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The moral importance of selecting people randomly

ABSTRACT

This article discusses some ethical principles for distributing pandemic influenza vaccine and other indivisible goods. I argue that a number of principles for distributing pandemic influenza vaccine recently adopted by several national governments are morally unacceptable because they put too much emphasis on utilitarian considerations, such as the ability of the individual to contribute to society. Instead, it would be better to distribute vaccine by setting up a lottery. The argument for this view is based on a purely consequentialist account of morality; i.e. an action is right if and only if its outcome is optimal. However, unlike utilitarians I do not believe that alternatives should be ranked strictly according to the amount of happiness or preference satisfaction they bring about. Even a mere chance to get some vaccine matters morally, even if it is never realised.

Dr Martin Peterson
Department of History and Philosophy of Science
University of Cambridge
Free School Lane
Cambridge, CB2 3RH
UK

Email: mbp24@cam.ac.uk
Tel: 01223 762868   Mobile: 07946 935173
http://www.hps.cam.ac.uk/dept/peterson.html

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1 Introduction

In recent years there has been some serious concern about the possible effects of an influenza pandemic. In nearly all developed countries governments have worked out contingency plans, which will be put into effect if or when a pandemic breaks out. Nearly all contingency plans include principles for vaccine distribution. During a pandemic demand for vaccine will no doubt exceed supply, and therefore some ethical principles have to be adopted for deciding who ought to get the vaccine first and why.[1]

None of the contingency plans currently implemented by western democratic governments recognize that all citizens have equal rights to vaccine.[2] On the contrary, the contingency plans based on the framework proposed by the World Health Organization (WHO) make the utilitarian point that some people are more important than others, in an instrumental sense. For example, the national plans developed by the relevant authorities in Australia, Canada, the US, and the UK explicitly state that people involved in vaccine production, and those working in hospitals, should be given priority, as that would minimise the total number of people killed. Other prioritised groups include government officials and patients suffering from medical conditions making them more vulnerable to the influenza, as well as pregnant women and the elderly. Healthy, middle aged, non-pregnant people will get the vaccine last.

This article argues that the policy for prioritizing people derived from WHO's recommendations is morally wrong and that it would be better to distribute the vaccine by setting up a lottery. To distribute the vaccine in a lottery would be better, no matter whether a higher total amount of utility could be obtained by distributing the vaccine in some other way. This is a controversial thesis, since it is incompatible with the current policy on pandemic influenza in many countries, as well as with the utilitarian dictum that one ought to bring about the greatest happiness to the greatest number. In this article the term utilitarianism refers to any ethical position that urges us to maximize overall wellbeing, health or happiness in society. Consequentialism is a more general term that includes every position that evaluates acts solely according to their consequences. Note that utilitarianism is a special version of consequentialism.

Arguably, the most obvious argument for distributing vaccine by setting up a lottery is that all humans have equal rights and that it follows from this that they should be granted equal

[1] Throughout this article I assume that the benefits of a novel influenza vaccine will outweigh the risks. This has not always been the case in the past, but it is a reasonable assumption to make when discussing contingency planning.
[2] This claim is based on a survey of the existing contingency plans, presented in Section 2.

chances of being saved. However, the appeal to equal rights would not convince the consequentialist, because for them the notion of rights is of no fundamental ethical importance. Hence, since the argument for *not* granting everyone equal chances is consequentialist, a forceful argument *for* granting everyone equal chances ought to be compatible this ethical framework. Otherwise we will just end up in a fruitless dispute over the truth of consequentialism. For this reason, I will limit the discussion to how consequentialists ought to reason about pandemic influenza and vaccine. More precisely put, I shall outline a consequentialist argument for granting all citizens equal chances, which is based on the moral intuition that one ought to bring about the best possible consequences. The key idea is to define "best possible consequence" in a novel way, which differs from the definition endorsed by utilitarians. Briefly put, I argue that the moral value of a consequence cannot be equated with the actual wellbeing it brings about; even mere chances matter, and the best distribution of chances is an equal distribution.[3]

Section 2 gives an overview of the existing contingency plans for influenza pandemic. In Section 3 the argument for distributing chances equally is detailed, and in Sections 4 and 5 this argument is compared to and modified in accordance with other arguments proposed in the literature.

2 Overview of existing contingency plans

According to the WHO the worldwide production capacity for influenza vaccine covers less than 5% of the world's population.[4] The WHO argues that because of this fact, "priorities for vaccination need to be established prior to a pandemic."[5] The WHO points out that each country is responsible for working out its own priorities, but as a general recommendation the organisation claims that, "When setting goals, it may … be useful to identify population subsets, such as medical personnel, emergency responders, and leaders, who require priority protection because of their roles during the pandemic response."[6] The organization never explains why medical personnel, emergency responders, and leaders should be given priority protection.

[3] For an alternative consequentialist analysis, see Emmanuel and Wertheimer (2006). Very briefly put, they argue that, "each person should have an opportunity to live through all the stages of life" (2006:854). As will become clear later on, their proposal is not inconsistent with mine, given that one emphasizes the word "opportunity".
[4] WHO (2004: 6).
[5] WHO (2004: 5).
[6] WHO (2004: 4).

However, it seems plausible to assume that they indirectly endorse the utilitarian claim that such a strategy would lead to better overall health or wellbeing than alternative strategies.

The national contingency plans worked out by national authorities around the world have an even more explicit utilitarian profile. In the *Australian Health Management Plan for Pandemic Influenza* it is pointed out that, "the vaccine will be made available first to people at high risk of exposure to the virus *and providing essential services*, then to people most vulnerable to severe illness from infection."[7] The Canadian plan explains that, "the prioritization process must consider the impact that the vaccine will have on (i) reducing morbidity and mortality … , and (ii) minimizing societal disruption by maintaining the essential services necessary for public health, safety and security."[8] Many contingency plans even go as far as suggesting explicit prioritization groups that will be used when distributing the vaccine. In the Canadian plan the following groups are identified:

THE CANADIAN PLAN

Group 1: Health Care Workers, Public Health Responders and Key Health Decision Makers
Group 2: Pandemic Societal Responders and Key Societal Decision Makers
Group 3: Persons at High Risk of Severe or Fatal Outcomes Following Influenza Infection
Group 4: Healthy Adults
Group 5: Children, 24 Months to 18 Years of Age

The Canadian plan explicitly suggests that the people belonging to Group 2 will include, "key government employees/elected officials (e.g. ministers, mayors)".[9] This appears to be a clear example of a utilitarian principle, and it seems equally clear that it is inconsistent with the thought that everyone ought to be granted an equal chance of getting the vaccine.

In the United States each federal state has been advised to make its own priority list based on some general recommendations published by the US Department of Health and Human Services. These recommendations to a large extend resemble the Canadian ones. However, an interesting feature of the US plan is that it is less utilitarian than other plans in that it stipulates that the contingency plans developed by the federal states, "should also specifically address the

[7] Australian Department of Health and Ageing (2006: section 3.6), my italics.
[8] Public Health Agency of Canada (2006: section 1).
[9] *Ibid.*

delivery of pandemic vaccine to medically underserved and migrant populations to improve equity in access within priority groups and, later, the general population."[10] It seems reasonable to assume that this will lead to an outcome that is suboptimal from a utilitarian point of view. However, as will be argued in the next section, this in fact makes the American plans more attractive from a moral point of view than the Canadian one.

The British contingency plan states that, "The priority in an influenza pandemic is to reduce the impact on public health (i.e. reduce illness and save lives). Interventions will therefore be applied where they will achieve maximum health benefit."[11] Arguably, this consequentialist reasoning, and especially the point about maximisation, could be interpreted as an indirect defence of a utilitarian moral framework. It is hard to reconcile the claim about maximisation with the ideal that everyone ought to be granted equal chances of getting the vaccine. Moreover, based on predictions about the likely consequences of various courses of action the British plan proposes that the population should be divided into seven priority groups. The groups are as follows.

THE BRITISH PLAN

Group 1:	*Healthcare staff with patient contact (including ambulance staff) and staff in residential care homes for the elderly.*
Group 2:	*Providers of essential services e.g. fire, police, security, communications, utilities, undertakers, armed forces.*
Group 3:	*Those with high medical risk e.g. chronic respiratory or heart disease, renal failure, diabetes mellitus or immunosuppression due to disease or treatment, women in the last trimester of pregnancy.*
Group 4:	*All over 65 years of age*
Group 5:	*Selected industries*
Group 6:	*Selected age groups, depending on advice from WHO eg children*
Group 7:	*Offer to all*

[10] US Department of Health and Human Services, (section SS III:B2).
[11] UK Health Departments (2005: section 2).

In Sweden the contingency plan for pandemic influenza has been revised recently.[12] The first edition had a clear utilitarian profile, which emphasised the need to minimise the total consequences for society. However, the revised plan puts more emphasis on the needs of the individual: "The point of departure for priorities within the medical services is that the resources are to be used efficiently and allocated according to need".[13] However, despite this emphasis on needs, the Swedish plan would nevertheless appeal to most utilitarians. This is because the concept of "need" is used in a very broad sense, which seems to be almost equivalent to maximisation of happiness. Another oddity about the Swedish plan is the following claim: "In a situation where there is not enough vaccine or anti-influenza drug to cover everyone, there must be an order of priority."[14] As far as I can judge this claim is incorrect. In a situation in which there is not enough vaccine to cover everyone it would no doubt be *possible* to arrange a lottery. In this lottery, everyone could be granted equal chances. Hence, it is simply false that there *must* be an order of priority.

A final example of the existing contingency plans is that issued by the Ministry of Health in the Republic of Nauru. Nauru is the world's smallest island nation, situated in the Micronesian South Pacific. The country, which gained its independence in 1968, covers 21 square kilometres of land and has about 13.000 inhabitants. According to the Nauru *Emergency Operations Plan for Pandemic Influenza*, vaccine will be distributed according to the following plan.

THE NAURIAN PLAN

Priority level	**Essential services**	**Total Number of Staff**	**Number that should get anti-viral medication if ill (or vaccine if available)**
Highest priority	Doctors	6	6
	Nurses + nurse aides	50	50
	Medical laboratory staff	7	2
Second priority	For use by doctors to treat high risk patients		50
Third priority	President, cabinet, chief secretary	7	7

[12] The plan was revised in November 2006. In March 2006 the author of this article criticized the plan in an article in *Dagens Nyheter*, the biggest Swedish newspaper. It cannot be excluded that there is a causal link between the two events.
[13] The National Board of Health and Welfare (2006: 14).
[14] *Ibid.*

	Police	100	50
	Ambulance drivers	6	3
	Air Nauru	150	37
	Airport		3
	Customs, Immigration	15	2
	Fire brigade	26	12
	Port services	100	30
	Medical quarantine	2	2
	Communication	38	4
	Utilities (water, electricity, fuel)		8
	Total		266

Note that only 50 of the 100 police officers will get the vaccine, and only 3 of the 6 ambulance drivers, and so on and so forth. This raises an important question about how to prioritise *within* each of the prioritised groups: Which 50 out of the 100 police officers should be given vaccine? In an email to the health officials of Nauru I raised this topic.[15] They admitted that they had no precise opinion about how to prioritise within each of the prioritised groups, but they refused my suggestion to set up a lottery – at least one of the Naurian officials explicitly argued that it would be unethical to set up a lottery.

3 An alternative proposal

Having surveyed a number of existing contingency plans and argued that they contain clear traits of utilitarian reasoning, the aim of this section is to present an alternative suggestion for how pandemic influenza vaccine ought to be distributed. As briefly mentioned in Section 1, I believe it would be ethically unacceptable to prioritise some people over others. Instead, I propose that it would be morally better to implement a system in which each nation sets up a lottery that gives all citizens equal chances of surviving a pandemic influenza.

My view does not entail that everyone should be entitled to equal chances of getting *a dose of vaccine*. Some people, such as doctors and nurses, are likely to be more exposed to the virus and should therefore receive a larger number of lottery tickets than, say, university teachers. The concept of herd immunity is also important, as is the fact that infectious diseases

[15] This email correspondence took place in March 2007.

are not spread randomly through the population. I will return to the distinction between *equal chances* and *equal doses* shortly. Meanwhile, I wish to emphasise that my view is based on a purely consequentialist account of morality: An action is right if and only if its outcome is optimal. However, unlike utilitarians I do not believe that alternatives should be ranked strictly according to the amount of happiness or preference satisfaction they bring about. Even a mere chance to get some vaccine matters morally, even if it is never realised. Moreover, the optimal distribution of chances is, ceteris paribus, one of perfect equality.

Why? A possible strategy, not to be pursued here, would be to defend some form of chance-egalitarianism, i.e. to argue that chances ought to be distributed equally because the relative difference (in chances) between people is morally relevant. Note that this can be done without giving up the consequentialist framework. Some egalitarian theories are versions of consequentialism, holding that distributions of goods ought to be ranked according to relative differences rather than according to their sum total.[16] However, if differences among people matter in themselves it follows that the scenario in which everyone is certain to survive is, from a chance-egalitarian point of view, exactly as good as the scenario in which everyone has no chance of getting the vaccine. This is because both scenarios are perfectly equal, i.e. there is no relative difference between the people with respect to chances. Furthermore, chance-egalitarianism famously entails that if a decision-maker is faced with an unequal distribution of chances, she could make things better by "levelling down" the chances of the better off people to the same level as those who are worse off. Since this seems to be morally unacceptable I conclude that chance-egalitarianism is false.

In line with Derek Parfit and others I believe that the so-called priority view gives a better account of the moral value of equality. In the present discussion, the priority view will be interpreted as a claim about the moral value of *chances*, rather than actual wellbeing. I will refer to this view as 'chance-prioritarianism'. Its basic message is simple: The moral value of valuable entities, such as increased chances, is non-linear. To start with, consider a scenario in which my chance of getting a good is increased from .1 to .2 (because a new facility for vaccine production is opened). Also consider a scenario in which my chance of getting the good is increased from .8 to .9. Now, chance-prioritarianism is roughly the view that the moral value gained by increasing

[16] Cf. Parfit 1997.

the chance from .1 to .2 exceeds that of increasing the chance from .8 to .9. Here is a more precise and general definition of chance-prioritarianism:

Chance-prioritarianism: For every good (e.g. life-saving vaccine), the marginal moral value of giving someone an increased chance of getting the good is decreasing.

Chance-prioritarianism logically entails that chances should be distributed equally. In order to see this, consider some arbitrary non-equal distribution of chances. Let p and p' be two arbitrary elements in the distribution of chances such that p is greater than, i.e. p is the probability that one individual will get the good whereas p' is the probability that the other individual will get it. Then suppose that p is decreased just a little bit; it follows from the axioms of the probability calculus that the tiny probability withdrawn from p has to be distributed somewhere else; for simplicity, we add all of it to p'. Then, since the moral value of chances is decreasing it follows that the moral value gained by improving p' outweighs the moral value lost by worsening p. By repeating this procedure over and over again we will eventually reach a point at which p equals p', i.e. at which the chances for both individuals are equal. Since we started from an arbitrary distribution and gained some moral value in each step, and since this procedure can be repeated for any finite number of individuals, it follows that the morally optimal distribution is one in which all individuals are given equal chances of getting the vaccine. (See Peterson and Hansson (2005) for a detailed discussion of prioritarianism.)

Now, if the government has a finite number of doses of vaccine and decide that all doses are to be distributed, the morally best distribution is a lottery in which all individuals have equal chances to survive, given that the total number of people saved will be the same no matter how vaccine is distributed. (The last assumption is a bit unrealistic, as will be further explained in Section 4.) However, as pointed out above, it does not follow that all of us should expect to receive exactly one lottery ticket. Doctors and other people working in hospitals will be more exposed to the virus, so they will need more than one lottery ticket in order to not be more likely to die than the rest of us. One also has to take into account that infectious diseases do not spread randomly in the population. That said, politicians and other key decision makers will not suffer any higher risk than the rest of us, or be any different from a medical point of view, so they should arguably get exactly the same number of tickets as you and me. Of course, exactly how

many extra tickets doctors and others should receive depends on a number of epidemiological considerations, which we shall not investigate here. My point is that the good that ought to be distributed equally is chances of survival, not doses of vaccine.

The chance-prioritarian view is intimately related to a number of views put forward in the modern literature on equality. Somewhat roughly put, the contemporary debate on using lotteries as a criterion for establishing equality can be divided into two, partly separate discussions. The first is concerned with the reasonableness of using lotteries for distributing indivisible goods, such as doses of pandemic influenza vaccine, kidneys, hearts, and other transplant organs. The second part is more general and deals with the overall reasonableness of using lotteries for distributing goods, no matter whether divisible or not.

The underlying structure of the problem with distributing indivisible goods is simply that all members of a certain group would benefit from the good in question, which they need and deserve equally much, but for various reasons the object in question cannot be divided equally among the members of the group. It then seems that setting up a lottery would be a morally acceptable way of distributing the indivisible good; for a defense of this view, see Broome (1990-1991). It should be emphasized that on Broome's view lotteries are not merely tie breakers, i.e. devices that should be used only when two alternatives cannot be distinguished by considering some more fundamental ethical value such as happiness, desert, or need. The claim is rather that the lottery itself has some fundamental ethical value. Hence, even if, say, one out of two patients who both need a new kidney can be expected to live for more years than the other one, that is not sufficient reason for favoring the more viable patient. To favor one person rather than another on such grounds would not be fair. Only a lottery would be fair. On Broome's account, this intuition is justified by making use of the notion of reasons. A reason why a certain principle for distributing indivisible goods ought to be preferred might be that the distribution in question comprises the highest total amount of utility. Another reason why a different principle ought to be preferred from a moral point of view might be that this principle leads to more equality. In this terminology, the claim that chances ought to be distributed equally can be identified with the following thought: The fact that we distribute equal chances, rather than certain goods, is a reason for preferring this principle which, at least sometimes, outweighs competing reasons such as considerations of total utility. I shall return to this idea in my defense of my own view, in the next section.

When it comes to divisible goods it seems trickier to explain why setting up a lottery would be morally better than distributing the good evenly among all the equally needing and deserving members of the group.[17] However, I believe that a kind of decision theoretic reasoning can be employed for justifying lotteries also in this case. Let me briefly outline my argument. The basic idea is that rationality supports the idea of setting up a lottery. From a decision theoretic point of view, it seems that agents should prefer a lottery to any possible set of deterministic criteria, since all members of the group would then be *certain* to receive something that has final value: an equal chance of winning. The underlying intuition is that physical goods (vaccine, kidneys, hearts, etc.) are not the only bearers of value. The mere chance to win a good is also valuable. Hence, since lotteries provides us with such chances, and is indeed *certain* to provide us with it, it is rational to set up a lottery.

The argument from rationality can also be put in a slightly different way. A rational decision maker will prefer a lottery over, say, a strict utilitarian approach, given that he or she is sufficiently risk averse. The point is that if we set up a lottery, the worst outcome will be strictly better than the worst outcome in the utilitarian approach; therefore, the maximin rule will favor a lottery.[18] In the lottery approach each individual is guaranteed an equal chance to pandemic influenza vaccine or a transplant organ, no matter what life-style she adopts. If a strict act utilitarian approach is taken, the worst outcome is that one gets no vaccine or organ when needed. On a utilitarian analysis the vast majority have in fact virtually no chance of receiving e.g. vaccine, simply because the majority does not belong to the prioritized groups.

4 Why a lottery would be better

I take it that my view is by now reasonably clear. So why should we accept it, and what is wrong with the traditional utilitarian view? My defence of chance-prioritarianism is based on a thought-experiment know as the Number Problem, which has received much attention in recent years.[19] The basic structure of the Number Problem is as follows. Imagine that you must either save two people and let one person die, or let two people die and save one. There are no morally relevant differences among the people. What should you do?

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[17] See e.g. Broome (1984, 1989, 2002) and Goodwin (1992).
[18] This argument can of course be dressed up in a Rawlsian terminology. To do that is, however, beyond the scope of this paper.
[19] The *locus classicus* is Taurek (1977). See also Broome (1990-91, 1998) and Hirose (2001, 2004).

Utilitarians maintain that one should always save the greatest number, because this would bring about the greatest amount of wellbeing. This is of course a very simple and straightforward solution, which enjoys significant support among moral philosophers. That said, there are at least two reasons for why a lottery would be better. First, as famously argued by Taurek (1977), the utilitarian solution seems to be unfair.[20] Imagine, for instance, that two cruise ships have struck two separate icebergs and are sinking rapidly. One ship has 1000 passengers, and the other 1001. The captain of a nearby rescue boat has to decide which ship to assist. The rescue boat can only assist one of the two ships. The mere fact that there are more people aboard one of the ships is not sufficient reason for *totally* ignoring those aboard the other ship. Arguably, each person should be granted *some* chance of being rescued; all of us have morally significant interests that ought to be given at least some weight. More precisely put, the *moral difference* between having no chance at all of being saved, and some chance is much more important from a moral point of view that the difference between having, say, a .4 or .5 chance of being saved. This conclusion follows directly from the chance-prioritarian view articulated above.

The second reason for rejecting the utilitarian view in favour of a lottery is that utilitarianism presupposes that moral value can be aggregated interpersonally. For the utilitarian view to make sense, we must be able to somehow compare my level of wellbeing with yours, and then add them together. So far no one has presented a method for how this could be done. Many scholars even think that it is dubious if it *can* be done.[21] A significant advantage of setting up a lottery is that it does not require any interpersonal comparisons of wellbeing. All we need to do is to measure chances of survival. This might of course pose practical problems, but it does not give rise to any theoretical or conceptual problems. We know what a chance is, and how it can be measured. I believe that the simplicity of the chance-prioritarian view is a strong advantage over utilitarianism.

Let us return to the sinking ships and the captain of the rescue boat. Some authors have suggested that the captain should decide which ship to assist by setting up a *weighted* lottery in which the probability that the first group (of m people) is saved is $m/m+n$, and the probability that the second group (of n people) is saved is $n/m+n$.[22] Given that the first ship has 1000

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[20] See also Broome (1990-91, 1998), Hirose (2001, 2004), and Otsuka (2006).
[21] This is a well-known objection against utilitarianism found in most introductory texts on the subject. See e.g. Tannsjo (2002).
[22] Broome (1998).

passengers and the second 1001, the first should thus be assisted with a probability of 1000/2001, which is slightly less than.5. However, in a choice between saving either ten or a million people, the probability is close to 1 that one should save the larger group. (Because 1.000.000 / 1.000.010 is almost 1.) Many people think that this seems to be at least approximately the right conclusion, even though there are other more complex arguments for why one may wish to differentiate the probabilities.[23] Is a weighted lottery compatible with chance-prioritarianism?

Chance-prioritarianism holds that the marginal moral value of chances is decreasing. This implies that chances should be divided equally if the two groups in the Number Problem contain exactly the same number of people. (This is entirely trivial; no one would deny that!) However, if one group contains many more people it might of course hold true that it would be better to save the larger group with a higher probability rather than the small, since the total amount of value realized by doing so would be higher. It is easy to see that a small amount increase in value enjoyed by a million people may outweigh a proportionally larger deterioration for only ten people. This shows that the chance-prioritarian view captures at least some of the intuitions underlying the weighted lottery, even though the two views are not identical, at least not for all shapes of the concave function used for determining the moral value chances. To give a more detailed analysis would require more mathematics than is appropriate here.

Finally, let me close this paper explaining the relation between the academic discussion of the Number Problem for the debate on how to distribute pandemic influenza vaccine. The point I am seeking to make is that the basic moral problem is the same: Whom should we save, and why? Furthermore, many of the solutions to the Number Problem considered here, excluding the utilitarian one, have something in common. The captain of the rescue ship (or the government deciding on a pandemic influenza contingency plan) should not always seek to save the greatest number of people. In some cases it would be morally better to set up a lottery for deciding whom to save. This holds true even if a slightly lower number of people is saved. Moreover, if both groups, i.e. the saved and the dead, are of about the same size, the major solutions to the Number Problem entail that it would be fair to toss a coin about who to save and whom to let die. However, in extreme cases, in which the difference in size between the two groups is very large, it might be necessary to adjust the probabilities, and save the larger group with a higher probability. Note that this follows from internal, theoretical considerations of

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[23] See Peterson (2007).

chance-prioritarianism; it is not an *ad hoc* assumption. Also note that the point about letting chances be equal (stressed in Section 3) presupposed that the two groups are of the same size. In real life, this is not always the case. The point about allowing differentiated probabilities only applies if the groups are not equally large.

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