Where are we in the rationing debate?
Improved tools and public participation can inform fair systems

Three linked articles take different perspectives on the need to allocate limited resources for human health fairly. Norheim examines clinical priority setting, which occurs implicitly or explicitly in clinicians’ daily practice. He courageously proposes that clinicians should integrate concern for cost-effectiveness and health inequalities into decisions about clinical priority setting. Donaldson and colleagues argue convincingly that explicit attention to comparative costs and relative values, using methods like programme budgeting and marginal analysis, can allow “genuine” reallocations. Finally, Daniels and Sabin draw on experience using their framework, “accountability for reasonableness,” as a guide for priority setting in three different locations.

The articles (whose full versions are on bmj.com) present valuable arguments, although a few types of methods of resource allocation are missing. While Donaldson and colleagues dismiss incentives as “smoke screens” used to avoid hard decisions, market-like approaches to allocation can be found in almost every system. User fees, privately purchased services or insurance, and competitive bidding comprise just some of the mechanisms that reflect market principles. Donaldson and colleagues correctly point out that allocating health services purely by price ignores the many ways that markets fail to achieve optimal allocation of health care. Important unanswered questions remain, however, about when and if market-style approaches could contribute to fair allocation schemes given the extent to which health services (intensive care beds, physical therapy, acne treatment) vary in necessity, demand, and patients’ sensitivity to price.

Democratic deliberation and public participation contribute to the legitimacy of health spending priorities. These ideas also receive scant mention. Although Daniels and Sabin previously agreed that public participation can be an element of an accountable process, their framework does not require public engagement. Donaldson and colleagues take a dimmer view of public participation, arguing that fair processes run the risk of finding the wrong answers or avoiding tough choices. Norheim, in contrast, argues that the value choices necessitated by priority setting (for example, trade-offs between equity and maximisation of health) “must involve the public through deliberation.” How to involve the public, however, remains a challenge. Thorny questions about representation, procedures, and influence (the extent to which public participation affects decisions) have yet to be settled despite considerable experience in participation.

Global budgeting, which constrains the availability of resources such as operating theatre time or imaging equipment, relies largely on implicit (clinical) rationing. Doctors, particularly in the United States, are reluctant to take on the role of rationing. Yet studies show that doctors can accept that role, that they can ration using clinical criteria (such as severity of illness), and that the public expects doctors to provide leadership in resource allocation policies. Norheim provides ethical reasoning and cogent examples illustrating how doctors can ration prudently and with integrity. He begins by referring to the inevitable nature of clinical priority setting in daily practice but quickly turns to guidelines and other systematic ways to compare alternative spending options for populations rather than individual patients. This turn is natural when the concern is for fairness, impartiality, and justice. Still, clinicians would benefit from clearer guidance about the particular, individual, and inherently partial spending decisions they must make every day.

Important debates about societal priorities for health and healthcare services have been ongoing for decades. What progress have we made? Firstly, as Donaldson and colleagues emphasise, we have enhanced our ability to remove priority and funding from existing services, rather than merely evaluate new spending priorities. Secondly, we can incorporate measures of equity and distribution into decision making. Thirdly, healthcare professionals are starting to grapple with how to ration ethically and equitably, contributing clinical judgment, leadership, and “front line” expertise to create more just and efficient healthcare systems. Fourthly, the turn in focus from total agreement on distributive principles to designing fair processes has infused new energy into the debate. Research that critically examines such processes must continue. Finally, accountability for reasonableness can be used to design and evaluate allocation processes in a variety of settings, using these
and other methods, and perhaps in broader discussions about health inequalities.

Most allocation efforts focus on the distribution of healthcare services, which we assume contribute to better health. Reallocating other types of resource—for example, employment, education, and clean environments would probably contribute more to improving life expectancy and health than reallocating health services. A broader view of justice should include social conditions that influence health.\textsuperscript{13,15} No allocation of resources, no matter how just, however, can ensure an equal distribution of health; illness remains, at times, an unlucky event no amount of social engineering or healthy behaviour can prevent, and no amount of resources can cure.\textsuperscript{15} We should not forget that, besides improving health, health care meets the vital social need to care for the ill. We have made substantial progress in developing economic tools—including programme budgeting and marginal analysis and increasingly sophisticated measures of health status, outcomes, costs, and equity—that contribute greatly to informed deliberation about health and healthcare spending priorities. We need to find equally sophisticated ways to evaluate to what extent those tools, and which methods of public deliberation, improve the accountability and legitimacy of health spending decisions.

Identifying famines
Timely, accurate, and accepted measures are needed

In most of the world, famine is no longer the threat it once was. This is partly because of higher quality information regarding potential food crises, lower transport costs, less expensive storage of food, more disaster relief agencies, and better understanding of nutrition and medicine.\textsuperscript{1} However, famines continue to threaten millions of people across parts of Africa, partly because of armed conflicts in these regions.\textsuperscript{1} In the past two decades alone, famines have occurred in Sudan (1988 and 1998), Somalia (1991–3), Ethiopia (1985–6 and 2000), and Malawi (2002).\textsuperscript{3,4} One recent food crisis was in Niger. In the linked study, Reza and colleagues examine the magnitude and severity of this crisis to ascertain if it reached famine proportions.\textsuperscript{3}

An important step in preventing and alleviating famines is to collect and categorise information within vulnerable areas. By doing so, interventions can be prompter and aid can be directed more precisely towards affected areas. Howe and Deveroux recently developed a method of categorising information about possible famines that incorporates both the intensity (the severity at any location and point in time) and magnitude (aggregate impact) of a food crisis.\textsuperscript{4} With respect to intensity, for an area to be categorised as experiencing famine, crude mortality has to be more than one per 10 000/day, wasting has to be greater than 20% of body weight or oedema has to be present. When famine is identified, the intensity ranges from “famine conditions” to “extreme famine conditions.” Areas that are experiencing famine using the intensity measure are further categorised using the magnitude measure (“minor famine” to “catastrophic famine”).

Reza and colleagues used these methods to study the 2005 crisis in Niger, a country facing many on-going challenges—for example, almost half of all children have chronic malnutrition and mortality is around 20% in children under 5.\textsuperscript{5} In 2005, crude mortality was found to be 0.2–0.7 per 10 000/day,\textsuperscript{7} and wasting levels had previously been assessed to be around 15%.\textsuperscript{7} Using Howe and Deveroux’s method, the situation in Niger constituted a food crisis but not a famine.

These famine measures are vitally important for policy makers and practitioners. Firstly, they enable observers to target resources to those areas most in need in a timely manner. When famine does not exist but chronic malnutrition does, other strategies can be used—different methods are needed to tackle famines from those that tackle other food problems.\textsuperscript{8} In addition, in parts of Africa the HIV crisis presents new challenges with respect to famines. In particular, increased mortality and people’s reduced ability to farm and work has led to a dismantling of coping strategies that historically have been used by households and communities in times of drought.\textsuperscript{9}

Secondly, famine measures can help identify those people who should be held accountable for their actions (or lack of actions) during a food crisis. Even when work

In otitis media with effusion, ventilation tubes (tympanostomy tubes, pressure equalisation tubes, or grommets) are placed in the eardrums to improve the hearing, behaviour, and development of children. This, the commonest operation in children worldwide has an evidence base which is periodically scrutinised.1 Guidelines attempt to foster stringent criteria for the operation because in most cases otitis media is mild and non-persistent, and the consequences of fluctuating hearing losses for language development have been exaggerated in the past.2

In the linked study Keyhani and colleagues examined the clinical characteristics of children with otitis media in New York who had ventilation tubes and compared these with the recommendations of two sets of expert guidelines and a set of RAND appropriateness criteria.3 Agreement with recommendations was very low—only 30.3% of tympanostomies were concordant with the explicit criteria and only 7.5% were concordant with one of the guidelines—thus there was considerable over-intervention.

Two recent trials on very young screened children with otitis media with effusion showed that treatment had no significant effect on language development.4,5 This does not mean that treatment is generally inappropriate, because other important outcomes (such as balance, orientation, communication, behaviour, family quality of life) need to be considered. Also, for the older children more common in UK referred caseloads, further considerations arise (tinnitus, schooling, social communication), and adenotonsillectomy is an effective adjuvant treatment for selected cases.6 However, these trials do underline three obligations. Firstly, researchers should define more precisely the clinical subgroups that benefit from treatment.7 Secondly, commissioners or third party reimbursers of healthcare costs should apply evidence relevant to the patients they are responsible for (with regard to age and severity, for example), provide an appropriate level of intervention, and have review mechanisms that minimise variations in practice. The difficulty in obtaining detailed evidence has made this difficult in the past. Thirdly, paediatric otolaryngologists should audit their practice and ensure that individual decisions to intervene are justifiable in relation to criteria.

The New York audit8 was well designed with an expert advisory panel, so it will probably influence practice in the United States. A further trial merely adding precision and generalisability to the estimates of the treatment effect on one outcome would not. Why was this audit necessary? It was trenchantly pointed out more than 20 years ago9 that placement of ventilation tubes for otitis media with effusion possesses most of the drivers of

Ventilation (tympanostomy) tubes for otitis media with effusion

We need to re-establish clinical audit to monitor the criteria for intervention
Continuous glucose monitoring in gestational diabetes

Can improve outcomes alongside other standard interventions

The diagnosis and management of diabetes that presents during pregnancy has always been difficult. Women are usually asymptomatic and are not aware that the condition may occur for the first time during pregnancy. The prevalence varies from 1.4% to 14% depending on the population. Women who are first found to have abnormal glucose concentrations during pregnancy form a heterogeneous group, which includes women with unrecognised pre-existing type 2 diabetes and small numbers of women with unrecognised type 1 diabetes. Once the diagnosis of diabetes is established in a pregnant woman, blood glucose concentrations should be controlled to decrease the risk of maternal and neonatal complications.

The linked randomised controlled trial by Murphy and colleague compares the effects of standard antenatal care with and without continuous glucose monitoring in 71 women with type 1 or type 2 diabetes. Continuous glucose monitoring was used as an educational tool to inform shared decision making and subsequent therapeutic changes at four to six week intervals during pregnancy.2

Most methods of monitoring glucose in pregnant women are the same as those used in non-pregnant patients with diabetes and are based on early glycaemic control with timed regular glucose monitoring. Previous studies have assessed the effects of maintaining blood glucose at normal or near normal concentrations. A systematic review found insufficient data about the effect of treatments for impaired glucose tolerance

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1. Overintervention—a complex presentation; low risk; not overly costly; and definite and immediate, if short lived, subjective improvement leading to parental satisfaction. Other permanent insidious pressures on the balance between benefit and the risk of harm include training needs and justification of existing staff capacity.

2. In private care or reimbursement systems, a strong driver of overintervention is the incentive of payment by item of service. However, databases in private health care are often guarded for commercial reasons, and data that allow adjustment for case mix are rarely available from that source. Even in socialised health care in the absence of income incentives, overintervention for otitis media occurs.4 In the UK, the intervention rate has been declining for 15 years and is below that seen in most developed countries.9 In the absence of any single control mechanism with sanctions, the specialised training and healthcare management systems in the UK seem to have multiple informal ways to apply healthcare research, and the recent change in the climate of educated professional opinion has been towards gearing activity more appropriately. To now avoid stagnation and complacency, clinical audit is a justifiable expense in high volume therapeutic procedures where the drivers for practice variation are strong.

3. Currently the detailed data for documenting clinical criteria are absent from general activity databases (such as hospital episode statistics, reimbursement records); consequently their information is gross—apparently high between benefit and the risk of harm include training

4. Amid this, general and average adherence should be applied and interpreted with care, because encouraging blind adherence to the unidimensional cut-offs necessary in guidelines also has dangers.11 In its recent guideline on otitis media with effusion,12 the UK’s National Institute for Health and Clinical Excellence avoided these dangers. However, promoting discretion around an average still risks abuse in either direction, amplifying variation in practice. While gaps in the evidence base exist, those applying guidelines need to formally audit their practice in order to generate and maintain useful data.
in pregnant women to make any definite conclusions. However, a subsequent trial in women with mild gestational diabetes found that dietary advice, glucose monitoring, and insulin therapy significantly reduced perinatal complications without an increase in rates of caesarean section.  

The optimum timing of glucose testing after meals has been advocated on the basis of the observation that insulin peaks at two to three hours after ingestion. Other researchers contend that rises in glucose concentrations vary according to the type and number of meals ingested. It is unclear whether measuring glucose concentration one or two hours after a meal leads to management that allows a further reduction of adverse outcomes.

One randomised trial measured glucose concentrations one hour after breakfast then separated women into two groups according to whether their blood glucose was above or below 7.8 mmol/l. Women in each group were then randomised to receive either home monitoring using a meter or routine clinical follow-up. The number of babies who were large for gestational age was not significantly different between the two groups in women with a breakfast result <7.8 mmol/l, but this number was significantly higher in women with glucose ≥7.8 mmol/l who had clinic follow-up. Glucose measurements taken one hour after any meal have been associated with a decreased rate of need for insulin therapy in a prospective study; however, altering the timing of the measurements did not significantly affect neonatal and obstetric outcomes. One randomised trial found that glucose monitoring before a meal and two hours afterwards (as part of a defined package in diabetes control) significantly improved maternal and neonatal outcomes (such as perinatal complications, admission to nursery, and induction of labour) compared with not measuring blood glucose.

How often should blood glucose be measured? Evidence suggests that measuring glucose more often improves outcomes, but the optimal frequency of blood glucose testing is yet to be determined. National Institute for Health and Clinical Excellence guidelines advise women to test fasting blood glucose concentration and blood glucose concentrations one hour after each meal during pregnancy. The American Diabetes Association recommends that glucose should be self monitored at least three times daily, and it also states that self monitoring seems to be superior to intermittent monitoring by health professionals. The American Academy of Family Physicians recommends that glucose be measured at least four times daily. The Australasian Diabetes in Pregnancy Society recommends that at least one fasting glucose measurement and one measurement at one or two hours after eating a meal should be obtained daily.

The problem with intermittent monitoring is that it does not take into account the normal yet possibly wide variation in glucose concentrations associated with eating, resting, exercise, and exposure to stress. The introduction of a continuous glucose monitoring system that can record glucose measurements at five minute intervals for 72 hours may give a more accurate and complete glucose profile.

Murphy and colleagues report the effectiveness of continuous glucose monitoring compared with no monitoring in improving maternal and neonatal outcomes. They found that infants of mothers who had continuous monitoring had a significantly reduced mean birthweight standard score and median customised birthweight centile, and they also had a reduced risk of macrosomia. Glycaemic control in the third trimester was also improved.

Continuous glucose monitoring increases the consistency and accuracy of glucose measurement, which is crucial for the nutritional and drug management of diabetes in pregnancy, given the wide variations in blood glucose concentrations in these patients. Although wearing a glucose sensor might be perceived as inconvenient, Murphy and colleagues reported 80% compliance among the participants at least once per trimester. The authors also acknowledge that although rates of macrosomia were reduced in the continuous glucose monitoring group, they were still 3.5 times higher than in the general population; this means that other standard interventions such as dietary control and drugs need to be continued.

This study has shown the potential benefits of continuous glucose monitoring. Continuous glucose monitoring is relatively cheap compared with a clinic based monitoring system, and more widespread use may lower costs and make it affordable even in developing countries. The high prevalence and lasting effects of maternal hyperglycaemia suggest that preventive interventions such as continuous glucose monitoring should be the focus of future public health strategies.

Tackling obesity in children and adolescents

Needs more investment in public health and medical intervention

The American Academy of Pediatrics has recently updated its 10 year old policy on screening for dyslipidaemias in childhood and adolescence stating that the report has “new urgency” in light of the current childhood obesity epidemic. In addition to recommending that children with a positive family history of lipid disorders or premature cardiovascular disease should be screened, the report also recommends that all overweight children aged 8 years and older should be screened for hypercholesterolaemia, regardless of family history or other risk factors. If indicated, such children should be treated by a combination of diet, physical activity, and, possibly, cholesterol lowering drugs. The fact that the recommendations focused on the medical treatment of hypercholesterolaemia in childhood raised media concerns about the apparent emphasis on medical, and specifically drug therapy, approaches to dealing with dyslipidaemia and its risk factors, including childhood obesity.

Is this emphasis on treatment warranted in the face of the obesity epidemic, and should there not be more focus on prevention? The answer is that both approaches are needed if the obesity epidemic is to be controlled in countries with a high or rising prevalence of paediatric obesity.

If obesity is untreated in older children and adolescents its natural history is to progress. Obese adolescents and some obese younger children also experience a range of immediate and long term medical and psychosocial complications. Clearly, they and their families deserve access to high quality assessment and treatment, as would be expected if they had any other chronic disease such as asthma, type 1 diabetes, or a chronic mental health illness.

Unfortunately, most obese children and young people do not receive such care even in countries with highly developed healthcare services. Internationally, no health system has developed, let alone evaluated, a coordinated approach to providing paediatric obesity services that is likely to be sustainable, equitable, or to have adequate reach. To provide such a system of delivery several fundamental questions need to be answered. Firstly, what treatment approaches are effective in the long term in different clinical settings, and how should they be modified according to age, sex, and developmental status? How can comorbidities be managed and what is the effect on them of treating the underlying obesity? How can health professionals be trained appropriately and services coordinated across different levels of health care? In most westernised and rapidly westernising countries these questions need to be answered in the context of both overstretched health service budgets and increasing numbers of obese patients.

Given the current prevalence rates and the future projections for obesity in children and adolescents, resources should be directed towards prevention as well as treatment. The past decade has seen an explosion in national, regional, and international plans for preventing obesity and policy documents. However, translating these plans into action and then into changes in the prevalence of obesity has been much slower. Although the effects of some programmes seem to be promising, such as the initial reports of a stabilisation of the prevalence of adult and paediatric obesity in France after multi-level interventions, this is unusual.

In many countries programmes to prevent obesity are underfunded, and those that are funded are either too narrowly focused or operate too close to the individual child to have much effect. If schools and early childhood settings continue to be the sole target for most interventions to prevent childhood obesity then no long term change in its prevalence can reasonably be expected. This is because the broader, more fundamental influences on the food and physical activity environments in which individuals live, work, play, and go to school also need to be modified. However, implementing policies that influence, for example, the regulation of food marketing to children, changes in local food production or food pricing strategies, a decreased dependence on the use of motor vehicles, and more family friendly and pedestrian friendly urban planning, have the potential to be politically challenging.

The question then, is not whether there should be a focus on effective treatment approaches for obese children or adolescents, or even on prevention. Instead, the question is what more will it take for adequate amounts of private and public sector funds to be invested in the solutions to paediatric obesity?