regards the worldwide distribution of COVID-19 vaccines, the various ways the principle of equity has been construed and applied or even overlooked. The main obstacle to equal access to vaccines is vaccine nationalism. The perception of equity varies with differing reference values adopted. Adequate response to needs appears to be the principal rule for achieving the criterion of equity in line with distributive justice.	Vaccine nationalism
Tandon, 2021	Canada	Perspective/ Opinion/ Commentary	Public Health/ Medicine	The concept of vaccine equity is discussed as an ethical dilemma between vaccine nationalism and vaccine cosmopolitanism. Equity is achieved when the most death and suffering is alleviated. The article further explores the implications of inequity and describes the need for inspection of the reasons that have compelled countries to compete for limited resources in the first place.	Vaccine nationalism

Krikorian, 2021	France, UK	Perspective/ Opinion/ Commentary	Ethics, Law	The authors argue that the current health innovation and access ecosystem is ill-suited to provide equitable access to life-saving medical interventions. The market-based health, pharmaceutical, and medical innovation policies are unable to generate the relevant health technologies and make them available—at an affordable price—to all who need them. Therefore, we need transparent research and development (R&D) and access policies, making the best of public capacities and setting up transparent and fair collaboration with the private sector for the public interest.	Global health law
Sekalala, 2021	England, USA, South Africa, Uganda, Canada	Perspective/ Opinion/ Commentary	Ethics, Law	The concept of vaccine equity is discussed from the side of reparative justice. It states the need for “freeing minds from colonial ideology”, in particular by addressing the ingrained idea that to be colonised was to be inferior. Decolonisation enables critique of positions of power and dominant culture. Equal access to vaccines should not be charitable, it should be achieved through international funding mechanisms and increasing Global South capacity of production. True equality lies in equality of power (not equality of access).	Reparative justice
Asundi, 2021	USA	Perspective/ Opinion/ Commentary	Public Health/ Medicine	The main focus is on inequitable vaccine distribution, with a comprehensive overview of the challenges in vaccine development, manufacturing, and distribution. In this way, the concept of vaccine equity centres on the disparities in global distribution, particularly between high-income countries and LMICs. The first step should be the redistribution of surplus in some high-income countries, while true global vaccine equity will require a long-term, global effort to expand vaccine production capability, facilitate technology transfer, and develop regulatory systems that support vaccine innovation.	Frameworks and mechanisms for vaccine allocation

Jecker, 2021	USA, UK, South Africa, Ghana	Perspective/Opinion/Commentary	Ethics, Philosophy	The article gives an ethical argument for a temporary IP waiver regarding COVID-19 vaccines by responding to the objections. It evaluates two proposals: the India/South Africa proposal and the WTO Director General proposal. It explores the concept of vaccine equity through the lenses of various ideologies including deontology, utilitarianism, and global solidarity.	Ethics and morality
Adejumo, 2021	Nigeria	Perspective/Opinion/Commentary	Ethics, Law	The concept of vaccine equity is explored from the principal of Universal health coverage first advanced by SDGs agenda. It also explores the differences between achieving equal and equitable access to healthcare stating the former is unachievable so far as other inequalities exists in the society. The article also defines equity as a means to eliminate disparities in health between more and less-advantaged social groups occupying different positions in the social hierarchy.	Ethics and morality
Erfani, 2021	USA, Rwanda, Bangladesh	Perspective/Opinion/Commentary	Law, Public Health/Medicine	This article addresses the barriers to vaccine equitable distribution through the perspective of global health law. It refers to the TRIPS agreement exploring what implication would an IP waver have on global COVID-19 vaccine equity. Authors argue that a temporary IP waiver is necessary to advance global herd immunity and equitable distribution. They also criticise the donor-based approach referring to COVAX initiative.	Global health law

Hotez, 2021	USA, UK, Turkey, Saudi Arabia, Germany, Spain, Mali, India, Switzerland, South Korea, Brazil, Jamaica	Review	Ethics, Law, Public Health/ Medicine	The article provides a comprehensive overview of the outstanding issues regarding COVID-19 vaccines and therapeutics. It states that vaccine equity 'aspires to reduce or remove obstacles related to power, social status, income, gender, and race or ethnicity' providing a well-rounded definition of the concept that goes beyond the distribution. The authors address the issues of TRIPS, diplomacy, in tandem with ethics of distribution frameworks.	Global health law, Reparative justice
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Abbreviations: COVAX, COVID-19 Vaccines Global Access; IP, intellectual property; LMICs, low- and middle-income countries; TRIPS, Trade-Related Aspects of Intellectual Property Rights; SDGs, Sustainable Development Goals; WHO, World Health Organization.