

# Antibiotic use and public policy

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## 1. Introduction: some principles of public policy

In many fields, it is relatively simple to obtain agreement on what the aims of public policy should be, but a great deal more difficult to find ways of putting an appropriate policy in place and determining how it can be carried through in practice.

The starting point for this paper will be the widely held consensus that the development of microbial resistance to antibiotics presents a major risk to public health, and that one of the major causes of such resistance is the over-prescribing and inappropriate prescribing of the antibiotics that have come into use over the last 40 years. That consensus leads in turn to the need for a public policy that will ensure that antibiotics are selected and used more critically than has been the case up to the present time.

In principle, a public policy of this type might be expected to involve measures with respect to the *products* and their *producers*, those involved in *prescribing* and *dispensing* them, and the *public*, which has a need for effective treatment. Since the problem of microbial resistance to antibiotics is an international one, with resistant strains readily spreading across the world, only a global public policy will be capable of containing it fully.

## 2. Drug regulation

Drug regulation, in the sense in which it is generally understood, is a process by which the authorities, generally at the national level, assess medicinal products, including antibiotics, to ensure that they *are only marketed if they are sufficiently efficacious and safe and of sufficient quality, and that the information provided with respect to them is reliable and sufficient.*

Drug regulation in this form began in many industrialised countries only after the thalidomide disaster of 1960–61. Prior to that, reasonably complete drug regulatory systems had been introduced only in Norway (1928), Sweden (1935) and the USA (1938); although The Netherlands had passed a progressive law in 1958 it was only brought into effect after thalidomide. The system in Japan (and various other industrialised countries) developed simultaneously. Many antibiotics had been marketed before widespread drug regulation came into being, but as a rule they have been retrospectively assessed to ensure that they adhere to present-day standards.

While the scope of drug regulation is broad, it does not provide the basis for a comprehensive and worldwide public policy approach:

- In a fair number of countries, including many in the developing world, national drug regulation has not been implemented (even where it is prescribed by law), is ineffective, or is weakened by corruption.
- The ability of regulators to prevent circulation of mediocre products is limited by the terms of national law and regulations.
- Even within an industrialised country, the terms of regulation do not normally ensure direct control of drug advertising.
- No drug regulatory system has the direct ability to influence the prescribing of drugs by physicians.
- It is not usual for drug regulatory authorities to have any influence on public opinion or knowledge, though in some instances they have influenced Ministries of Health to take action in this regard.
- Drug regulatory authorities are not necessarily the bodies determining whether drugs may be sold without prescription or not, and certainly do not carry out inspection of actual practice in this respect.
- A national regulatory system is at most affiliated to a Ministry of Health (and many agencies are today largely autonomous). The work of other Ministries that may be of importance in this field (trade, commerce, industry, agriculture) is entirely separate and is likely to be governed by different considerations.
- International harmonisation of drug regulatory systems and practices has removed drug regulation increasingly from the influence of national policy makers.

In industrialised countries the above unsatisfactory situation has to some limited extent been remedied by the rise of agencies concerned with the financing of drug supplies in the public sector (national health services, health funds, health management organisations). Purely because of their financial concerns these have taken sometimes emphatic measures to limit prescribing, including:

- Imposing various forms of control on the drugs that a physician is allowed to prescribe (positive or negative lists);
- Producing publications, bulletins and handbooks;
- In some countries exercising direct surveillance of physicians' prescribing practices or even limiting the individual doctor's prescribing budget.

### **3. Mediocre and superfluous products**

In principle a medicine should be reasonably 'effective'. Views as to what this means in practice have varied. In principle many take the view that it should be at least as effective as drugs in current use (unless a lesser degree of efficacy is outweighed by other considerations, such as greater safety), but others have considered that if a drug is rather more effective than a placebo it should be accepted. Norway for many years maintained a 'need clause', which rendered it possible to exclude superfluous and borderline products, but the EU had rejected this principle under heavy industrial pressure and Norway was obliged to rescind the clause because of EEA links to the Union.

Inadequate quality control of medicines is a major problem in countries with limited resources; largely ineffective products, including for example defective batches of antibiotics, may enter the market in these countries.

Counterfeit drugs, which commonly contain too little of the active ingredient (or none at all) circulate widely in a large part of the world. Antibiotics with too little of the active component are an evident invitation to the emergence of resistant strains.

#### **4. Drug advertising**

Drug regulation usually includes a provision that the claims advanced for a medicine (e.g. in advertising) must be in line with the text of the data sheet approved prior to marketing. However, inspectorate-type controls on the extent to which even printed advertising conforms to this standard are exercised only in the most advanced systems, and advertising techniques can readily circumvent formal requirements (e.g. by graphic suggestion rather than use of specific claims). Worldwide studies of drug advertising have frequently pointed to abuses, including messages likely to promote excessive use and irresponsible selection of antibiotics (e.g. encouraging use of third-generation cephalosporins where penicillin would be adequate). It is also known that travelling 'detail men' (industry representatives) visiting physicians have a major influence on prescribing and it is not possible to ensure that their messages comply with official standards.

While direct-to-consumer advertising for prescription drugs, known to result in great increases in consumption as patients demand the latest product from their prescribers, is prohibited in most industrialised countries, it is tolerated in the USA and New Zealand. It is also widespread in the developing world.

Sometimes more effective than official controls on advertising are voluntary controls exercised by an industrial association. The purpose of these controls is essentially to prevent unfair competition, but since one firm will be anxious to prevent a competitor from advancing excessive claims the end result is some degree of moderation. Such a system works only where there is a well-defined code of practice, which may or may not make reference to the principles applicable to antibiotics.

#### **5. Influence on prescribing**

While an effective regulatory agency will have to give approval of a 'data sheet' and packaging texts before a drug is released, it has no authority to determine whether physicians respect the indications, dosage, contraindications, etc., listed in these texts.

For drugs as a whole, formularies, prescribing guides and bulletins issued by government (or other) bodies, are widely read by prescribers, e.g. to check dosage, and cited by them; they appear to have considerable influence on drug selection as a whole. It is much less certain that they promote critical use of antibiotics.

In the long run, education of physicians in sound prescribing is known to have a considerable effect. However, many medical curricula are in this respect deficient, 'recycling' is insufficiently common, and again the medicinal control authorities have little or no influence on the process. Indeed, industrial sponsors have become prominent in funding and even designing 'recycling' courses for prescribers.

A further effect on prescribing could be exerted by public education and information, seeking to create understanding regarding the need to use antibiotics critically; undoubtedly, public pressure on the doctor influences many prescribing decisions, and where antibiotics medicines are widely on sale it will be vital to discourage public abuse of this loophole.

Drug regulatory agencies have little or no influence on the right of a physician to dispense and sell the drugs that he or she prescribes. Where this practice is prominent it is an important factor leading to overprescribing. Lack of trained pharmacists or retailers and the limited income of many physicians tends to lead to perpetuation of this practice and its continued acceptance by governments in countries where resources are very limited.

## **6. Sale of antibiotics without prescription**

Despite a wide consensus that antibiotics should be used only on medical prescription, one finds that in much of the world – including some countries within the European Union – they prove to be readily available on demand from pharmacies or other retail outlets. Some regulatory authorities are competent to determine which drugs require a prescription but, as noted above, they do not as a rule exercise direct control on practice in the field.

A competent government inspectorate should in principle be authorised to determine that prescription drugs are indeed not sold freely, but only in certain countries is there a competent and authoritative inspectorate able to exert influence and impose sanctions.

In many countries, the great majority of drug retailers are not pharmacists and drugs are sold without restriction to all comers.

## **7. Influence of ministries**

A Ministry of Health is the organ of government most likely to be aware of the need for a broad public policy serving the public interest where antibiotics are concerned. Yet even the influence of the Ministry of Health on regulation is likely to be limited, with the increasing trend in recent years towards the creation of autonomous self-financing bodies to handle drug regulation.

In the constellation of many governments, the Ministry of Health is the weakest in the administration. A ministry handling trade, commerce, industry or national development will be concerned with the pharmaceutical industry but primarily with the aim of promoting investment, turnover and exports. In some situations the resulting practices may run far from parallel with those dictated by public health policy, and conflicts between ministries in this regard are not uncommon. The economic interest is likely to prove dominant. One of the most prominent initiatives in the past to develop a global public policy on antibiotic use was directly arrested by the government primarily concerned after heavy representation by industry to the Head of State. Only if the health risks resulting from antibiotic use can be presented in economic terms (e.g. loss of working capacity, costs of health care) is this imbalance in the policy debate likely to be redressed.

A Ministry of Agriculture is likely to handle the approval of veterinary drugs and the terms under which they may be sold. In many countries there is little co-ordination between this ministry and the Department of Health with respect to advancement of the public health interest. Much the same applies to matters such as fish-farming and the use of antibiotics in increasing productivity. Antibiotic residues in animal and fish products, including milk, are all too likely to promote resistance in human recipients.

## **8. International influences**

The European Union took measures from 1965 onwards to harmonise drug regulation to a high standard, but this was a step taken for economic reasons (free movement of goods and services) and not out of considerations of public health. The Union has been much slower to become involved in issues of public health policy. The same applies to other emergent economic unions and free trade areas, where the primary emphasis is on economic growth. It is not yet clear that any multi-state regime is emerging in which health interests play an equally influential role.

For industrialised countries the content of drug regulatory systems is today largely determined by debate in the International Conference on Harmonization, which brings together the authorities of the EU, the USA and Japan; it is significant that the fourth partner in this system is the research-based drug industry, on equal terms with the others (and represented by the industry federation, IFPMA. There is no representation of the public or of the professions (a fault also prominent in national regulatory systems) and other countries are excluded. It seems extremely dubious whether developments of this type will be conducive to high standards of practice and whether these are potentially in conflict with economic interests.

The influence of the World Health Organization in formulating clear public policies in the health field is very considerable, but the Organization has only limited possibilities to ensure their adoption, let alone to proceed to action within member states. Where trade interests and health interests conflict, even resolutions of the World Health Assembly, which have strong persuasive influence, only tend to emerge after a lengthy process of emendation that can seriously weaken their status.

## **9. Conclusions**

While the above brief survey underlines some major obstacles that to date have impeded public policy measures in the field of antibiotic use, it should not be regarded as evidence that these obstacles are insuperable. They must however be borne in mind, and means must be found to circumvent them if effective action is to be planned and undertaken.