Ladders and stairs: how the intervention ladder focuses blame on individuals and obscures systemic failings and interventions

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ABSTRACT

Introduced in 2007 by the Nuffield Council on Bioethics, the intervention ladder has become an influential tool in bioethics and public health policy for weighing the justification for interventions and for weighing considerations of intrusiveness and proportionality. However, while such considerations are critical, in its focus on these factors, the ladder overemphasises the role of personal responsibility and the importance of individual behaviour change in public health interventions. Through a study of vaccine hesitancy and vaccine mandates among healthcare workers, this paper investigates how the ladder obscures systemic factors such as the social determinants of health. In overlooking these factors, potentially effective interventions are left off the table and the intervention ladder serves to divert attention away from key issues in public health. This paper, therefore, proposes a replacement for the intervention ladder—the intervention stairway. By broadening the intervention ladder to include systemic factors, the stairway ensures relevant interventions are not neglected merely due to the framing of the issue. Moreover, it more accurately captures factors influencing individual health as well as allocations of responsibility for improving these factors.

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INTRODUCTION

Introduced in 2007 by the Nuffield Council on Bioethics, the intervention ladder has become an influential framework in bioethics and public health policy.[1 2] By ordering potential interventions from least to most intrusive, the ladder seeks to balance the efficacy of interventions with the cost to individual liberty. However, while the ladder serves as a useful tool for evaluating potential interventions, it has unintended side effects. In particular, by focusing on the impacts to individual liberty, the ladder obscures potential interventions that operate on a systemic rather than individual level. That is, interventions whose primary target is not individual behaviour change. For instance, whereas individually targeted interventions may seek to make up for limited healthcare by reducing individuals need for care, systemic interventions may aim at ensuring there are enough healthcare resources to meet demand. To ensure that such systemic considerations are not excluded from consideration, I argue that the ladder needs to be broadened into an intervention stairway.

The intervention ladder

The intervention ladder is designed around the principles of 'proportionality' and 'intrusiveness.' 'Proportionality' holds that the degree of infringement on personal freedoms should not exceed the benefits that the public health intervention is expected to deliver.[3] Through considerations of proportionality, policy-makers seek to avoid an unnecessary breach of personal autonomy and to ensure the justifiability of the intervention. For instance, as secondhand smoke presents significant health risks to non-smokers, it is considered proportionate to restrict smoking in indoor public places.[4] Despite this intervention representing an infringement on smokers' freedoms, these regulations are deemed proportional due to the health benefits gained by reducing exposure to secondhand smoke and by the accessibility of alternative places to smoke.

Closely related to 'proportionality' is 'intrusiveness.' This principle suggests that when several effective interventions are available, the option which infringes least on the liberty of individuals or is the least coercive should be chosen.[3] Through considerations of intrusiveness, policy-makers seek to respect individual liberties while striving to achieve public health goals. Again, smoking provides an example. Banning cigarettes may have public health benefits as smoking contributes significantly to the burden of several diseases.[5] However, such an action would be a significant intrusion on the liberty of smokers and raises serious ethical questions about the limits of state authority. While alternatives are available for smokers, there are also less intrusive strategies for reducing smoking rates such as graphic warning labels on cigarette packaging. These labels have been found to significantly influence smoking behaviour, making individuals less likely to start smoking and more likely to quit.[6] As such, banning smoking in public places is seen as striking a balance between proportionality and intrusiveness, whereas banning smoking outright is not.

As a structured framework for integrating these considerations into policy decisions, the report proposes the 'intervention ladder,' where each higher rung represents a more intrusive intervention. The eight rungs are as follows:

8. Eliminate choice: Regulate in such a way as to entirely eliminate choice, for example, through compulsory isolation of patients with infectious diseases.
7. Restrict choice: Regulate in such a way as to restrict the options available to people with the aim of protecting them, for example, removing unhealthy ingredients from foods, or unhealthy foods from shops or restaurants.

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6. Guide choice through disincentives: Fiscal and other disincentives can be put in place to influence people not to pursue certain activities, for example, through taxes on cigarettes, or by discouraging the use of cars in inner cities through charging schemes or limitations of parking spaces.
5. Guide choices through incentives: Regulations can be offered that guide choices by fiscal and other incentives, for example, offering tax breaks for the purchase of bicycles that are used as a means of travelling to work.
4. Guide choices through changing the default policy: For example, in a restaurant, instead of providing chips as a standard side dish (with healthier options available), menus could be changed to provide a more healthy option as standard (with chips as an option available).
3. Enable choice: Enable individuals to change their behaviours, for example, by offering participation in a National Health Service 'stop smoking' programme, building cycle lanes or providing free fruit in schools.
2. Provide information: Inform and educate the public, for example, as part of campaigns to encourage people to walk more or eat five portions of fruit and vegetables per day.
1. Do nothing or simply monitor the current situation.[3]

As the report states, 'the higher the rung on the ladder at which the policy-maker intervenes, the stronger the justification has to be.'[3] If a lower rung is a proportionate response, that intervention should be implemented, and there is insufficient justification for moving up the ladder.

Elsewhere, the intervention ladder has been criticised for the inability to separate the rungs of the ladder, making it unclear where an intervention falls.[7] Still others have proposed a two-sided intervention ladder that captures how interventions can either enhance or diminish autonomy.[8] While I agree with these criticisms, the ladder remains a useful tool for weighing the justification of an intervention. For instance, depending on how it is characterised and to which healthcare workers it applies, mandating vaccination for healthcare workers could be seen as falling on rung seven or eight. But regardless of where the intervention falls, the ladder makes clear that mandating vaccination is a significantly intrusive policy that requires a high level of justification. Here, I address a different shortcoming of the ladder, the way it and similar approaches in public health policy limits the realm of potential policy considerations through a narrow focus on changing the behaviour of individuals.

Why the ladder is too narrow

The current intervention ladder underscores the ethical considerations surrounding measures that target individual behaviour change and/or impinge on individual liberty to promote health. While imposing smoking bans or enforcing food labelling both target behaviour change, the ladder makes clear how food labelling merely aims at influencing consumer behaviour whereas smoking bans infringe on individual freedom. However, by prioritising individual behaviour as a locus for intervention, the ladder foregrounds personal responsibility for health. This approach downplays the role of systemic factors on health outcomes such as the built environment or access to healthcare.

By systemic interventions, I am referring to interventions that operate on the level of systems rather than individuals and do not target or require individual behaviour change. On this definition, systemic interventions do not seek changes that primarily target the individual themselves or a small circle around them such as when a mother purchases food for her children. Instead, systemic interventions seek to bring about improvements in public health without requiring behaviour change. Such interventions could include cleaning up a polluted source of drinking water, investing in healthcare infrastructure, or investing in early warning systems for disease outbreaks. Of course, many interventions stemming from the ladder could be seen as operating on the level of systems. Rung eight, eliminate choice, could include regulating industry to remove harmful substances from food products. Such an intervention does not require individual behaviour change. However, while they place less of the onus for change on the individual, they centre individual behaviour change as the prime mechanism for improving public health. By eliminating choice, they seek to alter consumer behaviour. As they target individual behaviour change, these sorts of interventions are not considered systemic as defined here.

The ladders narrow focus on individual behaviour change is evident in its emphasis on shaping personal choice. Even at the higher levels, the rungs are presented as guiding choice (rung 6), restricting choice (rung 7) and eliminating choice (rung 8). This focus is also evident throughout the report in statements such as 'personal behaviours can have a significant effect on health, and therefore, a common theme in public health policy is behaviour change.'[3] This statement is, of course, true. Individual behaviours matter a great deal for a persons health and for the population as a whole. However, what is lacking is a discussion of ways in which systemic factors shape the social determinants of health beyond individual behaviour. Perhaps the closest the report comes to this discussion is when it states that:

> The success of public health interventions often depends on more than the cooperation of members of the population. Many different stakeholder groups, including health professionals, the corporate sector, non-governmental organisations (NGOs), institutions of civil society and the media, can have a crucial role to play.[3]

However, even in this discussion, the success being discussed is the success of shaping individual behaviour. When considering the role of media, the report states that 'health and science programmes and features can assist people in forming their views about public health matters' as well as how the media can 'provoke or amplify public concerns by inaccurate, biased or unhelpful portrayal of risks and evidence.'[3] Of course, these statements are also true. But they are far from complete.

Effective health policy requires goal agreement between the individual and systemic levels. In the context of smoking bans, the primary goal at the individual level may be perceived as the inconvenience to smokers, leading to a potential reduction in smoking frequency—a benefit for both the individual and society. However, at a national level, the overarching goal shifts towards minimising public exposure to tobacco smoke, primarily for the collective health benefit. This broader objective is pursued through a multifaceted strategy, encompassing advertising restrictions, taxation and cessation support programmes not all of which impinge on individual freedom.[i]

Nevertheless, goal agreement between systemic and individual levels need not require action on both levels. A systemic intervention, such as cleaning up a polluted area can improve individual health without requiring individual action. Likewise, an intervention targeting individuals, such as a ban on indoor

[i]My thanks to an anonymous editor of this journal for raising the issue of goal agreement.

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smoking, may improve individuals' health without requiring systemic interventions as defined above. Issues arise when individual freedoms are restricted, while paradoxically, certain freedoms are afforded to actors operating on the systemic level. In the case of smoking, this misalignment of goals could be seen if there was a significant mismatch between the restrictions placed on individual smokers without similar burdens being placed on tobacco companies, such as on their ability to advertise. In these cases, the freedoms granted to the companies work directly against the goal of reducing smoking aimed at by the restrictions placed on individuals.

As restricting both smoking and advertising target individual choice and consumer behaviour, they can be captured by the intervention ladder. However, the ladder is much less well suited to for interventions that do not impact individual behaviour. Here, it is also necessary to consider the objectives of public health interventions and the distinction between specific interventions and broader public health strategy. Interventions involve concrete action that target specific groups and outcomes. Banning smoking inside public buildings is an intervention aimed at reducing exposure to secondhand smoke. By contrast, public health strategies involve more high-level objectives such as reducing the health impacts of smoking. Such a strategy would include many interventions. Alongside smoking bans, it could include public health messaging, increasing taxes on tobacco products, etc. When discussing systemic interventions, I am not speaking of broader public health strategies. Rather, I am referring to specific, concrete interventions that must be considered alongside interventions targeting individual behaviour.

While there is overlap between systemic interventions and high-level strategies, it is crucial that systemic interventions not be left off the table when considering potential concrete interventions. Systemic interventions can have profound and direct impacts without requiring behaviour change from individuals. For instance, government implementation of stricter emissions standards have been shown to reduce the prevalence of conditions associated with air pollution such as asthma and heart disease.[9,10] Corporations can have similar impacts. For housing, individuals can only choose between available options. If all options are poor, improving health outcomes in this area is largely outside of the individual's control. By improving insulation, heating and ventilation in residential construction, corporations can demonstrably lower the incidence of health issues linked to substandard housing.[11] Likewise, community organisations can improve health in ways such as fighting food insecurity,[12] providing housing support and increasing equitable access to healthcare services.[13]

These interventions represent only a few ways actors beyond the individual shape health outcomes and how individuals' health can be improved without requiring changes in personal behaviour. By broadening the conception of the intervention ladder, we consider not just the actions of individuals but also structural factors that shape health outcomes and the roles and responsibilities of other actors in shaping these factors. To capture these considerations, I propose we move from an intervention ladder to an intervention stairway.

From ladders to stairs

The policies produced by the intervention ladder target individual behaviour. While perhaps not the image evoked by the original intervention ladder, we can consider some representative individual as the target of this intervention. When this person climbs the ladder there is no room for others. If instead this individual were to climb a stairway, other parties could pass them going up or down without much trouble. This accommodation of multiple parties and the ability to move freely is the goal of moving to the stairway. Alongside our target individual, we make room for systemic actors and interventions that do not impact the individual. This perspective better aligns with a comprehensive understanding of the social determinants of health and provides a more encompassing and nuanced view of ethical considerations in public health policy-making.

Part of this broader framework requires ensuring that all potential interventions are considered and that interventions are not excluded merely by the framing of the issue. Such exclusion of policies can be seen by the framing of the issue of unvaccinated healthcare workers. Vaccinating healthcare workers has significant benefits for their health, patients and healthcare capacity.[14] Unfortunately, vaccine uptake has been less than ideal among healthcare workers, prompting interventions such as vaccine mandates for this group.[15,16] However, what is at stake is not fundamentally vaccine rates among healthcare workers. Rather, what is at stake is protecting patients, healthcare workers and healthcare capacity.

This issue allows for many solutions. Interventions that fit the traditional ladder include mandating vaccination, education about the safety and benefits of vaccination, or reducing barriers to vaccination such as implementing a roaming vaccination cart that comes to healthcare workers while they are on shift. However, the intervention ladder is much harder pressed to accommodate interventions aimed at protecting patients without requiring change on the part of healthcare workers. For instance, the ladder cannot accommodate environmental interventions such as increasing ventilation and air filtration within hospitals—one method of protecting patients by reducing spread. Neither can it accommodate interventions such as ensuring adequate healthcare infrastructure and access to personal protective equipment (PPE). In some circumstances, this second class of interventions will be equally or better suited to targeting the core issue—protecting patients, healthcare workers and healthcare capacity. To ensure such interventions are considered alongside those on the ladder, we must broaden the intervention ladder to accommodate a second class of interventions. That is, we must broaden it into stairs. Without doing so, the solutions are artificially limited to those impacting vaccine uptake among healthcare workers.

This narrow focus can be seen in individual and institutional responses throughout the COVID-19 pandemic. Early in the pandemic, prominent bioethicists called for vaccine mandates for healthcare workers stating that vaccine refusal on the part of healthcare workers was 'unethical and appalling,' and that these healthcare workers were 'putting patients at risk and prolonging the very crisis they have been on the front-line fighting.'[17] While less inflammatory, many bioethicists and public health scholars stated similar positions.[18,19] These calls for mandates were made on the basis public health objectives such as protecting patients and healthcare capacity. While others argued against such measures,[20,21] many governments and healthcare institutions implemented mandates or threatened to do so before backing down over concerns of the impacts of losing unvaccinated healthcare.[22–24] Announcements that the Canadian provinces of Quebec and Ontario were backing down from their proposed mandates sparked outrage among healthcare workers and the public with healthcare workers calling it a 'bad decision,' a decision that 'goes against science,' and that it 'prioritiz(es) the freedom of unvaccinated healthcare workers over the safety of sick patients.'[25]

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When the approached with the intervention ladder, the issue becomes narrowed to considerations of shaping the actions of individual healthcare workers. By broadening the framing to consider systemic interventions, the issue is recast as the best way to protect healthcare workers, patients and healthcare capacity. This move expands the pool of potential interventions and sheds light on the failures of parties to enact interventions on the lower steps of the staircase that, if implemented, may have altered the situation and rendered higher order interventions unnecessary. These lower interventions can have considerable impacts on the outcomes we care about without resulting in coercing or manipulating healthcare workers behaviour. Whether or not they are ultimately the best choice, they should be considered alongside interventions aimed at increasing uptake.

These alternative interventions are captured under the intervention stairway. Along with the original eight steps of the intervention ladder, the stairs include:

8. Regulate industries: This category includes zoning for residential versus industrial use, regulating pollution and the use of certain chemicals, regulating advertising, etc. During COVID-19, interventions could have included closing non-essential businesses, imposing a vaccine-passport, etc.[9 26 27]

7. Increase public health capacity: By ensuring the public has adequate and equitable access to healthcare, many health issues can be ameliorated before they develop into larger issues.[28] Prior to and during COVID-19, interventions in this category could have included hiring more healthcare workers. By doing so, health authorities would have lessened strain on the healthcare system, improved patient to healthcare worker ratios and ensured sufficient capacity so that ill healthcare workers were able to take time off when necessary.

6. Improve public health infrastructure: This encompasses physical infrastructure such as hospitals, water treatment facilities and waste disposal.[29 30] Prior to and during COVID-19, interventions in this category could have included ensuring adequate hospital infrastructure/bed capacity and ensuring adequate stockpiles of PPE, both areas in which there were serious shortcomings during the pandemic.[31] PPE is effective at protecting healthcare workers from infection from COVID-19.[32–36] Interventions could also include upgrading existing infrastructure such as ensuring adequate ventilation within hospitals so as to decrease the spread of airborne infections.[37]

5. Environmental interventions: This includes interventions such as cleaning up polluted waterways, spraying for disease-carrying insects, urban planning to encourage public and active transportation such as cycling, etc.[38–40] During or prior to COVID-19, interventions in this category could include investing in public transit to reduce crowding, thereby reducing spread of diseases. Similarly, improving ventilation in schools or public buildings also helps reduce spread.

4. Incentivise business practices that align with public health goals: This could include subsidies for grocery stores to be established in food deserts, tax breaks on the sale of sustainable products, etc.[41] During COVID-19, interventions such as subsidies for sick days could have encouraged businesses to encourage employees to stay home when sick, thus limiting the spread of COVID-19.

3. Monitor for outbreaks and other public health concerns: Establishing and funding public health monitoring infrastructure can buy authorities time to act prior to a localised incident developing into an outbreak or pandemic.[42] Canada has been widely criticised for the defunding and deprioritisation of its Global Public Health Information Network prior to COVID-19.[43 44] Had the network been at full capacity, Canada and the world more broadly could have had the information necessary to make informed decisions earlier.

2. Fund research and development: Research and development contribute to ensuring tools are in place for addressing public health emergencies before they occur. Prior to the outbreak of COVID-19, this included funding research and development into general vaccine technologies as well as for specific outbreaks that are reasonably foreseeable.[42 45]

1. Ensure adequate funding for public health: Failing to ensure adequate baseline funding for public health would clearly be a failure of government and health institutions.[42 46]

Note that none of these interventions targets improving vaccination rates among healthcare workers. Rather, they target the objectives of protecting patients, healthcare workers and healthcare capacity. We care about vaccination rates among healthcare workers in that vaccinations protect healthcare workers from infection and may reduce transmission to patients. Thus, vaccinating healthcare workers contributes to the objective of ensuring there are enough healthcare workers to care for patients during pandemic-related spikes in cases. Whether directly or indirectly, each of the levels above can target this objective. Through increasing pandemic preparedness, reducing spread of infection to healthcare workers and potential patients, and through ensuring adequate healthcare capacity, each of these interventions can contribute to maintaining appropriate healthcare worker-to-patient ratios.

Note that the approach of the stairway does not conflict with the goals of the intervention ladder presented by the Nuffield report. Core to the intervention ladder is the necessity test, which states that 'if a particular objective can be achieved by more than one means, then the means should be chosen that causes the least intrusion in the lives of the individuals or communities concerned while still achieving adequate effectiveness.'[3] When interventions are successful without requiring individual behaviour change, they are less intrusive than those that restrict or eliminate the choice of individuals. Therefore, when the ladder is broadened into stairs to accommodate systemic interventions or interventions by other parties, the most appropriate intervention will often be the one which does little to interfere in the lives of individuals.

When considering vaccine mandates for healthcare workers, there exist multiple interventions that are less intrusive and potentially more effective than vaccine mandates. Moreover, if some of these interventions were taken prior to the outbreak of COVID-19, it would have reduced strain on the healthcare system, thus reducing the need and justification for mandates. However, as the intervention ladder focuses on individual behaviour change, it obscures these interventions and instead focuses on individual behaviour change.

Of course, once a pandemic is in progress, there may not be time or resources to undertake these actions. During a crisis, it will likely be required to move up the intervention ladder and implement more intrusive interventions. Similarly, it will likely be necessary to cross over and target the individual side of the ladder. In such a situation, mandates may be justified. Nevertheless, mandates for healthcare workers exist higher up the ladder than many alternatives such as mask mandates, vaccine passports and decreasing the spread of infection by increasing ventilation/decreasing crowding in healthcare spaces.

By replacing the intervention ladder with the stairway, it becomes clear that mandates are a last resort and that many

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systemic interventions are both available and less intrusive. With both sides combined, the stairs can be presented as such:

	Systemic	Individual
8	▶ Regulate industries	▶ Eliminate choice
7	▶ Increase public health capacity	▶ Restrict choice
6	▶ Improve public health infrastructure	▶ Guide choice through disincentives
5	▶ Environmental interventions	▶ Guide choice through incentives
4	▶ Incentivise business practices that align with public health goals	▶ Guide choice through the changing of default policy
3	▶ Monitor for outbreaks and other public health concerns	▶ Enable choice
2	▶ Fund research and development	▶ Provide information
1	▶ Ensure adequate funding for public health	▶ Do nothing or simply monitor the situation

Here, it is crucial to note that broadening the intervention ladder also broadens the scope beyond simple considerations of proportionality and intrusiveness. While the stairway is still capable of capturing these factors, including the systemic side of the stairway will inevitably introduce considerations such as resource allocation, cost–benefit calculations, etc. When such factors are considered, there will undoubtedly be cases where more intrusive policies targeting the individual side of the stairway are justified as the less intrusive/systemic intervention would result in an unjust allocation of resources. Still, by folding both sides under a single framework, it ensures that interventions are not left off the table simply because they do not target individual behaviour change.

As has been pointed out by the criticisms of the conventional intervention ladder, it will likely be impossible to assign many interventions to a specific level on stairwell. Moreover, there will inevitably be a cross over between the two sides of the stairs. For instance, building bike lanes fits on step three on the individual side (enabling choice) as well as step five of the systemic side (environmental interventions). Similarly, step four on the systemic side (incentivizing business practices that align with public health goals) will almost inevitibly result in interventions that could be construed as seeking to influence individual behaviour. However, this cross-over is not a flaw in the two-sided design of the stairs. Rather, it highlights the intimate connection between systemic interventions and individual outcomes. Similarly, the order of these interventions is not set in stone and which intervention is deemed more intrusive may differ depending on the circumstances. While increasing capacity may generally be less intrusive than regulating industries, this may not be the case in times of crisis when public funds and available capacity are already stretched to their limits. Still, the stairs provide a rough guide for structuring decision-making in public health and for ensuring that all systemic factors are considered rather than placing the onus of public health on individual behaviour change.

It is also essential to note that the levels on one side of the stairs are not necessarily equivalent to the other. That is, it is not necessary to exhaust level one on both sides before progressing to level two on either. In fact, there may be circumstances that demand progression along only one side of the stairs, leaving the other largely untouched. Still, by considering the two sides together, the stairs ensure that one side is not neglected and that the interventions on both sides are considered, even if they are not implemented. Finally, some may argue that this list is incomplete and that both the new and the conventional side of the stairs are missing important factors. This critique is likely correct. The stairwell as presented here is not intended to capture all relevant interventions or to provide a comprehensive guide for decision-makers. Instead, it is a tool for prompting decision-makers to consider all relevant styles of interventions and to ensure that proportionality and intrusiveness are considered in both the systemic and individual spheres.

While the intervention ladder has been influential in shaping public health policy by emphasising individual behaviour and responsibility, its narrow focus inadvertently overshadows systemic factors crucial to health outcomes. The stairway approach broadens this perspective, integrating systemic considerations, such as social determinants of health, alongside individual interventions. This holistic view not only aligns more closely with the realities of health determinants but also ensures that interventions are not disregarded due to a limited framework. By recognising and addressing both individual and systemic factors, the stairway approach offers a more equitable and effective strategy for health interventions. Moreover, it acknowledges that health outcomes are the product of a complex interplay between individual choices and broader systemic forces. This shift is crucial for developing interventions that are not only effective but also equitable and for addressing the systemic factors that underpin health disparities.

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