LES ATELIERS DE L'ÉTHIQUE

VOLUME 5 NUMÉRO 1
PRINTEMPS/SPRING 2010

LA REVUE DU CREUM

CREUM

CENTRE DE RECHERCHE EN ÉTHIQUE
DE L'UNIVERSITÉ DE MONTRÉAL

UNE REVUE MULTI-DISCIPLINAIRE SUR LES ENJEUX NORMATIFS DES POLITIQUES PUBLIQUES ET DES PRATIQUES SOCIALES.

VOLUME 5 NUMÉRO 1
PRINTEMPS/SPRING 2010

A MULTIDISCIPLINARY JOURNAL ON THE NORMATIVE CHALLENGES OF PUBLIC POLICIES AND SOCIAL PRACTICES.

ISSN 1718-9977

NOTE AUX AUTEURS

Un article doit compter de 10 à 20 pages environ, simple interligne (Times New Roman 12). Les notes doivent être placées en fin de texte. L'article doit inclure un résumé d'au plus 200 mots en français et en anglais. Les articles seront évalués de manière anonyme par deux pairs du comité éditorial.

Les consignes aux auteurs se retrouvent sur le site de la revue (www.creum.umontreal.ca/ateliers). Tout article ne s'y conformant pas sera automatiquement refusé.

GUIDELINES FOR AUTHORS

Papers should be between 10 and 20 pages, single spaced (Times New Roman 12). Notes should be placed at the end of the text. An abstract in English and French of no more than 200 words must be inserted at the beginning of the text. Articles are anonymously peer-reviewed by members of the editorial committee.

Instructions to authors are available on the journal website (www.creum.umontreal.ca/ateliers). Papers not following these will be automatically rejected.

TABLE DES MATIÈRES

3

VOLUME 5 NUMÉRO 1
PRINTEMPS/SPRING 2010

TABLE OF CONTENTS

Article: 119 → 126 Notes: 129 → 130

119

VOLUME 5 NUMÉRO 1
PRINTEMPS/SPRING 2010

ALLERGIES AND ASTHMA: EMPLOYING PRINCIPLES OF SOCIAL JUSTICE AS A GUIDE IN PUBLIC HEALTH POLICY DEVELOPMENT

JASON BEHRMANN
UNIVERSITÉ DE MONTRÉAL

ABSTRACT

The growing epidemic of allergy and allergy-induced asthma poses a significant challenge to population health. This article, written for a target audience of policy-makers in public health, aims to contribute to the development of policies to counter allergy morbidities by demonstrating how principles of social justice can guide public health initiatives in reducing allergy and asthma triggers. Following a discussion of why theories of social justice have utility in analyzing allergy, a step-wise policy assessment protocol formulated on Rawlsian principles of social justice is presented. This protocol can serve as a tool to aid in prioritizing public health initiatives and identifying ethically problematic policies that necessitate reform. Criteria for policy assessment include: 1) whether a tentative public health intervention would provide equal health benefit to a range of allergy and asthma sufferers, 2) whether targeting initiatives towards particular societal groups is merited based on the notion of 'worst-off status' of certain population segments, and 3) whether targeted policies have the potential for stigmatization. The article concludes by analyzing three examples of policies used in reducing allergy and asthma triggers in order to convey the general thought process underlying the use of the assessment protocol, which public health officials could replicate as a guide in actual, region-specific policy development.

RÉSUMÉ

L'épidémie en croissance d'allergie et d'asthme pose un défi important en matière de santé des populations. Cet article a pour but de contribuer au développement de politiques pour contrer la mortalité due à ces maladies en démontrant comment les principes de justice sociale peuvent guider les initiatives en santé publique par la réduction des causes d'allergies et de l'asthme,. À partir des principes Rawlsiens de justice sociale, il devient possible d'élaborer un protocole d'évaluation de ces politiques à l'attention des décideurs en santé publique. Ce protocole peut être utilisé comme un outil dans l'évaluation des priorités d'initiatives en santé publique et dans l'identification de problèmes éthiques de politiques mises en place. Les critères d'évaluation de ces politiques comprennent les points suivants : 1) une intervention spécifique en santé publique doit procurer un bénéfice en santé également répartis dans une population de patients atteints d'allergie ou d'asthme ; 2) si les initiatives ciblent un groupe particulier, ce groupe doit comporter principalement des populations défavorisées, et 3) les politiques ciblées ne doivent pas avoir un effet stigmatisant. L'analyse de trois politiques différentes en charge de lutter contre les déclencheurs des allergies et de l'asthme sera présentée dans le but de tester l'efficacité du protocole introduit dans cette étude.

INTRODUCTION

Throughout the 20th century, the developed world has achieved vast improvements in population health, most notable in the dramatic increase in average life expectancy and decrease in infant mortality. The beginning of the 21st century, however, is seeing mounting evidence of stagnation—and sometimes regression—in previous population health achievements[1], which stem from the increasing prevalence of chronic diseases. The chronic disease of allergy is exemplary; the incidence of allergic sensitivities towards common substances within our environment is now of epidemic proportions and continues to rise.[2]

Endemic allergic sensitivities do not imply a mere increase in the number of people with itchy eyes and runny noses. Rather, this chronic illness produces a multitude of morbidities ranging from irritable disorders such as dermatitis, to disabling conditions that have a high risk for mortality, such as asthma and anaphylaxis (sudden cardiac and respiratory arrest). These morbidities pose a significant challenge to public health. For one, they dramatically lower a person's quality of life;[3] they also result in huge costs for national health care systems in terms of pharmaceutical expenses and hospitalizations due to asthma and anaphylaxis.[4] Of further significance, allergies are a main cause of disability; for example, asthma is the leading source of disability amongst American children.[5] Indeed, there is pressing need for coordinated efforts to counter this escalating source of pathology.

This article aims to contribute to efforts aimed at countering allergy morbidity by demonstrating the utility of incorporating ethical analysis within the development of public health policy. The discussion will centre on adapting Rawlsian principles of 'justice as fairness' – with the aid of work by Daniels, Kennedy, and Kawachi[6] – as a means to identify the strengths and weaknesses inherent in policies aimed at reducing allergy and asthma triggers within the environment. Specifically, I use these principles of social justice as criteria for policy assessment, to help policy makers decide whether a tentative public health intervention would provide equal health benefit to a range of allergy and asthma sufferers, and whether targeting initiatives towards particular societal groups is merited based on the notion of 'worst-off status' of certain population segments. In relation to the latter assessment, a concomitant criterion for evaluation will include analysis of whether a policy may have the negative consequence of stigmatizing the population targeted for the public health intervention.

These principles of social justice will serve as a framework for the design of a step-wise assessment protocol that can aid public health officials in prioritizing policy initiatives. Furthermore, this protocol will also provide a means to identify ethical challenges inherent in some policies, thus signalling the need for specific reforms such as including measures to avoid possible stigmatization. After outlining the assessment protocol, three policies for the reduction of allergy and asthma triggers will serve as examples for assessment. These include policies of reducing air pollution, reducing allergens in automobiles, and reforming food labels to better indicate the presence of food allergens. The aim of this assessment is not to determine which are the ideal policies for reducing allergy morbidity. Rather, this analysis seeks to demonstrate the utility of the general thought process underlying the proposed assessment protocol – that is, one based on *principles of social justice* – which public health officials could replicate as a guide in actual policy development at the regional level.

Before presenting the policy assessment protocol, an overview of the aetiology, treatment, and social determinants of allergy is necessary in order to demonstrate why Rawlsian principles of social justice are relevant within the context of this chronic disease. Furthermore, this overview provides information necessary for the final analysis of example policies for the reduction of allergy and asthma triggers.

AETIOLOGY OF ALLERGY AND ASTHMA

Physiological and biomedical factors of allergy and asthma

Allergy is a chronic disease of the immune system where the body overreacts to common, typically non-pathogenic, substances in the environment, such as pollen, mould, and certain food proteins. Simply stated, immune responses normally target pathogens (i.e. bacteria), where the binding of antibodies induce its elimination and the localized release of histamine. Histamine produces inflammation that prevents further infiltration of the pathogen into the body by causing a reduction in blood flow and swelling. In allergy, the mistaken targeting of benign substances by the immune system results in a surge of

histamine release where the resultant inflammation produces pathological conditions varying from skin rash, respiratory impairment (i.e. asthma), and in some cases, sudden death (i.e. anaphylactic shock). Allergy-induced asthma is a particularly noteworthy pathology in terms of prevalence and physical impairment. Up to 80% of certain allergic populations develop asthma,[7] a burdensome disorder that is one of the leading causes of worker disability,[8] and a major contributor to total population disability levels[9] in industrialized nations.

Many chronic diseases, such as diabetes and arthritis, predominate in middle-aged and elderly populations. Allergy is unusual since it is prevalent across a broad spectrum of the population (i.e. all age groups, both sexes, all socioeconomic classes, and all ethnicities), while young children in particular have the highest incidence of allergic sensitivities. For example, in the United Kingdom—a nation with a particularly high incidence of allergy—39% of children and 30% of adults have been diagnosed with one or more allergic conditions.[10] The reason why *some* individuals develop tolerance to allergens with age is likely associated with the maturation of the immune and digestive systems.[11]

There are three main categories of treatment strategies for allergic sensitivities. The first and most common is pharmacotherapy, which involves the administration of drugs such as antihistamines that attenuate allergy symptoms. Immunotherapy is another strategy, and involves the injection of gradually larger doses of extracts of the problematic allergen, to physiologically induce tolerance in a sensitized patient. Immunotherapy is only available for treating sensitivities where medical extracts for that given allergen exists, and is largely unavailable for the treatment of food allergies due to elevated risks of adverse reactions to food allergen extracts.[12] A final strategy aims to prevent allergic reactions by reducing or eliminating altogether a person's exposure to allergens. An example of an avoidance effort is the removal of carpets from living environments as a means to reduce exposure to dust. Allergen elimination is an extreme form of avoidance commonly employed in situations where no other medical options are available, as is the case with severe food allergies that necessitate the elimination of food allergens from a person's diet.[13]

While certain genetic factors associated with immune function can elevate the risk of developing and severity of allergy and asthma,[14] there is clear evidence that the incidence of allergic sensitivities correlates strongly with social and environmental determinants.

Social determinants of allergy and asthma

There are several hypotheses as to why the developed world, and increasingly the developing world,[15] is witnessing an epidemic of allergy and concomitant asthma. It appears that increased urbanization is associated with a greater incidence of allergic sensitivities.[16] Exactly how urbanism in industrialized societies promotes allergic sensitivities, however, remains poorly understood. Yet evidence suggests that our current 'artificial living habitats'[17]—artificial in the sense that many individuals distance themselves from nature by spending large amounts of time indoors—may encourage the immune system to overreact towards substances common in nature, such as pollen. Further, living within buildings and employing transport vehicles also permits exposure to abnormally high levels of allergenic substances, such as dust mites, a known risk factor for the development of allergy towards dust.[18] Another purported cause of allergy has been termed the 'hygiene hypothesis',[19] where the reduced exposure to infectious agents in our society—due to improved urban sanitation, vaccination, and the use of antibiotics—may interfere with the development of the immune system and promote allergic hypersensitivities.

The incidence of allergy has additional associations with the structuring and organisation of society. For instance, Isolauri and colleagues[20] assessed the incidence of allergy within populations of different birth cohorts born between the years of 1923 to 1990. They observed that while physiological attributes of the immune system remained roughly constant, the incidence of food allergy rose linearly in later cohorts, with one exception. Those people born during and immediately after World War II had a significantly lower incidence of allergic sensitivities. The authors conclude that the mass disruption of society from WWII caused an unusual protective effect from allergic disease.

Another factor in allergy concerns the societal constructs of socioeconomic classes and ethnic minority groups. While allergic sensitivities exist within all ethnicities and social classes, the distribution of pathology is *uneven*. To expand, morbidity from allergic disease follows a steep socioeconomic gradient,[21] exemplified by the fact that hospitalizations for asthma predominate amongst low and middle socioeconomic classes,[22] and that asthma morbidity rates are higher amongst ethnic minorities.[23] It is interesting to note that the socioeconomic gradient in asthma morbidity remains even in nations such

as Canada[24] that provide universal access to comprehensive health care services, thus indicating that unequal access to health services is unlikely to be the cause of these elevated morbidity levels. Additionally, allergic sensitivities are distinct amongst socioeconomic classes, where lower classes often display allergies to environmental allergens associated with factors of socioeconomic deprivation. For example, impoverished inner-city children commonly have sensitivities to cockroaches, rodents, mould, and dust, the root cause of which is living in substandard housing.[25]

The social determinants of allergy and allergy-induced asthma demonstrate an important fact concerning these chronic illnesses. For one, allergy sufferers are a diverse population of various ages and ethnicities. Of greater significance is the fact that certain populations, such as children, ethnic minorities, and members of lower socioeconomic classes are particular vulnerable to allergy and asthma morbidity.

THE PERTINENCE OF SOCIAL JUSTICE IN ASSESSING ALLERGY AND ASTHMA MORBIDITY

Social justice and population health

Justice centres on determining what is 'fair', focussing on philosophical notions of what ought to constitute a rightful distribution of resources, outcomes of deliberations, and the provision of just-deserts (rewards), amongst others. The focal point of deliberations concerning *social* justice concerns philosophical notions of the ideal, just society. There are numerous theories of social justice with varying focal points in assessing what constitutes the fair distribution of societal factors.[26] As a general example (which relates to the subsequent discussion on Rawlsian social justice theory), certain social justice theories aim to define ideals such as the roles social institutions ought to have in ensuring an equitable distribution, amongst societal members, of protections, liberties, resources, and opportunities in achieving one's ambitions in life.

Theories of social justice are relevant in the context of population health, especially since health (defined here as *normal functioning and the absence of pathology*) is essential in providing individuals with the freedom and opportunity to achieve their chosen ambitions or goals in life.[27] Theories of social justice can provide useful tools for defining morally problematic, unequal distributions of health achievements, and arguments for the associated moral responsibility of governments to rectify these inequalities through social reforms. For example, malnutrition may predominate within a defined societal group, thus inhibiting some members of society from achieving their full potential. But is this unjust? If malnutrition is the result of the unequal distribution of resources that is beyond the control of deprived societal members, this situation would arguably be an unjust social arrangement. Furthermore, certain theories of social justice would affirm that social institutions, or societal reform, ought to provide additional protections and resources for this deprived population segment. To conclude, the application of theories of social justice in evaluating population health is a growing field of inquiry,[28] and assessing health inequalities within ethical frameworks of justice provides additional means for identifying morally problematic deficiencies in population health that necessitate policy intervention.

Social justice, allergy, and asthma

The previous discussion of the social determinants of allergy and asthma is a helpful case study with which to explain why public policy reforms based on theories of social justice are relevant within the context of these diseases. The observation that these illnesses predominate in industrialized nations suggest that social structures and the state of living environments are significant determinants of allergic disease. The fact that allergy and asthma have emerged as a recent burden to population health, and continue to increase in prevalence, also confirms that these illnesses are due mainly to socio-environmental factors and not genetic factors that are beyond the remit of social reforms. The observation that sudden disruptions of society, by events such as war, can influence the incidence of allergic disease is of additional interest. For one, it suggests that social reforms, orchestrated by positive means such as public health initiatives, hold promise in significantly countering allergy morbidity.

While allergy and asthma are associated with attributes of a society, can their presence in a population constitute an *injustice*, where theories of social justice would have utility in guiding public health policy development? Current levels of morbidity are arguably an injustice in certain groups of allergy and asthma sufferers. It is unjust that factors beyond the control of an individual, such as being a member of an ethnic minority, place some members of society at an increased risk of allergy and asthma morbidity. The same rationale applies to impoverished children – who obviously have little control

over their living environments – who develop allergic sensitivities because of substandard living conditions.

As a final note, the observation that allergy and asthma morbidity levels follow a socioeconomic *gradient*, where morbidity increases as one moves down the socioeconomic ladder, suggests that differentials in health correlate with the current means by which society allocates resources across the population. Differentials in wealth and divisions amongst social classes are arguably social constructs, constructs that can be changed through policy developments. As an example, policies that encourage a more even distribution of resources between socioeconomic classes could improve the health prospects of many impoverished population segments suffering from allergy and asthma. Overall, morbidity levels amongst lower socioeconomic classes are elevated, unnecessary, avoidable, and thus unjust. Therefore, orienting public health policy towards enacting social reforms is a possible strategy to alleviate a significant proportion of allergy and asthma morbidity.

A POLICY ASSESSMENT PROTOCOL BASED ON RAWLSIAN PRINCIPLES OF SOCIAL JUSTICE

Why Rawlsian principles of social justice?

To quote Amartya Sen,[29] "[b]y far the most influential theory of justice to be presented in this century has been John Rawls's 'justice as fairness'". Indeed, Rawlsian principles of social justice continue to have significant influence in numerous academic fields, including health policy.[30] The policy discussion presented in this article will be yet another example of the continuing applicability of Rawls' philosophical contributions. However, before describing some of the key principles of 'justice as fairness' presented in *A Theory of Justice*,[31] a short explanation is required as to why these particular principles have been chosen.

Rawlsian social justice theory was determined as a relevant framework to analyze allergic disease from observations of its utility in analyzing macro-level population health inequalities. For example, in their chapter in the edited collection *Is Inequality Bad For Our Health ?*,[32] Daniels, Kennedy, and Kawachi analyze differentials in population health measures in terms of life expectancy, both globally and within particular nations. They note the existence in many societies of a socio-economic gradient in life expectancy, where lower classes consistently fair worse in health achievements than higher classes. Subsequently, the authors analyze these inequalities from a social justice perspective where they argue that because such health inequalities are elevated, unnecessary, and avoidable, they constitute an injustice. Daniels and colleagues conclude their paper by formulating tentative policy initiatives, based on Rawlsian principles of social justice, which may be used to counter these health inequalities. They argue for the use of Rawlsian principles as an appropriate framework for the assessment of health inequalities on the basis of the attention that Rawls' theory gives to guaranteeing fair equality of opportunity for all individuals. Opportunities in this context refer to the abilities that individuals have in fulfilling their chosen life course and achievements. Since securing good health would significantly protect the range of opportunities available to individuals, employing principles that aim to provide equality of opportunity are an appropriate guide for health policy development to counter health inequalities. The policy proposals put forward by Daniels and colleagues are grounded on the notion that a more just or even distribution of resources between socio-economic classes would raise the life expectancy of lower income groups. Additionally, they suggest that policies which would provide greater opportunities for members of lower income brackets to improve their socioeconomic status, such as enabling greater access to higher education, could uncouple the social determinants that produce lower life expectancies in these population segments.

The thesis presented by Daniels, Kennedy, and Kawachi has many similarities with the assessment of allergic disease presented in this article. For one, as is the case with life expectancy, a significant degree of allergy morbidity is arguably an injustice since it follows a socio-economic gradient. This suggests that the elevated allergic morbidities in low and middle social classes are unnecessary and likely avoidable if these groups had equivalent opportunities to those of higher social classes. The observation that allergy morbidity is significantly higher amongst visible minorities and the poor indicate that their opportunities are limited by allergic disease. Thus, public health initiatives that aim to provide equality in the opportunity to avoid allergy morbidity between all groups of allergy sufferers is an appropriate framework to guide policy development in minimizing allergic disease. This article, however, will not re-iterate the broader health policy reforms put forth by Daniels and colleagues. Rather, the discussion will focus exclusively on policy proposals implemented at the

regional level in order to reduce environmental allergy and asthma triggers. Therefore, the context here is brought down a notch, so that the application of Rawlsian principles of social justice is implemented as a guide within regional public health policy development for a specific chronic ailment.

Overview of Rawlsian principles of social justice used to formulate a policy assessment protocol

Rawls' theory of social justice centres on the premise of *equality of opportunity*. According to Rawls, an ideal society is one that is organized to be fair and free where all people possess equal basic liberties and equal potential to achieve their defined prospects in life. Discrimination in any form is counterproductive to promoting opportunity, and so social institutions ought to safeguard human rights such that everyone is guaranteed equivalent protections. Two main principles here are of significance to policy development. The first concerns the notion of equality of opportunity. This principle signifies the importance for social institutions to enact policies and social reforms that will provide equal opportunity for benefit to all diverse members of society. In relation to public health, this implies that policies directed towards a disease ought to be formulated upon the goal of ameliorating the health of all individuals afflicted by that given ailment. Recall that allergy sufferers form a diverse group of various ages, ethnicities, and allergic sensitivities. Thus, from a Rawlsian perspective, ethical public health policies would be those that aim to reduce allergy morbidity amongst the broad spectrum of allergy sufferers. Furthermore, promoting equality of opportunity implies that the health needs of certain groups of allergy suffers ought not to be ignored due to influences such as lobbying for health resources by another segment of allergy sufferers.

The second principle concerns protections against discrimination. The ethical imperative for social institutions to protect against discrimination is relevant to public health policy in terms of stigmatization. The incidence of illness within a defined population segment can inadvertently promote the misconceived idea that *all* individuals within this group have the negative attribute of being 'diseased'. Therefore, public health officials need to be sensitive to stigmatization and so have a responsibility to employ methods that minimize this possibility. But public health initiatives themselves may play a role in promoting stigmatization. For example, targeted policies could aim to reduce allergy morbidity amongst impoverished children through educational campaigns in low-income areas that encourage people to remove dust and mould from their homes. This targeted policy carries a risk of stigmatizing those of lower socio-economic status by conveying the idea that they live in 'dirty' conditions. Public health officials thus have a responsibility to enact measures to protect these people from inadvertently acquiring the misconceived label of 'being unclean'.

Now we face a contradiction. How can we justify targeting public health initiatives to a particular group of people (as in the example above concerning impoverished children) when the principle of equality of opportunity requires that policy initiatives ought to provide equal health benefit to all? Rawlsian social justice theory can provide guidance in this situation according to the *difference principle*. As a further requirement of equality of opportunity, Rawls argued that social institutions ought to mitigate the effects of socio-economic inequalities that prevent less fortunate members of society from having equal opportunities in life. This entails implementing policies for directing resources towards those that are 'worst-off'. Overall, Rawls claims that *priority* ought to be directed towards promoting betterment within particularly deprived, vulnerable populations in order to raise their level of opportunity to a level that is achieved by more privileged population members. In other words, social institutions are justified in favouring the distribution of resources towards 'worst-off' population groups in order to decrease differences in opportunities between societal members.

The difference principle thus provides guidance in determining whether targeted public health policies are justified. It would be justifiable to place priority in directing public health initiatives, and thus health benefit, towards a specific population if this group meets criteria of being particularly vulnerable and deprived. The previous example concerning impoverished children would meet such criteria. These children are vulnerable in the sense that they have little control over their health, and their low socio-economic status suggests that they are deprived.

A step-wise assessment protocol for public health policies

I will now present a policy assessment protocol formulated on the previous discussed principles of equality of opportunity, ensuring protections against discrimination, and the difference principle of

favouring the redistribution of resources towards the 'worst-off' members in a population. A summary of the protocol appears in figure 1.

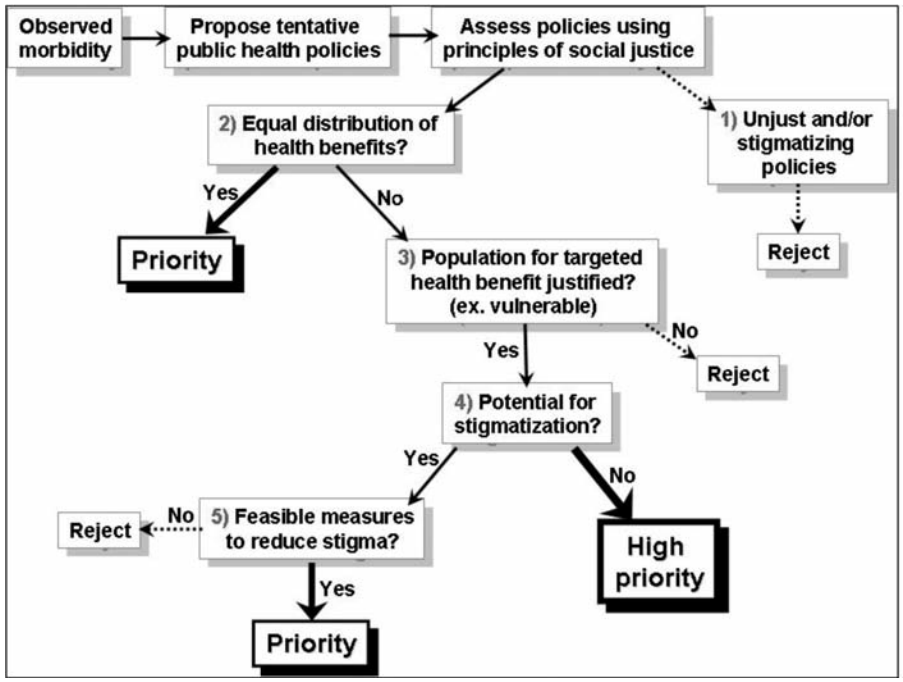

Figure 1: Schematic overview of a policy assessment protocol formulated upon Rawlsian principles of social justice.

Numerous factors influence regional population health, including culture, climate, distribution of wealth, and access to health care. These multiple influences on health signify that regional as well as individual variations in morbidity and mortality are to be expected. Thus, in the context of public health, the beginning of policy development starts with identifying morbidity within regions and population groups. Upon identifying morbidity, preliminary public health policies aimed at countering the root determinants of disease then follow. Of those policies deemed feasible in reducing disease, subsequent evaluations centre on prioritizing policies and determining whether particular policies pose ethical challenges that require specific reforms or protections.

The first step in policy assessment (step 1) centres on determining whether a tentative policy is blatantly unjust and defies the principle of equality of opportunity. These would include policies that carry a high risk for stigmatization, where the efficacy of the policy *requires* that certain groups be associated with a negative label. Another category of unjust policies is those that provide betterment to some to the *adversity* of others, which completely counters the notion of equality of opportunity. A final example of unjust policies includes those that are pushed forward due to unjustified lobbying and pragmatism. All policies meeting such criteria of assessment are ethically unsound and ought to be rejected.

If the tentative policy passes the initial ethical assessment, the subsequent steps aid in determining what general level of priority the policy should have relative to other policies. This is particularly important in situations of resource constraints that permit the limited implementation of public health initiatives. The first priority assessment (step 2) asks whether the proposed policy aims to provide equal health benefit to all members that compose the population requiring the public health intervention. Policies that meet this criterion support the principle of equality of opportunity and should thus receive priority in implementation.

If the policy aims to focus health benefit to a defined sub-group of a population experiencing morbidity, subsequent priority assessments (step 3) ask whether the targeting of resources towards this group is justified. If the targeted population does not possess characteristics of being particularly vulnerable, deprived, and thus 'worst-off', the policy is not justified for it does not support the difference principle. These policies ought to be rejected.

Subsequent assessments (step 4) must focus on reassessing whether if by targeting policy initiatives towards a specific, vulnerable group, the policy initiative may inadvertently stigmatize that population. If there is minimal risk for stigmatization, this policy proposal should receive high priority since it will likely bring health benefits to a 'worst-off' population that is in greatest need of aid. However, if there

is a risk for stigmatization, the final assessment (step 5) should determine whether it is feasible to incorporate within the policy additional protections to minimize or circumvent this problem. There are various methods to minimize harms from stigmatization in public health; which Thompson et al.[33] argue centre on: 1) the need to protect privacy, and 2) the provision of public education to correct misconceptions about disease incidence and to offset misattribution of blame to particular communities (a full detailed description of such mechanisms is beyond the scope of this article). If harm reduction strategies such as these cannot be incorporated within the targeted public health policy, then the policy ought to be rejected.

APPLYING THE PROTOCOL: ASSESSING POLICIES IN THE REDUCTION OF ALLERGY AND ASTHMA TRIGGERS

To recapitulate, avoidance and elimination treatment strategies are common strategies for reducing exposure to environmental allergens and asthma triggers. These treatment strategies require regional reforms in social and environmental factors, and thus fall largely within the jurisdiction of public health policy. Therefore, these strategies will be the focus of the current policy analysis rather than the biomedical-focussed treatment strategies of pharmacotherapy and immunotherapy, which fall more within the jurisdiction of the acute care health system. Analysis of three policies will serve as examples to demonstrate the step-by-step thought process underlying the use of the assessment protocol presented above, which public health officials could replicate as a guide in regional policy development.

Reducing air pollution

Outdoor pollutants—smog, ozone, and sulphur dioxide—negatively affects everyone, yet places a particularly heavy burden on those inflicted with respiratory illnesses like asthma.[34] Of additional consideration is the fact that residential areas located proximal to regions of high air pollution, such as busy highways, are often low cost housing inhabited by low-income earners. Recall that factors of substandard housing and low socio-economic status correlate with elevated asthma morbidity. Overall, health policies aimed at reducing air pollution are potential strategies to reduce asthma triggers. Therefore, feasible policies could centre on decreasing automotive emissions through encouraging public transit and redirecting heavy traffic away from residential areas. How might these policy initiatives fare in terms of assessment by the above protocol?

Reducing air pollution via public transit or the redirection of traffic does not carry an overt risk for stigmatizing a particular group of people. Since the policy focuses on pollution due to traffic congestion, it does not convey a negative label towards asthma sufferers. Furthermore, policies aimed at reducing air pollution do not appear to contradict principles of equality of opportunity. The health benefits that would be achieved by this policy do not depend on denying certain opportunities to other population groups.

Advancing from step 1, the next assessment concerns the distribution of health benefits. This policy appears sound in terms of providing equal health benefit to all asthma sufferers. Yet, it could be argued that this public health intervention would have added benefit to asthma sufferers residing in low-income neighbourhoods since they are often living in regions containing elevated levels of pollution. This is not problematic since providing added benefit to this socio-economically deprived population is justifiable in terms of the difference principle. Overall, this policy should receive priority in implementation.

Normally the assessment process would end here, however this example contains a hidden complication. Asthma is but one of many morbidities that arise from allergic sensitivities. Thus, policies for reducing air pollution will be primarily of benefit to those with allergy-induced asthma and less so for those experiencing other allergy morbidities. Is this justified? Such a policy does nonetheless appear to be justified in light of an aforementioned fact concerning asthma, that is, that asthma is a leading cause of disability, especially amongst children. Therefore, asthma sufferers fit criteria of being a particularly disadvantaged, 'worst-off', segment of allergy sufferers. Upon further analysis, it appears that policies for reducing air pollution should receive high priority in implementation.

Reducing allergens in automobiles

Efforts to minimize exposure to allergens typically focus on living environments. With a general upward trend in commute times, a significant segment of the population is spending an increasing amount of time in their cars, thus making the car somewhat of a 'living environment'. Indeed, one study indicates that car interiors can develop high concentrations of allergens.[35] Therefore, public health

initiatives that reduce the build-up of allergens within automobiles may be an effective means to lower allergy and asthma morbidity.

A tentative public health intervention aimed at reducing allergens within automobiles could involve lobbying car manufacturers to change the structure of automobiles so that they are less likely to collect allergens. For example, upholstered car seats, which are excellent at trapping a variety of allergens such as pet hair, could be redesigned so that they are easier to clean or are impermeable to common allergens. Now we turn to the assessment.

Early steps within the assessment protocol indicate inherent weaknesses in these policy proposals. While there is a small risk of stigmatizing certain allergy sufferers as having poor cleaning habits, this problem could be avoided by incorporating public education campaigns within the policy. For example, the public could be informed that allergen accumulation in cars is primarily due to the ability for car seats to trap allergens rather than poor cleaning habits. The main problems arise at step 2.

Such policies would primarily benefit allergy sufferers that are also vehicle owners. Being a policy that targets a specific sub-population, further analysis should determine whether this is justified. There does not appear to be evidence indicating that this population group is particularly vulnerable or is heavily disadvantaged by elevated levels of morbidity. Furthermore, their ability to own and operate a vehicle suggests that they are less likely to be socio-economically deprived, or at least not amongst the most disadvantaged. Therefore, the reduction of allergens within automobiles should not have priority relative to other initiatives, such as the aforementioned example of reducing air pollution.

This does not mean that this policy is not of any value; the policy assessment simply indicates that public health officials should not be *aggressive* in implementing this policy, especially if it would direct resources away from policies deemed as more ethically sound by the assessment protocol. In situations such as this, public health officials should then assess whether it is possible to implement the policy in a more 'hands-off' manner that would require few resources. For example, merely informing car manufacturers that current car interiors trap allergens may be sufficient in initiating reforms to car interiors.

Reforming food labels to better indicate the presence of food allergens

There are several important issues related to food allergy. First, people with allergic sensitivities to food allergens compose a large segment of the population of allergy sufferers. Second, food sensitivities are more common amongst children than in adults. Of those with food allergy, many experience life-threatening reactions upon exposure to a given food allergen and this is a source for psychological stress and heightened caution surrounding the daily activity of eating.[36] Of particular importance, and as previously noted, there are virtually no biomedical interventions to prevent severe reactions to food allergens, so food allergic individuals must employ strict measures to eliminate the problematic allergen from their diet and environment.

People with food sensitivities therefore rely on ingredient listings on food labels to indicate the presence of allergens. Current regulations concerning food labels, however, are less than ideal. For example, ingredient listings such as 'natural flavours' may not indicate the fact that a food product contains milk products, milk being a common allergen.[37] Therefore, current regulations concerning food labels allow certain common allergens not to be clearly listed on food labels, and this can place food sensitive individuals at unnecessary risk. Thus, a tentative public health initiative could focus on reforming food labels to better indicate the presence of common allergens.

Upon analysis, this tentative policy does not appear to carry risks for stigmatization. A clearer listing of food ingredients (e.g. from 'natural flavours' to 'natural flavours, including milk') would not imply any negative connotations towards food allergic individuals. Nor does this policy appear to counter principles of equal opportunity since reformed food labels would not disadvantage any particular group of the population.

Legislating reforms to food labels is an example of a targeted policy intervention since it will be of exclusive health benefit to food allergic individuals. Therefore, the assessment of this policy advances from step 2 to step 3. Is targeting health benefits to this particular group justified? Such initiatives are justified since food allergic individuals fit criteria of being a particularly disadvantaged group of allergy sufferers.

For one, many food allergic individuals experience elevated morbidity since food allergies commonly induce severe reactions, and food allergies predominate amongst children, a particularly vulnerable population group. Furthermore, unlike other allergic sensitivities, there are virtually no other treatment strategies, such as pharmacotherapy or immunotherapy, for severe food allergies. Therefore, many food allergic individuals could be classified as being particularly restrained, and thus disadvantaged, in their ability to minimize morbidity from their allergic sensitivity. Overall, the following analysis indicates that policies for reforming food labels should receive high priority in implementation.

Summary

The following analysis of initiatives in reducing allergy and asthma triggers aims to highlight a key issue concerning public health policy. For one, it aims to show how ethical analysis can serve as a general guide in determining preliminary strengths and weaknesses inherent in particular health policies. Within the context of allergy and asthma, Rawlsian principles of social justice focus attention on determining if public health interventions are ethically sound in terms of the provision of equal benefit to all allergy sufferers. Rawlsian principles also focus scrutiny on the provision of protections from stigmatization. In addition, these principles provide rational to justify the targeting of health benefits towards particularly disadvantaged groups of allergy sufferers. Overall, the protocol for ethical analysis of policies presented here outlines a systematic thought process useful in priority setting. Relative to the above three examples, ethical analysis indicates that public health officials should place preference towards policies aimed at reforming food labels and reducing air pollution, while reducing allergens in automobiles should receive lower priority. This systematic thought process can be replicated as guide within regional development of various strategies in reducing allergy and asthma triggers, and thus allergy morbidity.

CONCLUSION

The increasing incidence of chronic diseases is raising a fundamental challenge for policy makers seeking to secure population health. This article focuses on the particular health burden caused by allergy and concomitant asthma and proposes tools for public health policy development that will hopefully contribute to countering current morbidity levels originating from these ailments.

This article demonstrates how Rawlsian principles of social justice have utility in formulating an assessment protocol for policies of reducing morbidities associated with environmental allergens. The Rawlsian principles of equality of opportunity, ensuring protections against discrimination, and priority in the redistribution of resources towards the 'worst-off' members in a population have particular relevance in policy analysis. These principles translate into criteria that are directly pertinent for policy assessment. In practice, this means testing public health initiatives to see if they would provide equal benefit to the range of allergy suffers, and whether the targeting of health benefits to a particular group of allergy sufferers is justified. Additionally, analyzing these policies from a social justice perspective provides means to identify early on whether a policy is ethically unsound and requires rejection or reforms, such as including provisions to minimize the harms of stigmatization. Overall, this article demonstrates the utility of applying Rawlsian principles of social justice in regional-level public health policy development.

While the proposed policy assessment protocol was designed specifically within the context of allergic disease, it is possible that it may have utility in guiding policy development for several other pathologies. Namely, this protocol may have utility in guiding public health strategies in countering other chronic illnesses that exist within a wide spectrum of the population that includes segments of particularly vulnerable and deprived peoples.

I would like to thank Catherine Olivier and Bryn Williams-Jones of Université de Montréal for their helpful comments on this article. This research was supported by scholarships from the Université de Montréal (UdeM), the Centre de Recherche en Éthique de l'Université de Montréal (CRÉUM), and Les Fonds de Recherche en Santé du Québec (FRSQ).

NOTES

1 Anand, S. and Peter, F., "Introduction", in Anand, S., Peter, F., and Sen, A. (eds.), *Public health, Ethics, and Equity*, New York, Oxford University Press, 2004., p2

2 Isolauri, E. et al., "The allergy epidemic extends beyond the past few decades", *Clin Exp Allergy,* vol. 34, 2004, p. 1007-1010; Holgate, Stephen T., "The epidemic of allergy and asthma", *Nature,* vol. 402, no. Supp, 1999, p. B2-B4.

3 [Marklund, 2004 #26;Gerth van Wijk, 2002 #5]

4 Gupta, R. et al., "Burden of allergic disease in the UK: secondary analyses of national databases", *Clinical & Experimental Allergy,* vol. 34, no. 4, 2004, p. 520-526, <http://dx.doi.org/10.1111/j.1365-2222.2004.1935.x > accessed; Weiss, C. et al., "Impact of Food Allergies on School Nursing Practice", *J. School Nursing,* vol. 20, 2004, p. 21-31; Weiss, K. B., Gergen, P. J., and Hodgson, T. A., "An economic evaluation of asthma in the United States", *N Engl J Med,* vol. 326, no. 13, 1992, p. 862-866, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi ?cmd=Retrieve&db=PubMed&dopt=Citation &list_uids=1542323 > accessed.

5 Michaud, C. M. et al., "The burden of disease and injury in the United States 1996", *Population Health Metrics,* vol. 4, 2006, p. 11.

6 Daniels, N., Kennedy, B., and Kawachi, I., "Justice is Good for Our Health", in Cohen, J. and Rogers, J. (eds.), *Is Inequality Bad For Our Health ?—New Democracy Forum Series*, Boston, Beacon Press, 2000, p. 99.

7 Capristo, C., Romei, I., and Boner, A. L., "Environmental prevention in atopic eczema dermatitis syndrome (AEDS) and asthma: avoidance of indoor allergens", *Allergy,* vol. 59 Suppl 78, 2004, p. 53-60, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi ?cmd=Retrieve&db= PubMed&dopt=Citation&list_uids=15245359 > accessed.

8 Blanc, P. D. et al., "Asthma, Employment Status, and Disability Amongst Adults Treated by Pulmonary and Allergy Specialists", *Chest,* vol. 109, 1996, p. 688-696.

9 Michaud et al., "The burden of disease and injury in the United States 1996".

10 Gupta et al., "Burden of allergic disease in the UK: secondary analyses of national databases".

11 Sicherer, S. H., "Food allergy", *Lancet,* vol. 360, no. 9334, 2002, p. 701-710, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi ?cmd=Retrieve&db= PubMed&dopt=Citation&list_uids=12241890 > accessed.

12 Nelson, H. S. et al., "Treatment of anaphylactic sensitivity to peanuts by immunotherapy with injections of aqueous peanut extract", *J Allergy Clin Immunol,* vol. 99, 1997, p. 744-751.

13 Sicherer, S. H., "Diagnosis and Management of Childhood Food Allergy", *Curr Probl Pediatr,* vol. 31, 2001, p. 39-57.

14 Zhang, J., Paré, P. D., and Sandford, A. J., "Recent advances in asthma genetics", *Respiratory Research,* vol. 9, 2009, p. 4.

15 Masoli, M. et al., "The global burden of asthma: executive summary of the GINA Dissemination Committee Report", *Allergy,* vol. 59, 2004, p. 469-478; Crane, J. et al., "Asthma and allergy: a worldwide problem of meanings and management ?", *Allergy,* vol. 57, 2002, p. 663-672.

16 Linneberg, A., "Hypothesis: urbanization and the allergy epidemic — a reverse case of immunotherapy ?", *Allergy,* vol. 60, no. 4, 2005, p. 538-539, <http://dx.doi.org/10.1111/j.1398-9995.2005.00721.x > accessed.

17 Maziak, W., "The asthma epidemic and our artificial habitats", *BMC Pulmonary Medicine,* vol. 5, 2005, p. 5.

18 Beck, H. I. and Korsgaard, J., "Atopic dermatitis and house dust mites", *Br J Dermatol,* vol. 120, 1989, p. 245-251.

19 Allen, M., "The Hygiene Hypothesis", *Allergy & Asthma News,* vol. 2, 2005, <http://www.aaia.ca/en/hygiene_hypothesis.htm> accessed.

20 Isolauri et al., "The allergy epidemic extends beyond the past few decades".

21 Almqvist, C., Pershagen, G., and Wickman, M., "Low socioeconomic status as a risk factor for asthma, rhinitis and sensitization at 4 years in a birth cohort", Ibid.vol. 35, no. 5, 2005, p. 612-618, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi ?cmd=Retrieve&db=PubMed &dopt=Citation&list_uids=15898983 > accessed.

22 [, 2008 #1]

23 Foggs, M. B., "Need for better adherence to asthma guidelines in Chicago", *Annals of allergy, asthma & immunology,* vol. 95, 2005, p. 1-3; Michaud et al., "The burden of disease and injury in the United States 1996".

24 [, 2008 #1]

25 Breysse, P. et al., "The relationship between housing and health: children at risk", *Environ Health Perspect,* vol. 112, no. 15, 2004, p. 1583-1588, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi ?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15531446 > accessed; Malveaux, F. J. and Fletcher-Vincent, S. A., "Environmental risk factors of childhood asthma in urban centers", *Environ Health Perspect,* vol. 103 Suppl 6, 1995, p. 59-62, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi ?cmd=Retrieve&db= PubMed&dopt=Citation&list_uids=8549491 > accessed; Busse, P. J., Wang, J. J., and Halm, E. A., "Allergen sensitization evaluation and allergen avoidance education in an inner-city adult cohort with persistent asthma", *J Allergy Clin Immunol,* vol. 116, no. 1, 2005, p. 146-152, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi ?cmd=Retrieve&db= PubMed&dopt=Citation&list_uids=15990788 > accessed.

26 Lamont, J. and Favor, C., "Distributive Justice", (http://plato.stanford.edu /entries/justice-distributive: Stanford Encyclopedia of Philosophy, 2007).

27 Daniels, N., *Just Health: Meeting Health Needs Fairly*, New York, New York, Cambridge University Press, 2008., p29-31

28 Anand, S., Peter, F., and Sen, A. (eds.), *Public Health, Ethics, and Equity*Oxford, Oxford University Press, 2004.

29 Sen, A., *Inequality Reexamined*, Cambridge, Massachusetts Harvard University Press, 1992., p.75

30 Daniels, *Just Health: Meeting Health Needs Fairly*.

31 Rawls, J., *A Theory of Justice* rev edn., Cambridge, Harvard University Press, 1999.

32 Daniels, N., Kennedy, B., and Kawachi, I., “Justice is Good for Our Health”, in Cohen, J. and Rogers, J. (eds.), *Is Inequality Bad For Our Health?—New Democracy Forum Series*, Boston, Beacon Press, 2000, p. 99.
33 Thompson, A. K. et al., “Pandemic influenza preparedness: an ethical framework to guide decision-making”, *BMC Med Ethics,* vol. 7, 2006, p. E12, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=17144926> accessed.
34 Breysse et al., “The relationship between housing and health: children at risk”.
35 Neal, J. S., Arlian, L. G., and Morgan, M. S., “Relationship amongst house-dust mites, Der p1, Fel d1, and Can f1 on clothing and automobile seats with respect to densities in houses”, *Ann Allergy Asthma Immunol,* vol. 88, 2002, p. 410-415.
36 Marklund, B. et al., “Adolescents’ experiences of being food-hypersensitive: a qualitative study”, *BMC Nursing,* vol. 6, 2007, p. 8.
37 Muñoz-Furlong, A., “Daily Coping Strategies for Patients and Their Families”, *Pediatrics,* vol. 111, 2003, p. 1654-1661.