

**Predictions for collaboration between medtech and pharma were overshadowed by the realities of complex relationship boundaries and opposing business models. Now the topic of convergence is set to take centre stage once more on the heels of a successful two-year study for a pioneering drug-eluting peripheral stent created by Cook Medical. Jason Urbanski and Dr Bill Hunter talk to Lorrie Kelly about their success and how they see convergence opportunities evolving over the next few years.**

# COMPLEMENTARY THERAPY

**T**hough there are a multitude of drug-eluting stents on the market, Cook Medical's recent addition, Zilver PTX, stands well above its competition. With most other medical device manufacturers focused primarily on the coronary market, Cook broke step to develop the first peripheral drug-eluting stent to be used for treating superficial femoral arteries; a decision that has clearly paid off.

'Cook was initially in the race for the coronary stent, until we started working with Angiotech, the pharmaceutical company who had the paclitaxel drug rights in the US,' says Jason Urbanski, senior global product manager for Cook Medical's Peripheral Intervention unit. 'During the initial discussion with Angiotech in the mid to late 1990s, Cook made the swap and rather than continuing in the pursuit of the coronary arena, decided to go after the peripheral stents.'

The addition of paclitaxel meant that Cook's stent technology would not only be able to hold open vessels that lie unprotected and close to the skin surface, but the device could also prevent restenosis – narrowing of the vessels which commonly occurs after a stent has been implanted. 'Cook sees that the future of the device industry is going more towards these combination devices that include either pharmaceuticals or biologics, or uses the device to deliver a pharmaceutical or biologic into the body to help treat a disease process,' Urbanski explains.

However, collaborative efforts between medtech and pharmaceutical companies are not as common as they may seem. Cook's decision to work with Angiotech was made easier by existing close contacts within the companies that helped create a relationship for the development of Zilver PTX. Competition remains fierce within the pharmaceutical

and medtech sectors, with the number of pharma companies acquiring medtech companies/technologies on the rise.

'Early on, Angiotech didn't have a medical device component in-house,' says Urbanski. 'However, since the relationship started, the company has ventured into the device world and is a competitor for Cook in other areas. That is the type of delicate nature that must be worked through with convergence. While working on projects such as Zilver PTX, each contributor will develop expertise and intellectual property. Trying to balance that, to make sure one company isn't sacrificing knowledge that can be used against it in the future, is a fine line. It's much easier when you have closer relationships with the collaborating company – either being a part of it or having a significant business relationship.'

'I think a lot of pharmaceutical companies see the future of medical devices is in combining delivery and treatment systems with drugs and biologics,' he adds. 'The device companies see that as well. It is down to what makes the most sense; either creating these types of partnerships or bringing the device or pharmaceutical technologies in-house.'

## Contributor profile



Jason Urbanski is senior global product manager at Cook Medical. He is responsible for the company's drug-eluting programme and has been an employee of Cook Medical for 12 years.



Dr Bill Hunter is one of Angiotech's co-founders and serves as President and CEO of the company. He has led Angiotech through significant corporate milestones from its initial rounds of private and public financings, to product commercialisation and profitability.

In the future we will probably see a bit of both. Over the next ten to 15 years we will likely see a drastic evolution of the medical device area, especially with implant products that incorporate pharmaceutical and biologics. The rate of convergence is definitely going to change – we will see more collaboration between device manufacturers and pharma.’

Overall, Urbanski believes the collaborative effort has produced positive results and Zilver PTX will be a bright example of when convergence produces the best that medtech and pharma have to offer. ‘With technologies in the device world, two years is an area where you start to see some separation - where a technology proves itself as a durable platform that will be beneficial long-term,’ he concludes. ‘With Zilver PTX, the people at Cook are very excited about the results and the trend. The industry in general has expressed quite a bit of excitement about the durability of this technology and how well it is working.’

**Collaborative effort**

Dr Bill Hunter, CEO and president of Angiotech Pharmaceuticals, believes that though his company’s collaboration with Cook Medical has succeeded in bringing

**ZILVER PTX: CE MARK APPROVAL IN AUGUST 2009**

The Zilver PTX drug-eluting peripheral stent was designed to treat severe blockages in the challenging and largest artery in the leg. Speaking after its approval Cook said it represented a ‘global landmark in effective peripheral intervention for treating PAD, a chronic disease affecting tens of millions of patients worldwide that is a leading cause of leg amputation and shortened lifespans’. The device is intended to treat PAD affecting the main blood vessel in the thigh, the superficial femoral artery. It, Cook says, solves two ‘key problems: allowing targeted delivery of a drug; and by removing the need for a polymer’.

a revolutionary device to market, convergence isn’t nearly as widespread as many would have you think. ‘The pharmaceutical industry, although very sophisticated at drug delivery, hasn’t really worked in the device aspects of the field,’ he explains. ‘Even the drug manufacturers who have peripherally touched drug-eluting stents did so by primarily coming up with the compounds themselves and then handing over the

delivery components to the medical device manufacturers. Zilver PTX has been primarily handled by medical tech innovation. I think convergence will happen but drug and device companies truly coming together at the development process is still something that a lot of people have talked about but haven’t really done.’

Hunter believes this trend has more to do with corporate finance reasons rather than R&D. ‘There is a fundamental difference between pharmaceutical companies and device companies in terms of how they manage product



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developments and associated risks. Pharma companies are used to entering a phase one trial where nine out of ten things they try, fail. But when they succeed, it tends to be a blockbuster product that helps to pay for all the false starts.

‘Medtech on the other-hand is quite different,’ he continues. ‘When they enter a clinical trial 70–90% of the things they try end up being successful because they are not taking the same level of biological risk. Their end game tends to be more market share and incremental innovation. That has been the business model for the past 20 years. If you look at what limited history we do have now with drug devices, it’s not surprising that the first drug coated implants have been in markets that were expected to be billion plus dollar markets – things like bone morphogenic proteins in orthopaedics or drug eluting coronary stents – because they have the potential to service both business model needs. The markets are big enough to capture pharma’s attention and the rewards were large enough for medtech to take the risk. The tip of the wedge has been on the big ticket, big market devices. I think the next wave, if we truly see a blending of risk development between the two sectors, will be people start going after slightly smaller markets; taking risks in terms of developing into markets that are not established.’

**‘The first drug-eluting peripheral stent is a significant advance in vascular science.’**

The question of how to divide profits from convergence models remains unanswered. Since most drug-coated devices would be better marketed through medtech infrastructure – where specialists work with operating theatres and labs to instruct on device placement – most pharmaceutical companies would not be equipped to handle the commercial channels. Big pharma would be hard pressed to function on the 10–15% royalties they might gain from a collaborative development effort. ‘What needs to happen is to identify markets where the drug/device combination creates a significant value, and that clinical value translates into premium pricing,’ says Hunter. ‘There is enough margin to go around to satisfy the needs of two large companies. I think it would be difficult to go into a classic medtech/pharma relationship, where the drug-coated product sold at roughly the same price as an uncoated product, because where do you find the economic split to compensate both parties?’

Though the healthcare sector is counter-cyclical, able to survive economic downturns better than others, there is no appetite, particularly in Europe for price increases. ‘There is not a lot of room to move,’ Hunter adds. ‘If companies want to grow in this economic environment, they will have to grow through procedural volume rather than pricing pressure. But, having said that, I think if you are able to make a product that truly delivers clinical benefit, the pressure from patients and care givers is such that you can still be successful, even during difficult economic times. The Cook stent is a

classic example. The first drug-eluting peripheral stent is a significant advancement in vascular science.’

### Future opportunities

Many people believed that it would only take five years for convergence to take hold but Hunter believes it will be a slower growing period. ‘About 20 years ago, a lot of pharmaceutical companies divested their medtech assets because, at the time, pharma was growing rapidly and medtech wasn’t,’ he explains. ‘What you see now is that medtech tends to be growing faster than pharma. I wouldn’t be surprised if over the next three to five years we see more pharma companies acquire medtech assets, which in itself will increase convergence.’

‘I also think convergence will start to happen for what I call drug lifecycle management. If you already have a successful drug on the market, that drug has the potential to live a new life on a medical device. You may not be interested in finding a compound for the sole purpose of working in medtech, but if you can add a new lifecycle to an existing drug by crossing it over into a medtech environment, then that is probably a good return for a pharmaceutical company.’

### Gaps in the market

In the UK, there is a huge movement afoot within the NHS to reduce HAIs. Government incentives for medtech and pharma companies to create technologies that reduce iatrogenic infection are increasing. ‘One way is to have medical implants that are capable of killing bacteria,’ says Hunter. ‘Cook has developed a line of catheters that use antibiotics to do that. Angiotech has developed a line of catheters that use an anti-cancer drug called Fluorouracil (5FU) for the same purpose. I think there will be a lot of convergence work focused on infection prevention using near-end-of-patent drugs, where a significant problem can be handled well by drugs.’ The restenosis story that started with coronary stents is now moving into the periphery. The ability to prevent scar and blockage of the vessels is still going to be important and next-generation technologies are expected to develop there. Trying to prevent thrombosis in stents and grafts with drugs capable of preventing clotting is an obvious next generation that will be seen over the next five years.

Angiotech continues to explore convergence opportunities and Hunter believes that in a few years the company will be on its way to developing interoperative sprays for surgeons, to prevent pain, stop bleeding and prevent infection at the incision site. Though this will be a significant achievement, he points out that Angiotech’s collaboration with Cook has offered an opportunity to be part of a technological leap. ‘The Cook stent is a significant medical advancement,’ Hunter concludes. ‘Coronary stenting is a lot easier because the stent is protected by your ribcage, but a stent in the superficial femoral artery can undergo a lot of mechanical stress. A stent that can withstand that kind of pressure combined with a state-of-the-art drug and delivery system, such as Zilver PTX, is a three-step advance; in many ways a more impressive leap than the coronary stent system.’ **WPF**