

# Medical Technology Insights: Predicting the Future

Forecasting Initial Product Demand and Sales  
Revenue for Novel Medical Device Technologies



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“Developing an accurate forecast for new medical technologies is both an art and a science.”

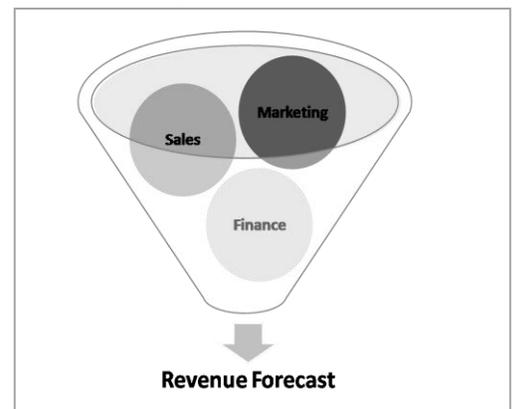
Developing accurate forecasts is important to medical technology companies for both the financial and operational aspects of the business. Forecasts assist the finance group as they develop revenue plans, determine appropriate expense levels, and forecast the profitability of the company. The operational group uses forecasts to develop a production schedule, to make component buying decisions, and to plan for any required capacity changes needed to meet demand. Both of these components are vital to companies as they develop their annual business plans and for their long-term corporate strategic planning efforts.

During the strategic planning process, the sales, marketing and finance group are typically involved with the development of a monetary-based sales forecast (Figure 1). The forecast is usually based on monthly sales for the 12month time period comprising the next annual plan and then a more long-term forecast for a 3 to 5 year strategic planning period. Once the sales forecast has been finalized, the marketing group often works with the operations group to develop a 12 to 18 month product build schedule which insures sufficient quantities to meet the sales plan with additional production to allow for a safety inventory of the product. This safety stock is needed in the event that sales demand exceeds the plan or if there is a temporary delay in production of the product creating a potential out of stock scenario.

Developing a sales forecast for existing products is fairly straightforward. Forecasts for these products can be arrived at by conducting a statistical analysis of historical sales data and then

combining this information with anticipated changes in market dynamics, sales organization structure and pricing to project future sales.

Forecasting sales revenue and product utilization for novel medical technologies prior to commercialization becomes much more difficult due in part to the lack of historical sales data and the unknowns associated with a new product in the marketplace. In this scenario, many individuals assigned with developing a forecast for a new product line often resort to making a SWAG (scientific wild ass guess) as to what product demand will be following commercialization. While this may be an accepted approach, it often results in forecasts which are overenthusiastic or not sufficiently validated for strategic decision making purposes from a financial or operational point of view.



**Fig. 1. Functional groups typically involved with the development of a revenue forecast.**

Developing an accurate forecast for new medical technologies is both an art and a science. Using input from market based assumptions and company related parameters, a spreadsheet-based model can be built which allows the user to more accurately forecast sales revenue and product demand. As a result of using imbedded formulas in



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these spreadsheets, the user can easily determine the effect changes to baseline assumptions can have on the forecast and allow for the modeling of differing scenarios. It is important to combine the above with a “reality check” of the projections to determine if the output from the model makes sense based on the user’s knowledge of the marketplace.

*Market Factors*

While spreadsheet-based forecasting models can often accurately predict sales revenue and product demand, numerous market related factors (see Table 1) can substantially influence the accuracy of forecasting models for new medical technologies. Understanding the influence market related factors may have on the adoption curve for a new technology and factoring these into the assumptions for the forecasting model is imperative.

**Table 1. Examples of Marketrelated Factors to Consider When Forecasting**

- Competitive environment
- Price sensitivity for target market
- New products committees
- Influence of buying groups
- Customer’s access to working capital
- Patientrelated factors
- Seasonality of business

Direct or indirect competitive products which are currently being promoted within the same target markets as the new technology can impact how fast a new product can enter the market and its ongoing growth rate. Understanding how customers within the target markets view the clinical and economic value of the new technology versus current competitive products is required in order to develop an accurate forecasting model. The potential future introduction of product

enhancements to current competitive technology or additional new market entries should also be considered when projecting longer-term sales revenue and product demand.

The price sensitivity with the target market(s) for the new technology and the differential pricing between the new product and existing technology are key drivers of market adoption and the ability to gain market share. If the direct cost of the newer technology is substantially higher than that of existing products or if this technology represents a first of its kind market entry, it is important to understand timelines for the availability of clinical data supporting the value of the technology and decisions on coding, coverage, and payment amounts by 3<sup>rd</sup> party payors.

The type of clinical study conducted with the technology, the study methodology utilized, and the prestige of the journal the results are published in are all factors which should be accounted for in forecasting models in conjunction with the timing of planned publications.

The availability of incremental reimbursement for newer medical technologies is a key factor which should be considered when developing forecasting assumptions. Anticipated changes in coverage and payment amounts to providers for the technology should be incorporated into forecasting model based on the presumed timing of upcoming rulings by 3<sup>rd</sup> party payors. If the technology is deemed not eligible for incremental reimbursement, the timing and ability to formulate an economic message which supports the use of the product should be considered when forecasting.

Most hospitals have new product committees which limit the flow of newer technologies into their hospitals.



“The timing of product availability and the ability to build sufficient inventory to meet demand are critical factors towards determining the timing of a product launch.”

Incorporating projected timelines for gaining hospital approval is important as a part of the forecasting process. Elongating this timeline may be required if a trial or assessment period is mandated. It is important to include the potential need to provide free products during a trial period as a part of the build forecast since these items would not be captured by a revenue forecasting model. Assessing whether a purchasing contract with a regional or national buying group will be required and the projected timeline to finalize these contracts should also be assessed as assumption for a forecasting model are developed.

If the new technology is a big ticket items, understanding economic trends and their influences on the availability of capital to hospitals is important. As costs of borrowing money increase, the costs of making leveraged capital purchases or leasing go up resulting in a slowing of the adoption of expensive technologies which require capital outlays.

Patient factors can also influence forecasting. Products which are associated with elective procedures where no insurance coverage is available or those where patients have copays can be impacted economic conditions as well. As the economy weakens, patients often put off having elective procedures performed as a result of financial concerns. This is especially true for cosmetic procedures. Conversely, as the economy becomes stronger, the number of elective procedures performed may increase substantially as a result of the backlog of patients who have put off having the procedure performed. The above influence long-term strategic forecasting efforts in particular.

From a short-term perspective, adjusting forecasts for seasonal factors

is also important. For some new technologies, it may be important to model for the potential change in demand during vacation (e.g. July and August) and holiday seasons. These are times when patients may be unwilling to undergo elective procedures or when providers may not be as accessible due to their own vacation plans. If the new technology is focused on one particular physician specialty, adjusting for the potential impact of an annual scientific meeting within this specialty may be required.

Another often overlooked seasonal factor which can influence forecasting is the number of selling days per month. Since the number of selling days per month can vary by as much as 20% (from as little as 19 to as many as 23 days), adjusting monthly forecasts to align with the number of potential selling days is important to insure accurate forecasting.

#### *Company Factors*

There are also a variety of company-related factors which can affect forecasting for new medical technologies (see Table 2). Models should include variable assumptions based on these factors.

The timing of product availability and the ability to build sufficient inventory to meet product demand are critical factors towards determining the timing of a proper product launch. Launching prematurely when an adequate inventory position or manufacturing validation has not been established can lead to post-launch backorders which cripples launch momentum.

**Table 2. Examples of Company-related Parameters to Consider When Forecasting**

- Product availability
- Inventory position
- New technology or product line

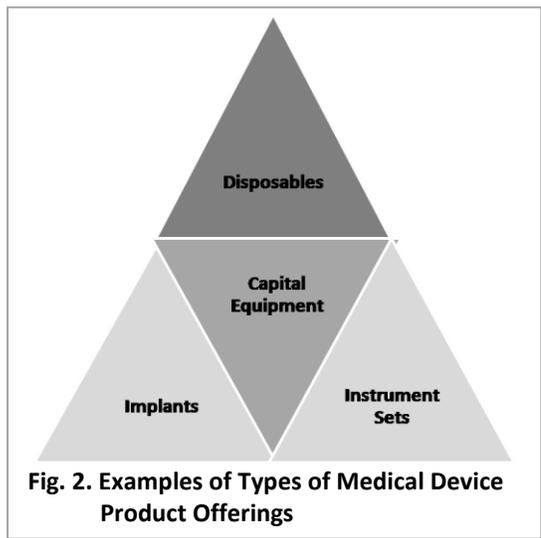


“The type of products a company offers can also influence the assumptions used when forecasting since differing product types have their own unique market dynamics.”

- extension?
- Type(s) of product lines
  - Sales organization
  - Geographic markets targeted
  - Pricing strategy

If the new technology is a product line extension, there is the potential for the new product to cannibalize current business, if it is a next generation product designed to replace the current product line. If the product is a planned add-on to the product line which is anticipated to expand applications and use for the technology, the ability to build momentum by leveraging existing business is a key factor to consider when building a forecasting model. Sales history associated with the company’s introduction of previous product line extensions can often be used as a guide to developing assumptions for the product line extensions. The incremental clinical and economic value associated with the new product line should also be considered.

The type of product a company offers can also influence the assumptions used when forecasting (see Figure 2) since differing product types have their own unique market dynamics.



If the technology is stand alone capital equipment, the customer access to working capital (see above) and the timing of the start of a new fiscal year are important considerations. The availability of possible alternative capital placement programs (see Table 3) can also influence forecasting since these may expand the ability for hospitals to access the technology. If the technology requires capital equipment and a disposable component (razor/razor blade model), the hospital might also have the added ability to bundle disposable purchases in order to obtain the capital equipment.

**Table 3. Examples of Options Available to Hospital for Acquiring Capital Equipment**

<b>Purchase</b>
<b>Lease</b>
<b>Rent</b>
<b>Bundling with disposables</b>
<b>Evaluation unit</b>

It is important that capital equipment that is not inherently captured in a revenue model (e.g. equipment which is placed in a hospital without generating direct revenue) is accounted for when a build forecast is developed to insure adequate supply to meet customer’s demands.

Forecasts for disposable devices which require a capital equipment component should also include assumptions for the number of disposables which will be utilized over a given time period for each unit of capital equipment available in the field. Assessing the productivity (e.g. disposables sold per capital equipment utilized) is an excellent method for arriving at metrics which can be used in the future to adjust a forecasting model.



“Forecasting for new medical technologies can be further complicated if the strategic plan includes the launch of the product in numerous geographic markets. Differences in the timing of introduction into these markets, the use of alternative sales channels, and variations in both market dynamics and pricing structures create the need for more complex models and the ability to create multiple differing scenarios.”

For implants which require specialized instrumentation sets, forecasts should take into account the number of sets which will be available in the field when projecting product sales. If a limited number of instrument sets are available at launch due to production capacity of budgetary constraints, assumptions for the revenue model should be adjusted accordingly. The product adoption curve can be accelerated as the number of instrument sets available increases over time. Similar to a capital equipment/ disposable device model, assumptions for the likely number of implant procedures per available instrument set over a given time period is an excellent metric to develop and track following product launch. These metrics can then be used to refine the forecasting model over time. Since instrument sets are often loaned to customers on a consignment basis and are may not be associated with direct sales revenue, there is a need to account for these sets separately as a part of the build forecast.

The structure and makeup of the sales organization is another company-related factor which can significantly affect the sales ramp for a new medical technology (Table 3). The use of a direct vs. distributor sales force, the number of products the sales representatives are promoting, the previous experience the sales representatives have with the introduction of new products, especially products within the therapeutic area(s) the new technology is directed towards are all important elements to consider when developing sales projections.

**Table 3. Sales Organization-Related Factors Which Can Impact Forecasting**

- Direct vs. distributor sales force
- Number of sales representatives who will be promoting the products
- Number of additional product lines sales reps are responsible for

- Tenure of the sales organization
- Experience sales organization has within therapeutic area
- Experience launching new technology
- Compensation

The use of a direct sales organization or exclusive distributor partners increases the likelihood that the promotional efforts by the sales force will be aligned with the company’s priorities increasing the ability to drive initial sales with the new medical technology. If nonexclusive distribution partners are utilized, the initial growth rate could be slowed as a result of differing product promotion priorities and a more dispersed sales training approach.

The number of products the sales force is promoting and the differential ability for these products to generate commissions for sales reps should also be considered when forecasting since these can also influence the priority the sales force places on promoting a new product. If the new product is seen as having a strong potential for generating commission dollars, sales reps will likely take the time to become more knowledgeable about the product and will prioritize promoting the product over other products they carry. Plans to provide additional incentives or SPIFs (sales promotion incentive funds) in conjunction with the launch of a new product along with the timing of contests should also be considered when forecasting.

If the company’s sales organization has limited experience launching newer medical technologies, the forecasted sales ramp should be reduced versus expectations associated with the launch of a new product by a sales force with significant experience introducing new products to the marketplace.

Developing a forecast for new medical technologies can also be further

Do you need help with the development of a strategic marketing plan for your novel medical technology or tactical support for your Company's marketing initiatives? The Atticus Group can help.

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complicated if the strategic plan includes the launch of the product in differing geographic markets. Potential differences in the timing of introduction into these markets, the use of alternative sales channels, and variations in both market dynamics and pricing structures create the need for more complex models and the ability to create multiple differing scenarios.

A company's long-term pricing strategy should also be considered when developing revenue forecasts especially forecasts used for 3 to 5 year strategic plans. Anticipated future pricing increases should be included in the model to insure any increased sales revenue resulting from increased pricing is accounted for.

#### Conclusion

Developing an accurate sales forecast and an estimate of product demand for a new technology requires a thorough understanding of both market and company-related factors which can influence the adoption curve for the product.

The development of a forecasting model which has variable input parameters that can be modified to in order to assess the impact of changes to the basic assumptions used for the model can be useful.

Validating the results of the forecasting and by conducting a reality check of the modeled productivity metrics can help to insure the accuracy of the model. Revenue forecasting and product build models should be assessed periodically after product launch and adjusted as needed to reflect additional insights and changes to market dynamics which have occurred since product launch.



#### About the author:

Larry Yost is the Founder and Managing Partner of The Atticus Group, LLC. Mr. Yost has over 30 years of domestic and international medical device, molecular diagnostics, and pharmaceutical company experience including experience with both small venture capital startup companies and large multinational organizations. His expertise includes the development and implementation of comprehensive strategic plans and tactical marketing solutions for novel medical technologies. Mr. Yost is a graduate of the Purdue University School of Pharmacy.