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Faculty of Pharmaceutical Medicine submission to the Academy of Medical
Science 'Call for Input' on Health of the Public 2040

01/05/15

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1. *The working group and various stakeholders have collectively articulated their aspirations for the future health of the UK population. These are described in the background document. Do you share these aspirations? If not, why? What other aspirations do you have?*

Yes, we do share these aspirations. Other aspirations include:

- Prompt and full availability of medicines to those who would derive benefit
 - Teaching understanding and empathy towards disabled, those with learning disorders and autism, the mentally ill and aging people
 - UK citizens no longer being dragged down to an “average” level of service provision, lagging behind other first world countries in order to provide high quality and up to date treatment for all with fair and equal access.
 - A reduction in bureaucratic load in medicines development to encourage innovation.
 - That Government / Society will take an increasing role in sharing the risk burden for healthcare.
 - Adherence will increase; improving health outcomes, reducing wastage and decreasing cost.
 - Capacity for real time monitoring of basic physiologic parameters, e.g. blood pressure, heart rhythm, will be possible, and this data could be integrated with health records
 - Integrated computerised health records will be in common use. These can be accessed by multiple users, including the patient.
 - Effectiveness and safety of medicines can be monitored through real time monitoring of efficacy and safety using integrated health records.
2. *What do you think will be the major drivers of change which will influence the population's health over the next 25 years and what are the key uncertainties surrounding these drivers?*
- Disease Considerations
 - Increased threat of infectious disease particularly viral diseases, vector borne diseases such as malaria coming to the UK associated with climate change
 - Increased antimicrobial drug resistance

- Explosions of diseases associated with obesity, alcohol and lack of exercise. This could result in a division of the population into the “motivated healthy” who make time and effort to invest in exercise and preventative healthcare and those who for whatever reason are unable to break free of lifestyle habits which are associated with morbidity and increased mortality
- Risk of disease associated with bio-terrorism
- Economic and Behavioural Factors
 - Continued development of defined groups at both ends of the health spectrum: Empowered, motivated people who actively implement healthy lifestyles, engage with healthcare interventions, and expect to share decision making with health professionals, and those who become disenfranchised in terms of healthy lifestyle habits; disease prevention activities etc.
 - The evolution and uptake of private healthcare, driven by the “empowered, motivated healthy group” described above who will wish to access cutting edge therapies not available on the NHS, and will be prepared to pay. Providers will become increasingly able to assess and cost risk and reduce costs for those who adopt healthy, and monitored, lifestyle interventions,
 - Increasing access to cutting edge medicines and other interventions is likely to have a number of effects on the NHS. There may be some cost reduction, although these therapies may not be provided by the NHS in the first place; a two tier service may evolve; the private sector taking resource from the NHS in the shape of medical expertise. The use of cutting edge therapy in the UK, albeit in the private sector, may retain experts in the areas concerned.
 - Non-adherence to prescribed drug treatment will continue to rise. This causes public money spent on medicines to be wasted and results in a lack of effectiveness in the patients who are not taking them. This failure to gain benefit will also result in a further drain on resources as ill-health persists.
- Advances in Medicines & Diagnostics Development
 - More extensive application of genomics in medicines development. This will enable more targeted treatment of disease and the use of preventative strategies if people are motivated to adopt them. It is predicted that the “number needed to treat” would fall for many diseases and therefore the unit cost would rise. In time the cost of these high technology medicines may fall. However, personalised medicines with greater efficacy and improved safety may reduce overall drug consumption. Future costs for society require modelling.
 - Pace & direction of research with greater success in identifying personalised medicine. In addition to oncology therapies, advances are likely to include diagnostics and therapies for degenerative diseases of the CNS, e.g., Alzheimer’s disease and other diseases of an aging population.
 - Biological medicines and associated diagnostic tools will become more widely used. These are expensive to produce, and production is likely to be relatively more expensive even when upscaled. However, there will be increased demand for these medicines as their efficacy is demonstrated in clinical practice and it is likely that in time the price will fall.

- Regulatory authority approach – enablers of early and flexible licensing will improve and will likely be linked to diseases of high unmet need.
- Screening becomes less invasive and therefore taken up more readily, particularly by the “motivated healthy”

3. *What are the potential shocks or disruptive events that might need to be taken into consideration in planning for the future?*

- Political and environmental events; global conflicts; rise of terrorism, potentially bioterrorism.
- Endemic infectious diseases
- Risk of a health “underclass” who avoid monitoring and who have unhealthy lifestyles, but have significant healthcare costs. This group will be especially subject to a contraction in health services unless the ongoing crisis in the NHS is brought under control, efficiency improved, and more money injected into the system. If this crisis is not dealt with, we should expect a further widening of the wealth gap between the have and have-nots in society.
- The following are not so much “shocks” or single disruptive events, but the risk of a slow but steady and therefore unnoticed change, the consequences of which may be considered “shocks” in hindsight, but which could have been predicted:
 - A decline in research in the UK which will take investment and expertise elsewhere. The costs and profitability of drug development and commercialisation in the UK and Europe has led to a drain of research and pharmaceutical infrastructure. The consequence of this is that there will be less experienced pharmaceutical physicians able to support drug development which is now appearing in smaller, frequently academic, or charitable bodies. Whilst academically sound, these units do not have the experience required to plan development in such a way as to necessarily make their medicines commercially profitable, and therefore many of the drugs they produce never complete development, nor become commercialised.
 - Ongoing economic pressure due to an aging population with increasing morbidity. Inadequate pension provision will increase chronic mental illness and demands on health services in addition to physical illness.
 - Global warming, to which the manufacturing of medicines contributes. This may change climate conditions affecting disease, e.g. reintroduction of malaria in UK.

4. *What research evidence is (or will be) needed to address these aspirations and reduce these uncertainties, and to what extent is the required research currently taking place?*

- Translational research
- Applied genomic evidence
- Increased applied research in pathogenesis of degenerative diseases
- Real world data – methodology for reliable collection will be required
- Economic modelling of healthcare costs allowing scenario evaluation and sensitivity analysis of various interventions
- Research into understanding the reasons for lack of behavioural change and the most effective strategies for changing it (at an individual and population level).

- Modelling of the effect of global disease patterns tied to global warming and globalisation

5. *Given the above, what needs to be done to support, deliver and realise the value of this research? Particular consideration should be given to: a. Research capacity (for example, training, workforce, skills, relevant academic disciplines and funding) b. Research infrastructure (including physical, virtual and institutional infrastructure) c. Mechanisms for translating research into policy and practice*

- Research capacity
 - Attract medical research of all types, even if not directly related to these targets, to build a culture of excellence in applied medical research.
 - Nurture small companies and biotech; realistically incentivise research in the NHS to compliment academia.
 - Support public/private partnerships with Industry, including long term research risk sharing schemes/shelters. Further implementation of public private partnerships.
 - Continue to develop pharmaceutical medicine as a medical specialty to ensure effective delivery of research and medicines development.
- Mechanisms for translating research into policy and practice
 - Greater engagement with the public to increase lifestyle messages and motivated engagement with health providers.
 - Government to guarantee funding subject to licensing of effective medicines of research subject to reaching pre-defined efficacy and safety targets.
 - Government to subsidise the development of key medicines which may not be profitable if left to market forces, e.g. new antibiotics would be expected to be reserved for serious infections which have become resistant to existing medicines, and therefore are unlikely to be profitable at reasonable prices.
 - Changes to lengthen the duration of medicines exclusivity may sufficiently incentivise the pharmaceutical and biotechnology industry. This has already happened in the rejuvenation of novel and new antibiotics.
 - Continue to educate and reinforce prescribing behaviour, in both healthcare professionals and patients, to improve adherence and reduce misuse of medicines, e.g. antibiotics.
 - HTA assessment requires re-engineering to ensure that personalised medicines are not discriminated against as a result of their higher acquisition costs.

6. *Please add any additional comments, not covered by the above, which may be of benefit to the Working Group.*

None