

bmj.com News: Mark Walport will be next UK government chief scientific adviser, cabinet office announces (BMJ 2012;345:e4621)

Government's Wellcome new source of advice

The Wellcome Trust is the world's third largest private foundation, with a total endowment approaching £15bn and an annual spend of about £650m. But of more interest to me when I met its (now former) director Mark Walport was how the Hammersmith professor I used to liaise with over educational articles for the *BMJ* came to be numbered among the UK's top digital powerbrokers. Last year, *Wired* magazine had ranked him 17th—ahead of Tim Berners Lee (inventor of the world wide web) and Jimmy Wales (cofounder of Wikipedia).¹ What were they thinking?

"Oh blimey, yes," he groaned, before brightening. He attributed the accolade to the Wellcome's role and interest in the power of data. There were the various Wellcome funded genome projects that had changed how biomedical science gets done—these days data are made public and the genetics community collaborates on the analysis. Then there was Walport's passionate belief in the power of data, particularly over clinical outcomes, to improve the delivery of healthcare. And lastly was his unflinching support of open access publishing—his belief that to maximise the impact of research you must maximise its distribution (with the internet obviously playing a crucial part).

"The Wellcome Trust's position is very straightforward," he said, explaining its early lead in paying authors' fees for open access publishing. Publishing the research is just part of the research process, he maintains, and the costs of publication are like any other research cost: centrifuges, gels, researchers' salaries. "And what the publishers provide is the service to get it out there," says Walport, "but they shouldn't restrict access through subscriptions." The Wellcome stipulates that the results of all research it has funded are made publicly available within six months and pays any fees to meet this requirement. In addition, it requires authors and publishers to license research papers so they may be freely copied and re-used.

Walport is a signatory to the Bethesda Statement on Open Access Publishing (2003),² when, intriguingly, his position was given as Wellcome's "director designate." How had he felt confident

enough to sign the Wellcome up to the initiative before he was formally in post? No problem, he said—by then he was already "part of the trust machinery" and had the organisation's support. Soon afterwards, the world heard the story (several times) of how Walport tried downloading a paper reporting research the Wellcome had funded only to discover that he was blocked by access controls. It was a very persuasive example of what was wrong with scientific publishing circa 2003, but Walport's "light bulb" moment had come earlier.

Various UK funding bodies had spent most of the past decade dragging their heels over mandating open access of the research they funded, but with last year's string of announcements³ did he believe we had just about reached the promised land?

"I think everyone is getting there [but] we're only beginning to exploit the technology in terms of what we can do. We're really in the foothills." Walport then discussed a project that was close to his heart: *eLife*. Billed as "the new open access journal for outstanding research in life sciences and biomedicine," it's funded by the Wellcome, alongside the Howard Hughes Medical Institute and the Max Planck Society. As well as providing competition for journals at the top, Walport thinks it might be equally important in providing innovative new models of how science is published. "What does a paper look like in the future?" he wondered. "Do you start from scratch with each new paper? Or do you move to a world where you have paper version one and six months later you've done three more experiments, and instead of writing a new paper you update your original paper?"

On the question of making available the data behind the findings, Walport is keen to distinguish between data and information: "What we need, of course, is open information," he said. "Data without the metadata are often completely useless, and so the data have got to be interpreted; they have got to be curated properly." In terms of clinical data, it's about maximising the impact of that information for the benefit of patients. "If I develop a side effect from a drug and

Mark Walport, the new government chief scientific adviser, takes up the post after a decade as the Wellcome Trust's director. **Tony Delamothe** spoke to him as he was clearing his desk at the Wellcome

it's not put into a database, then that's missing a very important trick."

So has the Wellcome funded any projects in this area? Walport responded that it's been in recent partnerships with the Medical Research Council and the Economic and Social Research Council and has funded some of the people that are doing the innovative data work. But he didn't think it was the job of the Wellcome, a research funder, to fund the NHS to use its data better.

Rise of genomics

The meeting on open access publishing wasn't the only event the director designate attended in Bethesda (a suburb of Washington, DC) in 2003. He was present at the press conference at the National Institutes of Health that announced the completion of the sequencing of the human genome. "I don't think anyone then thought 10 years later we'd be able to sequence literally dozens of genomes a day and the price would have come down by several hundred thousand-fold." Genome science is moving into health "at an extraordinary rate." As examples he cites the gene sequencing of bacteria to track outbreaks of hospital acquired infection, the synthesis of drugs such as vemurafenib for metastatic melanoma, and the characterisation of the common origins of various neurodevelopmental diseases.

Walport recalls a visit last year to a medical student research society in Cambridge. From their posters,

he could see that "they were doing stuff that I couldn't have dreamt of doing during my PhD as an MRC training fellowship in the early 1980s."

One area that the Wellcome has focused on during his tenure is improving clinical academic careers. Work done in partnership with the Department of Health has resulted in academic clinical fellowships ("more than ever before"), academic clinical lecturers, and academic foundation programmes. The Wellcome wants to get the message out that we "take bright people and give them the support they need to tackle tough questions." But the trust also recognises the importance of infrastructure to these people's work. Walport reeled off some of the institutions

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the Wellcome is funding: the Crick Institute (medical research and innovation), the Sanger Institute (genome sequencing and analysis), and the Sainsbury Wellcome Centre (neuroscience).

Another strand is the Wellcome's support of global work, particularly research into malaria. "We've seen the seminal clinical trials, which compared artemisinin with quinine; a drug of course beloved by Henry Wellcome, but showing that artemisinin improves survival in severe malaria compared with quinine." The World Health Organization has acted on the results—"it's an accepted recommendation."

"But now of course we're seeing artemisinin resistance emerging in Cambodia, and it will be genetics, genomics, that tells us the mechanism of resistance to artemisinin in malarial parasites in and around South East Asia. Paradoxically, it may be understanding the resistance mechanism that tells us how artemisinin actually works."

Work in the developing world and genomics "absolutely comes together," and Walport said he's delighted by the very strong collaboration between the Sanger Institute in Cambridge and scientists working on typhoid and cholera in the field. "I talked about wiping out an outbreak of MRSA in a paediatric intensive care unit in a hospital in the UK, but you can also use genomics to study how infections travel round the world in ways you could never have done before." It's incredibly interesting.

New job

His new job as government chief scientific adviser seems several worlds away from this. A civil servant, he will advise the prime minister and cabinet on science and technology and will have a key role in providing scientific advice in response to emergencies. Some months earlier I had heard Walport say at a public meeting, "Scientists can assemble the best evidence, but it's politicians, not scientists, who ultimately have to decide what to do with it."

How hard was it going to be to hand the ultimate decisions to others? Walport thinks it is important to recognise that politicians often have potentially conflicting policy objectives, and uses the example of sentencing policy. Some of the intended outcomes—such as deterrence and a reduction in reoffending—can be assessed scientifically. But "no amount of science can tell you about retribution." It's an example of where the science "may be a very large part of the story, but it's rarely the only story."

How about the horse meat scandal, which had just about run its course by the time we spoke? Wouldn't the government want to take the best scientific advice about what it should do, regardless of any competing policy objectives?

Walport responded that he's an optimist and a rationalist, and that "in general terms when the science is extremely important for an issue it's very likely that good advice, delivered well, will have a powerful effect." His job is to seek advice

from the best scientists in whatever area of science is relevant and translate it for politicians. At this point, Walport led me gently back to his new job description: "the job of the government chief scientific adviser is to advise the government."

Did he think he could continue to pursue the open access agenda, which he'd pursued so vigorously at the Wellcome? "I think that the government, indeed governments, have appreciated the power of data. Given that data are so ultra important for public policy, I think that it's an entirely appropriate area for me to be working on in government, so I'm sure I will carry on working on it."

I had discovered a forthcoming meeting at the Centre for Science and Policy (with Walport as one of its star turns) and asked him what he thought of the claim on its website that: "Scientific advice has never been in greater demand, nor has it been more contested."

I shared my concern that considered scientific positions now risked being treated as just one opinion among many. Walport responded with a quotation from US politician Daniel Moynihan: "Everyone is entitled to his own opinion, but not to his own facts." He recalled how his PhD supervisor, Peter Lachman, used to distinguish between questions that were pollable—in other words you can vote on the answer—and questions that were not. "You can't have a vote on whether the earth is broadly spherical or not. There is a right answer to that and it doesn't matter what people's opinions are." On the question of whether vaccination is associated with particular side effects: "Well, actually, there is a correct answer to that."

On the subject of his new job, Walport described a spider's web, with himself as the spider and a network of chief scientific advisers in each government department. Beyond that were the academic community, the learned academies, and scientists in industry. "My ability to do the job properly will depend on getting the best possible advice I can all the time."

He thought that his decade with the Wellcome Trust had been good training for the new job but admitted that going from being a chief executive to an adviser was a big change. Nevertheless, because the trust is such a big player in UK science, education, and public policy he's had frequent contact with government over the years.

And it wasn't a five year appointment, he corrected me, it was three, in the first instance. "Doesn't seem that long," I suggested. "Could be longer," he laughed.

Tony Delamothe deputy editor, *BMJ*, London WC1H 9JR, UK tdelamothe@bmj.com

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