REALIZING THE VALUE OF PRECISION MEDICINE: TODAY

by Peter Keeling and Jeff Waldron

For eight years, a group of 200 healthcare experts from six different stakeholder groups set aside their competitive agendas to search for an answer to the complex question: how can we advance precision medicine? These biannual meetings, sponsored by Diaceutics, were designed to bring together multiple stakeholders in a spirit of mutual investigation and collaboration. What became increasingly apparent to a core section of this group was that a possible solution may lie outside the current focus on how precision medicine could transform people’s lives in the future through anticipated pipeline technologies and innovations, and lobbying for access to these high-cost therapies.

They reasoned that if the existing precision medicine toolbox could be re-managed, it could be possible to unlock the value of this technology now, rather than five or ten years down the line, producing better outcomes for patients and an economic win-win for all stakeholders. Two years on and this expanded group, known as the PM Connective, is tantalisingly close to proving it.

By mid- to end-2017, the Connective expects to have a personalised valuation model that will demonstrate how, by moving the management of a condition higher up the treatment pathway – from the expense of late-stage disease to early stage treatment – it is possible to better share the value of precision medicine across stakeholders. And by 2020 it hopes to publish its final paper explaining the learnings, how the framework can be deployed, and the value it can bring across not just melanoma but other diseases where the precision medicine promise remains fragmented.

Diagnostics are healthcare’s orphans
At the heart of this ambitious project is the understanding that diagnostics are currently ‘orphans’ in precision medicine, underutilised and requiring deep pockets to drive adoption. To date, this poorly understood business model dynamic is one of the drags of the precision medicine landscape.

Analysis by the Connective reveals that payers are slow to adopt diagnostics. Indeed, without a major pharmaceutical sponsor it could be four or five years before just 25% of US doctors are using the test in the way it was originally designed.

“Diagnostics are the poor relation,” states Peter Keeling, CEO of Diaceutics, which founded and sponsors the PM Connective. “Patient journeys don’t start with new drugs, they start with diagnostics, but the dilemmas associated with diagnostic issues, such as a patient having to deal with a lifelong disease or terminal illness diagnosis, or the need for patient counselling, means physicians are often hesitant to adopt a new diagnostic without clear guidance on its utility.”

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The same reticence is true of US payers who, besides the pharmaceutical industry, form the other major industrial player with the resources to accelerate the uptake of precision medicine. While there have been payer-led initiatives, such as United Healthcare’s $5 billion investment in genetic testing for its patients, or Aetna’s appointment of a centralised precision medicine specialist, the sector has been slow to take up the technology without data-driven evidence.

Metastatic melanoma model

The PM Connective aims to make that evidence tangible to payers by initially focusing its valuation model at the disease specific level. It chose to start building the model around metastatic melanoma – a cancer with unmet patient needs, but highly curable if treated early. The disease also has the right combination of both new drugs and new diagnostics near or on the market that are underutilised, and a pressing need for higher levels of education on the clinical and economic value of precision medicine in melanoma across both the patient and primary and secondary care settings.

As one of our key collaborators, Dr. Howard Kaufman from the Rutgers Cancer Institute, explained “melanoma has turned out to be an interesting disease as it exemplifies many of the key issues facing oncology today. It has challenging disease scenarios, is clearly a paradigm for both precision medicine and immunotherapy, and is confronting the growing need for a combination of prognostic and predictive elements to better stratify patients for primary and adjuvant therapies.”

Thus, our collaboration group is examining prognostic tools that address the risk characterisation of who is more or less likely to relapse, as well as predictive assays that may help tell if a patient is likely to respond to a specific therapy or not. Integration of both technologies and expertise is extremely difficult, but offers the most potential for improved outcomes.

While work is currently underway on valuing specific interventions developed by the Connective, results from modelling historical costs are encouraging.

The Health Economics data suggests that in contrast to current practices, patient management at stages 0-1 of the disease delivers the greatest patient and economic impact. For example, investment in development and diffusion of improved diagnostics could identify 46% of patients at stage zero of the disease (versus base of 23%), reducing second line surgery by 72% for stage III and above, and lowering the overall cost of melanoma treatment by more than $1 billion per year.

There are also promising indicators on an economic level, with suggestions, for example, that while per patient management for stages 0-1 of the disease could increase by 10%, surveillance costs could reduce by up to 20% through access to improved patient self-monitoring technology.

These figures are merely representative of the types of savings that could be possible, but early evaluation of the Connective’s melanoma model suggests substantial improvements in health outcomes and lower overall costs are likely.

Building a different bridge

“As an industry we’ve lost our way in the value discussions about precision medicine,” says Keeling. “We’ve become confused by mixed signals and mixed agendas. When you get the sequence correct – new diagnostics, new treatments, new levels of education – managed and integrated, it’s possible to unlock a more balanced value that can be shared among stakeholders. It’s like trying to build a bridge with ten Lego bricks but finding it doesn’t quite meet in the middle. We think again and use the Lego in a different way, and we have a working bridge.”

Indeed, this ‘different bridge’ would redistribute the value of precision medicine to the various stakeholders, or ‘silos’, of healthcare. For example, a simple shift of 3% of pharma’s revenue could be redistributed to diagnostic and laboratory companies to incentivise more timely testing.

Jeff Waldron, Executive Director of the PM Connective, acknowledges: “Evaluation of the model is complicated because in order to reduce healthcare costs someone is going to get less revenue. So we have to quantify how the precision medicine interventions we’ve identified will benefit each stakeholder, for example, by better positioning of diagnostics on the treatment pathway, ensuring greater uptake of early drug therapies, and reducing payer costs and patient co-pays, as earlier stage treatments lower spend on more costly end-of-life treatments. If we prove our first-line medicine approach in melanoma greatly reduces healthcare costs and improves patient outcomes it’s hard for stakeholders not to buy into this.”

Importantly, the true value of this initiative is that while melanoma was an obvious disease to prove the Connective’s hypothesis, the process is not disease specific. “I think the underlying value of the Connective isn’t what we’re doing in melanoma, it’s to road test a process that can be redeployed in other disease areas,” says Keeling. The Connective is already looking at early onset asthma as its next disease target.

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Disconnected stakeholders

Until now, stakeholders in personalised medicine have been disconnected, working in their own silos, so no one organisation or stakeholder has governance over the entire precision medicine toolbox. This results in underutilised therapies and diagnostics, and patchy education on how to drive value from these tools. By taking on the mantle of a single organisation that integrates the views of each of the 12 healthcare stakeholders – drawn from the direct patient pathway, R&D, and funding and regulation – the PM Connective has effectively ensured the disease model should meet each of the stakeholders’ individual needs and expectations.

Operating as a not-for-profit organisation, the PM Connective has brought together up to 160 key representatives from within these healthcare silos to establish the hurdles that encumber each stakeholder in implementing precision medicine, and to pinpoint the solutions. They include Drs. Howard Kaufman, Shridar Ganesan and Janice Mehrert (Rutgers Cancer Institute of New Jersey), Suzie Chen (Rutgers Pharmacy School), Javier Leaniz (Novartis), Erika Hedden (Merck), Ralph Riley (Janssen Diagnostics), Paul Langley (University of Minnesota and Maimon Research), Gil L’Italien (Alexion and Yale Medical School), Eloise Aita (Diaceutics), Gregg Mayer (BioCore Strategies), Mark Trusheim (MIT Sloan School), and Jerry Conway (Foundation Medicine).

Their proposed solutions are currently being defined, examined and processed through the valuation model to quantify and prioritise interventions for implementation, so the Connective’s health economists and advisor groups can integrate these components into an economic value message.

“We’ve travelled a long journey and there is a tantalising glimpse that suggests our original hypothesis of utilising a better architecture of existing diagnostics treatments and education can really unlock the financial and value promise of precision medicine,” says Keeling. “If we achieve this, and we believe we can, there will be multiple winners along the way towards transformative patient care.”

Realising the benefits

For these benefits to fully play out, however, the PM Connective needs to attract more collaborators, in particular among patient advocates – who can help educate patients about the value of early melanoma diagnosis and treatment – and the pharmaceutical industry. To date, the Connective’s proof of concept stage has been funded by Diaceutics, and ‘in kind’ by Rutgers Cancer Institute, which donated workshop facilities. However, outside financial sponsorship is required to move to the next stage.

Waldron says: “Everyone I talk to is genuinely enthusiastic and interested in the PM Connective. Until now, some experts have viewed it as an idealistic goal or mission, which of course it is, but the collaborative model for melanoma is now starting to show real promise, and there are benefits to being in the collective network, not least connecting with peers in all silos of the healthcare system to improve organisational linkages and understanding of other perspectives.”

Many CEOs and R&D heads now list precision medicine as a pillar of growth for their business. The deliverables for the pharmaceutical firms that engage with the Connective include:

- Motivation to find ways to advance therapeutic assets
- Help with finding diagnostic partners
- Reimbursement considerations through the Connective’s collaboration with payers
- Possible access to patient aggregated data and educational opportunities through its network of Patient Support Groups
- PM Connective, cancer centres of excellence, and clinician/investigator collaborators may offer outside expertise to validate and confirm findings and possibly aid clinical trial participation.

“I think we’ve suffered from a series of headlines about the hundred dollar genome or new technology that will revolutionise, for example, Alzheimer’s disease,” says Keeling. “Those of us close to it are witness to the fact that those technologies, though brilliant, often sit in the margins for years. What makes the work we’re doing important is that we are trying to make it accountable now.”

With practical and financial support from the industry and other stakeholders, a new precision medicine model and valuation framework that will not just lower healthcare costs but provide better clinical outcomes for patients is indeed tantalisingly close to being realised. “Going forward, the big challenge is to stay focused and keep our one simple agenda,” says Keeling. “That’s what makes us unique.”

Interested parties and potential supporters can contact Jeff Waldron at JR.Waldron@PMConnective.org

Peter Keeling, has driven Diaceutics to become a leader in innovative solutions that enable pharma to leverage diagnostic testing globally. With over 30 years in international healthcare, Peter is a thought leader in diagnostic commercialization, a respected speaker at precision medicine events and has published widely. Peter has also spent extended periods in applied industrial research, including a year with MIT’s Pharmaceutical Program.

Jeff Waldron, Executive Director of PM Connective, is tasked with building and sustaining the network of collaborators. He has created greater awareness of the project through attendance at industry conferences – including the invitation-only, ninth Annual Scientific Retreat, organised by the Melanoma Research Alliance in February this year, which is so well connected to advocacy groups – and through round table discussions, including his joint presentation with Dr. Katherine Johansen Taber of the American Medical Association, on barriers to the adoption of precision medicine, at the Journal of Precision Medicine Leaders’ Summit in August last year.