Editorial

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The United Kingdom (UK) has made much progress with regards to recognising the risks of and implementing actions to tackle antimicrobial resistance (AMR). However, as outlined in the UK's five-year national action plan [1], we still have much more work to do with around 20% of antibiotics prescribed inappropriately in UK primary care [2], and the UK's antibiotic prescribing rate being twice as high as parts of Scandinavia and the Netherlands [1].

The collaborative effort of multiple disciplines and professions to attain optimal health for people, animals and the environment, permeates across the governments new five-year national action plan. However, this 'One Health' approach, firmly anchored within the plan to the human, animal and environmental domains, could be usefully supplemented and enhanced by considering the intertwined economic, political, societal, and clinical spheres. Calls in the plan for the integration and collaboration of academics, practitioners, and policy makers, could also be extended to include those in non-health area such as transport, housing, employment policies. Such supplementation and extension would help to facilitate citizens contribution towards antimicrobial stewardship (AMS) effort and the reduction of infection and antimicrobial use.

Clearly described in the plan is the role of the community pharmacist in improving antimicrobial prescribing, and leading stewardship efforts. However, the role other non-medical healthcare professionals (i.e. nurses and allied health professionals) play is absent. Given the increasing clinical, academic, and leadership interest in AMS by these healthcare professional groups since the last national plan, this is both surprising and concerning within the context of modern-day health and care delivery and particularly, in light of the government's call for collaborative interdisciplinary efforts.

In order to fulfil the workforce needs of the National Health Service (NHS), non-medical healthcare professionals now frequently work in advanced roles [3-4]. Many of these roles include involvement in a variety of patient and medicine related stewardship activities (such as the prescription of antibiotics, antibiotic administration, monitoring of patients for effectiveness of treatment and adverse effects), and so the involvement of these groups in AMS efforts is important. Indeed, the numbers of nurse prescribers (around 35,000), who are currently responsible for around 8% of all primary care antibiotics prescribed [5], is set to rise with less experienced nurses soon able to access shortened post-registration prescribing courses [6]. This only serves to emphasise the need for their engagement in this effort.

Although not alluded to in the five-year action plan, the broad range of multidisciplinary professionals now involved in stewardship activities, provides an important resource to draw upon to increase public education and awareness of AMR, and optimise antimicrobials use. For example, nurses, physiotherapists and podiatrists, working in the community and general practice, and

pharmacists who are increasingly working within these contexts, are well placed to communicate AMR messages to the general public. School nurses are in an excellent position to communicate these messages to young people, as are health visitors who work so closely with young families and communities who often have frequent contact with health services during early years. These contributions should be used and encouraged and, if messages are to be communicated effectively, these healthcare professionals need to be engaged in local AMS programmes.

With this expanding team of diverse healthcare professionals, comes the potential risk of interprofessional conflict and miscommunication. One element of this would be the encouragement towards full linked-up electronic prescribing. This will enable sharing between providers and reduce duplication of previous treatment or misuse of previously tried and failed interventions. The importance of our national strategy in setting the tone and expectations of collaboration is therefore essential. It is key that all healthcare professionals are adequately skilled and prepared to contribute as part of a team to tackle AMR. AMS efforts need to be co-ordinated across all healthcare professional groups to ensure the adoption of a consistent approach, avoidance of duplication of effort, and sharing of best practice. In this way the same messages will be conveyed to the general public and patients. The call in the plan to develop new combined board level leadership roles, with oversight of IPC and AMR may be an opportunity for current Directors of Infection Prevention and Control, who are often senior and executive nurses.

The plan highlights the need for more evidence with regards to knowing how best to influence practitioner and patient behaviour. Innovative approaches, to explore the drivers of sub-optimal practice, and multidisciplinary research is highlighted. We know that a broad range of factors influence the prescribing behaviour of nurse and pharmacist prescribers [7], and some of these factors differ to those that influence the prescription of antibiotics by medical prescribers. We also know that if interventions are to be effective, they must be tailored to the population and context in which the target behaviours are delivered [8-9]. It is therefore essential that intervention and implementation research include all members of the multidisciplinary team involved in antimicrobial stewardship.

The next 5 years is set to be a crucial period for the UK to step-up, lead and fund strategic collaborations across different sectors and levels, nationally and globally, to tackle the ever-increasing threat of AMR.

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