EphMRA Conference 2018: Parallel Session 6

Forecasting and Data Analytics Round Table Discussion

Ben Collins – Boehringer Ingelheim and Erik Holzinger - groupH

Ben Collins and Erik Holzinger facilitated a lively discussion on the topic of Forecasting and Data Analytics. The group consisted of some very experienced individuals from a broad range of pharma companies and business functions, as well as several people from the agency side, providing for diverse backgrounds and insights into what one individual named "…a very big subject".

The discussion focussed on four key areas:

Organising the forecasting process across the Pharma organisation – assumption, communication, and consensus

We have seen over time that getting forecast assumptions right can be difficult enough in itself, but when you branch it out to get input from colleagues and countries it can become a complex exercise. Erik kicked off the session by asking the group to share their experiences and potential frustrations on what can go wrong in the process, what anyone did to improve this process and what the potential pitfalls might be.

One of the major frustrations for forecasters was expressed as the inability to make senior management understand that a long-term forecast (LTF) will be inaccurate. There is not necessarily anything wrong with the process, or the assumptions, it is just that a forecast has a different purpose.

"The future is not already here so you have to ask yourself what the forecast is for. If it is for decision making how often do you need to make those decisions? The reason forecasts are not wrong is because we have the opportunity to change the future, so is it wrong or did it tell us the right thing to do? That's the struggle I have."

It was observed that people unfamiliar with data fear forecasting and see it as "magic" or a "dark art", and as a result can be less engaged.

"The fundamental problem is always that you're asking people to forecast who are scared of it, not engaged with it and don't know how to do it. Rubbish in = rubbish out. You can have the best platform in the world but if you are so worried about a point that is so insignificant then you are unable to communicate that forecast."

The size of the organisation was not necessarily seen as the problem, although the fewer people involved in the process, and the shorter the outlook, were attributes considered to deliver forecasts with the least complexity and time needed and the greatest accuracy.

In terms of the types of forecasting undertaken it was broadly agreed that strategic forecasts were rarely needed to be created more of often than once per year; a one-off forecast was performed for a launched product that was repeated once or two years after this; and monthly forecasts were necessary for tracking sales teams.

As different forecasts are required for different teams, agreement is needed on which models to use, and it was stated that it can take time to achieve this as the finance, sales, supply chain and commercial teams don't necessarily talk to each other and may all develop their own individual forecasts. There is also the issue of global vs local forecasts as, again, different models can be used that are either internally or externally sourced.

"We had three teams and three forecasts, so would spend one month each quarter to argue over which one is a good one……Models were important as all different ones were used. All were good and, in the end, maybe 5% difference. The issue is about model ownership and the level of trust you have in it."

Best practice was deemed to be ensuring consistency throughout, to minimise the variation in the models used and thus avoiding different numbers being reported which can lead to unnecessarily long discussions with senior management who receive these forecasts from multiple sources. Ownership of the models was considered key to this.

"We try to solve at the global level, but the problem is that there are people doing forecasts at any level so the amount of time to explain the differences is huge……it goes to the same top management and they are not happy."

As well as differences in the models, the challenge of differing market definitions was also discussed. There can be an inherent bias in that the team creating the forecast will be influenced by the advantage a specific definition will give them. This was an area the group felt should be strongly managed at a high management level to achieve order and clarity.

"Everybody applies the market definition that suits their situation. For an affiliate they do not want it too high, but the global brand manager wants the highest possible number, so it's really a political war within many global companies. Very, very difficult to manage. Need something strongly managed at a high level."

Erik summarised this section by observing that we may not have shared all possible solutions, but it's very much about communication, organisational structure and governance and, of course, bias can come in at any level depending on who provides the forecast and what incentives they have to bias a forecast in one or the other direction. Possible solutions can include, a clear forecast process and ownership, making assumptions transparent through documenting sources and team consensus on assumptions, discussing individual assumptions and their rationale rather than the end result reduces potential bias and country prioritisation can help simplifying the process. Engaging a third party remains an option when time is tight, primary market research is required or when key assumptions would benefit from non-inhouse validation.

"It is good to know we are not alone in our challenges!" was one of the participant's comment.

How to communicate strategic forecasts and illustrate uncertainties to senior management - does Monte Carlo simulation have a role here?

Erik opened by saying there are different ways of communicating uncertainties and a different level of effort that goes into that depending on which question you need to answer, i.e. which stage of the lifecycle are you at? Is it early development or in-licensing? Twenty years ago you may have used base/upper/lower case. Now there are more tools at anyone's disposal – tornados, sensitivity analysis and Monte Carlo among others facilitated by appropriate software. Monte Carlo seems a meaningful way to communicate uncertainty to an audience. Also, soft factors like behavioural science and other uncertainties that cannot be easily expressed in a number.

"Management are not very good at uncertainty, as people are not very good at uncertainty. I think people really don't understand what we are telling them. Now we have a data science group and they want to do predictive analytics. I'm not sure maths is the problem, so I'm not sure complex maths is the solution to the fact that the future is ours to make. It has not already been pre-determined, so we have to work harder at the forecast to make it clear."

"I think they understand uncertainty, but they don't know what to do with it. It is easier to communicate a range than a base case."

These were early contributions in this discussion. This quickly moved on to establishing how this could be dealt with. It was observed that Monte Carlo still had relevance with senior managers as this was a tool that was popular with MBA courses in the past, and now those graduates are in senior manager roles, so are comfortable with this particular methodology and can interpret it. It was deemed to be a good way to communicate uncertainties that cannot easily be demonstrated with a single number.

"We have an affiliate that doesn't like the epi data we've given them. There are two different numbers from two papers – they want to know which is best. They can either choose one or the other. Failure to decide means Monte Carlo can help as they can put the range in and run it."

"Most of our LTF is about what the budget is. The budget is a target. Needs to be sufficiently stretched so that we are not giving money away and sufficiently achievable that we're not ruining the business by investing money we don't have. With a good Monte Carlo you can decide where you want to be within that and have a feel for what risk you are willing to take."

It was observed that Monte Carlo and applying complex maths will not improve forecast accuracy as such and reverting to a simpler approach and focussing on the people creating the forecasts may be a better tactic.

The use of machine learning was also discussed. Its value was seen in scenarios where short-term decisions had to be made with a high degree of detail and certainty e.g. sales rep budgeting and the allocation of resources over a 6-12-month period. The human approach was considered far preferable for long term, strategic decisions with a lower degree of certainty.

"Machine can handle far more data and be used to check the accuracy of the model before we apply the forecast. Very good for short term decisions."

Required granularity and scope in forecasting strategic pipeline and in-licensing assets: US + RoW?

Ben initiated this section by asking the question: If you had to do a pipeline forecast for a launch in 5 years' time how granular does it need to be and what regional make up does it need to have? US &

ROW? Europe? 10-15 years ago we were talking about the BRIC markets, but these are still not that important and the EU is declining in importance. What is the optimal mix of regions for an early stage forecast?

The discussion started with exploring the sort of investment decision that the forecast will be helping to make.

"Am I making this decision to invest in clinical trials or to invest in manufacturing capacity? For a financial forecast a US plus a factor might be enough. For a capacity forecast it won't be enough."

The type of product and formulation will also influence the granularity required for a supply chain forecast.

"If it is an oral small molecule is it in the KG, tonne or hundred tonne range. That's it. We don't care about anything else. If it is lyophilised, needs a cold chain and a specific platform that is used for multiple products then it's (granularity) really important."

"Five years out a global forecast is fine for manufacturing volume. The dose isn't always clear at that point so can have an order of magnitude out within the forecast."

It was observed that capacity questions are being asked in earlier stage of development as the companies often want to use the same supply for phase III trials and the final manufacturing facilities. Also, for biologics and products of high toxicity/unknown toxicity as there are capacity constraints. Manufacturing constraints can influence the forecast.

It was proposed that for a financial forecast the level of accuracy will depend on which stage the product is at and whether it is a licensing opportunity or not.

"If pipeline and 4/5/6 years out – is it go/no go? Less accuracy is needed. If licensing-in then there is a deal to bargain with and it needs to be more precise. Need country, or group of countries, and we involve the country side."

Erik posed the question: If the scope is decided based on the original question would someone then go out and research that and do more work in those countries you include? You can almost say if US is not positive then you can have a go/no-go based on that, but if non-US basis you would just focus elsewhere.

"We work closely with market access for somewhere like China, so we try to group the maximum number of countries together, discuss with them to validate assumptions and agree everything. We involve the affiliates when looking to license in and we need to be precise."

The discussion here established that the geographies to include in a forecast is entirely dependent on the business question the forecast is looking to answer and there is no "one size fits all" approach. For strategic forecasts it depends on future pharma market growth projections but also the indication and its epidemiology (e.g. Asia and other geographies vary significantly from US or EU when it comes to HCC, Hep C or the incidence of rare (often genetic) diseases).

Early insights into the application of Behavioural Economics to the forecasting process

Erik introduced the topic of Behavioural Economics (BE) and how we can use this to interpret the feedback we get from doctors in primary research regarding their prospective prescribing preferences. How do we decide on a market share in the future based on information they provide?

Ask someone today what they will do in the future and it's likely that in 90% of cases what people will actually do will be significantly different to what they thought. Why is that? Can we have any influence over either correcting or avoiding that error by understanding these biases better? We know doctor biases are there. We must discount them but by how much? Can BE help to make forecasting less of a dark art?

The group agreed that there was a world of difference between the term "market share" and "preference share", and that forecasters should be mindful of this when conducting quantitative primary research. Asking a doctor how many patients they would prescribe a drug for bears little correlation to an accurate market share.

"Don't trust what people tell you. Look at what they have done in the past" was a comment from one participant.

"Don't ask how many patients they would prescribe for, ask whether they like it. Believe what they say they think rather than what they say they will do"

"Can't expect any accuracy when you ask what someone will do. You need a consultancy approach and defend the decision to your colleagues. Are management happier with process and algorithms rather than the judgement of an experienced forecaster?"

This does not mean there is no value in asking the question relating to preference share, but it was considered that the output should be used with caution, and it was the role of the forecaster to use as many possible different ways of validating a patient share, their judgement, together with real world data, to create a market share.

"[for an inline product] We looked at our salesforce as we were not getting the share we should be getting. Had a good share of voice and brand equity was good, but we were still not getting the share. It came down to the fact the doctors had already said which one they preferred, and we didn't have a message to change their mind. I don't know whether BE can help us with this. We need to find better messages and decide how well they will perform to put into the forecast."

It was discussed that in the preference vs market share debate it is only possible to validate a preference share shortly after launch, so this is generally only available for consumer products. It would be difficult, and expensive, to validate for prescription products and there are very few studies on this, especially not long-term ones.

"There are very few papers to validate preference shares, especially after five years in the market. It is intrinsically difficult to do because of long time intervals, data availability and data transparency constraints and because of potential non-anticipated changes in TPP and market conditions over time."

Approaches using Real World Data (Real World Patients) can minimise the need for discounting or 'adjusting' preference shares to patient shares. Behavioural Science insights can be used to minimise bias when interacting with an HCP during PMR. In any case, the purpose has to justify the means as no single approach is perfect for all situations (and budgets).