editorial

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The shrinking of the knowledge base – what is the impact of this on the speed and security of drug development?

We have all seen the litany of redundancy as blockbusters go generic and mainstream pharma reduces its cost base and/or merges with other struggling groups to compensate and/or restructures to move into new therapeutic areas of strategic importance. Not all announcements in the last few years have been negative but overall, big pharma shrank in size and continues doing so, particularly in the Western world. Part of that is accelerating outsourcing of manufacturing activities to Asia and Eastern Europe but actual slicing into corporate size is also the case. AstraZeneca said this year that it was cutting 15% of its 66,000-strong workforce. Pfizer announced that it would close its drug manufacturing plant at Sandwich in Kent, UK and the ramifications of its merger with Wyeth have yet to become wholly clear.

Many companies have undertaken similar substantial reorganizations throughout 2008 and 2009. Much of that was initially aimed at sales and marketing (reflecting imminent or actual patent losses) and manufacturing plants but the move to condense R&D groups also took hold and reports across the sector shows this is likely to accelerate. In previous decades R&D departments were protected but new realities are now reaching into all aspects of development. You can see why, when US spending on R&D alone reached close to $63 billion in 2008, topping $1.2bn in real costs per drug licensed that year, with similar showings in Europe. As a consequence, overall, in-house R&D cost-cutting by pharma is expected to gather pace in 2010, before slackening off from 2011 onwards, although some groups continue to buck the trend and have flagged markedly increased R&D spending; Novartis and Schering-Plough to name two.

However, many R&D cost-cutting efforts will be ultimately counter-productive if they reduce current expenditure but endanger the future drug pipeline that is the raison d'être of the company. This is the elephant in the room. Slashing R&D staff numbers will not provide sufficient savings in itself, especially if it cuts into the competencies that are critical to ensure that there will be a drug at the end of the process. In the longer term, there must be consequences to all this cost-cutting activity and shift of emphases, particularly in loss of direct control over programmes, loss of expertise in-house to ensure reliable and positive deliverables, in the medical governance of programmes and the loss of senior mentors and role models for the next generations of drug developers.

At present, current and planned cuts in staffing may already be impacting the capabilities of major groups to process their pipelines, and will definitely do so in the future as juniors lose their mentors. Mainstream pharma 'Old Hands', who normally make the judgement calls, are taking advantage of generous redundancy

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packages, leaving behind teams of relatively junior medics and scientists to make critical operational and even strategic decisions. Furthermore, the senior staff remaining are handling ever-increasing workloads and are spread too thinly, placing the future of a vibrant pharma industry at risk. The critical question is whether the major CROs, consultants and interims realistically and effectively fill this void?

Outsourcing any knowledge-based element, large or small, on grounds of cost, without fully understanding what that actually means when you hand influence on critical issues over to an outside organization can be a risky endeavour. Drug development strategy, design and decision-making require disease area knowledge, experience, judgement and 'feel'. When you put that in context of whole development programmes, multiplied by the number of pharma companies trying to develop their pipelines differently, and it becomes abundantly clear that the CROs on their own, as currently comprised, collectively cannot compensate for the lack of in-house knowledge in pharma; structurally they are not set up to do so, especially on the scale that might be necessary in the context of the changes taking place in big pharma. Nor are the CROs natural homes for those same 'Old Hands', who have no wish to be spread even more thinly, or used as business development bait whilst spending half their life in aircraft doing it. No matter how large, how experienced or how competent they are at processing and operations, CROs rarely have enough talent in their senior teams to compensate for those critical competencies that may be needed by the client.

If all of these things are true, what can be done to address the short and long-term needs; knowledge now and knowledge later? Assemblies of competencies, whether as loose alliances or tight companies are coalescing outside the regular CROs, although some larger CROs, alert to the issue, are trying to create clusters within their organizations, with variable success.

Companies too are beginning to respond differently and despite the issues described, realising that outsourcing and drug development alliances will become a more dominant component of their resourcing strategy in the future, are seeking to utilise external resources to best effect while still cutting R&D costs/drug overall. Expertise outsourcing and partnerships will multiply, simply because the work still has to be done somewhere, not only in the traditional areas such as the use of chemists in India and China, or in the wholesale outsourcing of bits of clinical programmes to others but more importantly in the augmentation of the remaining in-house expertise by outside competencies. Some estimates suggest a tenfold increase in this type of activity over the next five years.

Accessing competencies have to balance Productivity against Efficiency and Speed against Security and Patient Safety. What tests should apply?:

- Value for money this does not necessarily imply the cheapest. Knowledge and expertise is less of a commodity than data management or clinical operations, which have tried and tested standards and measurable outcomes. As such, accessing through the same supply and tendering departments that negotiate with CROs may not work to best advantage.
- Security of the data – the data being the single most valuable element of the process chain, does your independent 'consultant'/'expert' have secure IT systems? Security of access to the expertise – are there back-ups in case of accident or illness? Single experts cannot supply any of this, which is another reason driving the rise of the expert group. Single experts can also run into conflicts of interest if specialised in certain areas, where rival companies are operating.
- Patient/volunteer safety – although the external knowledge requirement may seem to be tightly defined, without therapeutic context assessment and review by other critical eyes within the external 'team', mistakes can occur that endanger lives (as we have seen).
- Speed of access – although good planning can offset some issues around access to expertise, those heavy-hitters are in constant demand. The problem arises when those planning programmes do not foresee the need because of their own lack of experience. Knowing where to go has become a critical element. Much valuable time can be wasted in finding the right source.

In addressing the training of the next generation of Industry physicians and scientists, assuming the trend on downsizing continues, what options are there? If we look at what big pharma used to supply in developing its in-house talent, one of the biggest positive elements in addition to formal training was working alongside exemplars of the professions. Both medics and scientists have structured access to mentors, diverse projects and functional groups that taught them much of what was required to develop drugs. These mentors are leaving, the projects are fewer and many of the tasks that functional groups did are outsourced. The questions are these:

- Companies – will they continue to fund the formal training of their staff? How will they diversify the experience of their staff when the silo-isation of departments is strengthening (e.g. medical affairs staffers do complain that they do little more than job-bagging)?
- Academic centres – Can they compensate for the lack of experience gained in companies? Does the Dip. Pharm. Med. and the scientific/regulatory equivalents need to be more ambitious in scope and do we need higher mandated levels of training?
- CROs – can they provide structured learning in similar vein to develop high-end expertise? Can they attract or afford to employ these people in a way that can be integrated with their financial model?
- Learned bodies – Can they do more?

We sit at the start of an R&D revolution. Drug development is undergoing significant change to permanently re-shape its activities, with moves away from large budgets and research teams towards external resources.

Because pricing pressures from patients, governments and insurance companies and rising cost hurdles to registering products, the drive to produce more effective, safer drugs, more cleverly and at lower development cost with less risk will continue. Choose your knowledge partners with care!!

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