

Recent World Health Organization initiatives for antimicrobial resistance control



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The World Health Organization (WHO) overseeing of antimicrobial resistance (AMR) containment issues in the last decade has varied in intensity. From 1999 onwards, concerted focus from the WHO led to the development of a multi-disciplinary framework for AMR containment at a country level. However, implementation of the WHO Global Strategy for the Containment of Antimicrobial Resistance¹ (the Global Strategy) was overtaken first by events in the USA in 2001 and later by related and other bio-security issues. By 2003, loss of funding and a restructured WHO saw AMR initiatives curtailed. Interest in AMR at the WHO has been recently rekindled and it is hoped that renewed attention will again be focused on this issue by the WHO and its member states.

Background

The 11 September 2001 (9/11) was to have been a high-point in the implementation of the WHO Global Strategy. This WHO initiative in the area of AMR followed a 1998 World Health Assembly (WHA) resolution (WHA 51.17). Resources in the form of external funding and expertise of national bodies, non-government organisations (NGOs) and individuals were mobilised, and internally a specific taskforce was established that linked many existing WHO programs. (The WHA is the governing body of the WHO and comprises the member states of the WHO meeting in session annually in Geneva. While the WHO headquarters are in Geneva, it has a regional structure and its activities are country-based. Australia is part of the Western Pacific Regional Organization [WPRO], one of six regions in total.)

The WHO Global Strategy

The WHO Global Strategy was progressively developed by a thorough process of multi-disciplinary consultation. 'Global' refers not to a geographical perspective, but to a comprehensive country-based and cross-cutting approach to control of AMR in both animal and human health. The WHO Global Strategy is a guide for individual member states for control of AMR and:

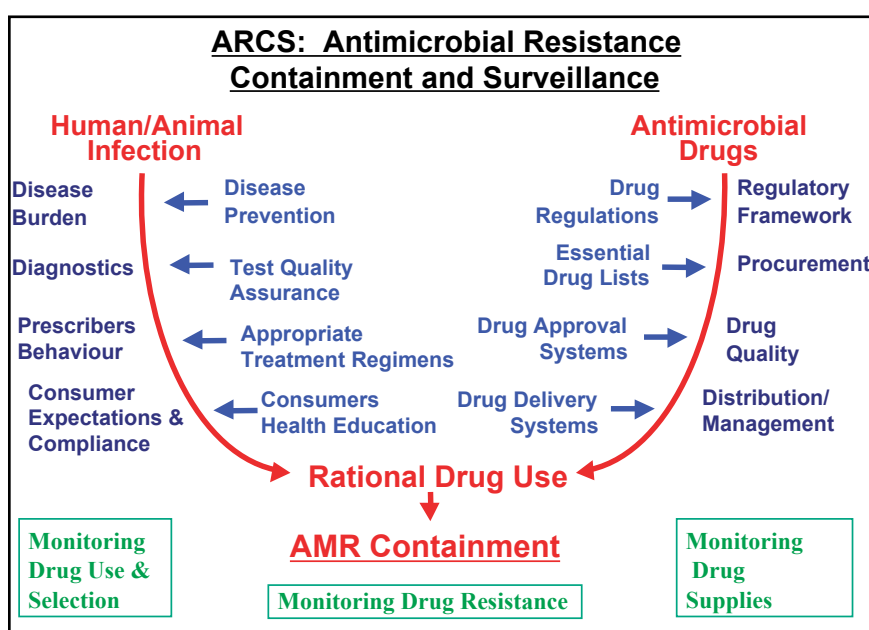


Figure 1. The Antimicrobial Resistance Containment and Surveillance (ARCS) strategy. The inter-relationships between the major issues and priority interventions that together comprise the WHO Global Strategy for Containment of Antimicrobial Resistance¹. (Reproduced with kind permission from the *Bulletin of the World Health Organization*².)

... provides a framework of interventions to slow the emergence and reduce the spread of antimicrobial-resistant organisms through:

- Reducing the disease burden and spread of infection.
- Improving access to appropriate antimicrobials.
- Improving use of antimicrobials.
- Strengthening health systems and their surveillance capacities.
- Enforcing regulations and legislation.
- Encouraging the development of appropriate new drugs and vaccines.

Because it was a country-based approach, the WHO Global Strategy also provided a program for implementation in the form of more than sixty recommendations for the guidance of member states. These included a core set of recommendations for prioritisation of the Global Strategy comprising two 'fundamental' and fourteen 'first priority' interventions. The two fundamental policy recommendations recognised the role of microbiology and the need for relevant laboratory resources, and included a requirement for an overarching and empowered national taskforce in each member state to coordinate and oversee the process of AMR control.

The antimicrobial resistance containment and surveillance (ARCS) approach in the WHO Global Strategy

The intersections of the fourteen first priority, multi-disciplinary based recommendations for control of AMR were set out diagrammatically in a companion Antimicrobial Resistance

Containment and Surveillance (ARCS) document². The structure of the ARCS diagram (Figure 1) is based on the premise that ultimately AMR is contained by proper use of antimicrobials and this interaction is shown as the core section of the diagram.

'ARCS' are found on either side of the diagram. The ARC on right side deals with 'supply – side' issues, such as drug availability and evaluation and regulation of use through prescribing. While relevant to Australia and implemented here through regulatory bodies such as the Therapeutic Goods Administration, these issues are even more important in settings where drug supply, regulation and oversight is not well established. All too frequently, antibiotics often of poor quality are freely available off-prescription in what is euphemistically described as the 'informal health sector'. Equivalent arrangements for veterinary medicines are in place in Australia, but also are often poorly regulated in some countries. The ARC on the left side deals with the 'demand-side' of the equation. This includes highly important factors, such as consumer and prescriber demand for antibiotics and reducing disease prevalence.

Each issue depicted on the outside of each ARC is then linked to a corresponding 'priority intervention' aimed at limiting its effect. Underpinning the supply and demand interventions are the essential surveillance components required for AMR control – how much antibiotic is used, how well it is used and, most importantly, surveillance of AMR itself. The basic premise is that the integrated 'global' approach should be implemented in toto if AMR is to be contained.

While this ARCS diagram is quite detailed, it can also be simplified for specific purposes. For example, although it was designed for 'country as a whole approach' it is equally adaptable for local regional or even hospital use. The relationships between control of multi-resistant organism in hospitals, disease control, laboratory practice and surveillance is shown in Figure 2.

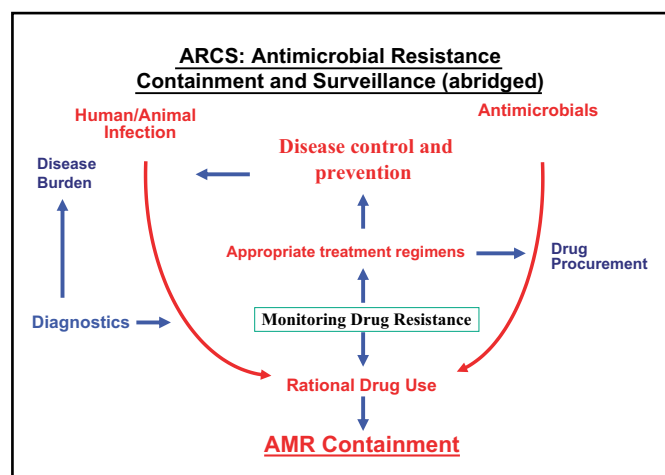


Figure 2. A simplified ARCS² diagram showing the close relationship between antimicrobial resistance containment, disease control and antimicrobial resistance surveillance.

Other measures accompanying the WHO Global Strategy

The WHO Global Strategy document is part of a WHO integrated approach and a series of accompanying guidelines and position papers were also produced³. Some were disease specific (relating mainly to diseases of public health importance) while others set standards for surveillance of AMR and still others considered the role of hospital infection and control of multi-resistant organisms. Thus, the package was an integrated global package and had already achieved a considerable degree of expert consensus (including significant input from Australian sources) during its preparation.

Additionally, the WHO has available the WHONET⁴ facility – a free, Windows® based database for the management of laboratory

information. This was developed and provided by a WHO collaborating centre in Boston with the objectives to assist in the handling of locally derived data and to promote international collaboration. The program is widely used, although there are no users listed from Australia, and it is continually updated.

What went wrong?

The launch of the WHO Global Strategy scheduled for 9/11 in Washington DC was necessarily postponed, but even by December 2001 when the package was finally released at the Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC), again in Washington DC, other events were overtaking AMR as a priority issue for decision makers. Bio-terrorism in particular, and bio-security issues in general, influenced at first by the deliberate spread of anthrax spores and reinforced by events such as outbreaks of severe acute respiratory syndrome (SARS) and avian influenza, saw a diversion of resources and interest from AMR.

During 2002–2003 the WHO strove to re-direct and maintain the interest and to roll out the Global Strategy approach, convening follow-up implementation meetings with relevant partners and WHO regional offices, and electronically disseminating the Global Strategy in several languages. The WHO attempted to establish a 'Global Atlas' of AMR that was only partially successful, and also produced, with the CDC, a manual for susceptibility testing of pathogens of public health importance and further defined standards for laboratories undertaking AMR surveillance³. At a regional level, the WPRO organised a workshop for WHO member states in Manila in 2005. Several countries, notably South Korea, had made major strides forward in their efforts at AMR control, while others had committed resources and teams to this process. The WHONET was widely used in the WPRO. However, in 2003 there was another major re-structure at the WHO headquarters and this, coupled with progressive loss of funding from important donors, saw the AMR team dispersed and AMR responsibilities assigned to an under-resourced section.

What next for the WHO and AMR?

The issue of AMR has not gone away. Major, expensive initiatives for the control of TB, HIV/AIDS and malaria were introduced and continued through a UN Global Fund for their control, and it was soon realised that progress in these areas would be severely hampered by the extra costs and burdens of any failed treatments due to AMR. Similarly, the reliance on antivirals for public health control of possible epidemics of respiratory diseases would be similarly compromised by emerging resistance. New versions of older problems also reappeared: more drug-resistant TB, community-acquired MRSA with attendant costs, vancomycin-resistant enterococci, and drug-resistant respiratory and genital tract pathogens. Additionally more sophisticated analyses became available to estimate the economic burden of AMR.

On this basis and because of a continuing belief in the importance of the issue, several national bodies and NGOs continued their agitation for further action by the WHO in the area of AMR that saw yet another resolution at the WHA in 2005; WHA58.27 called on member states to renew their initiatives with regard to AMR and for a progress report at the 2007 WHA. At the time of writing, the details of the 2007 WHA re-examination of progress of the WHO on AMR were not available, but it is thought that a number of member states and NGOs would prefer still greater commitment and that further progress reports will be sought from the organisation at the next two WHAs. This desire was also reflected in a separate resolution on rational use of medicines that included antibiotics (WHA60.16).

It is hoped that the combination of these two resolutions will see a dedicated team re-established within the WHO to facilitate the collaboration needed at all levels of the WHO and to again work in a truly multidisciplinary way to contain AMR and promote rational use of medicines.

The basis for appropriate interventions to contain the emergence and spread of AMR at an international, regional, country and local (hospital) level has been firmly established by the earlier endeavours described above. With wider support inside and outside the WHO, it is anticipated that any renewed initiatives will be supported and sustained with a happier and more productive outcome.

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