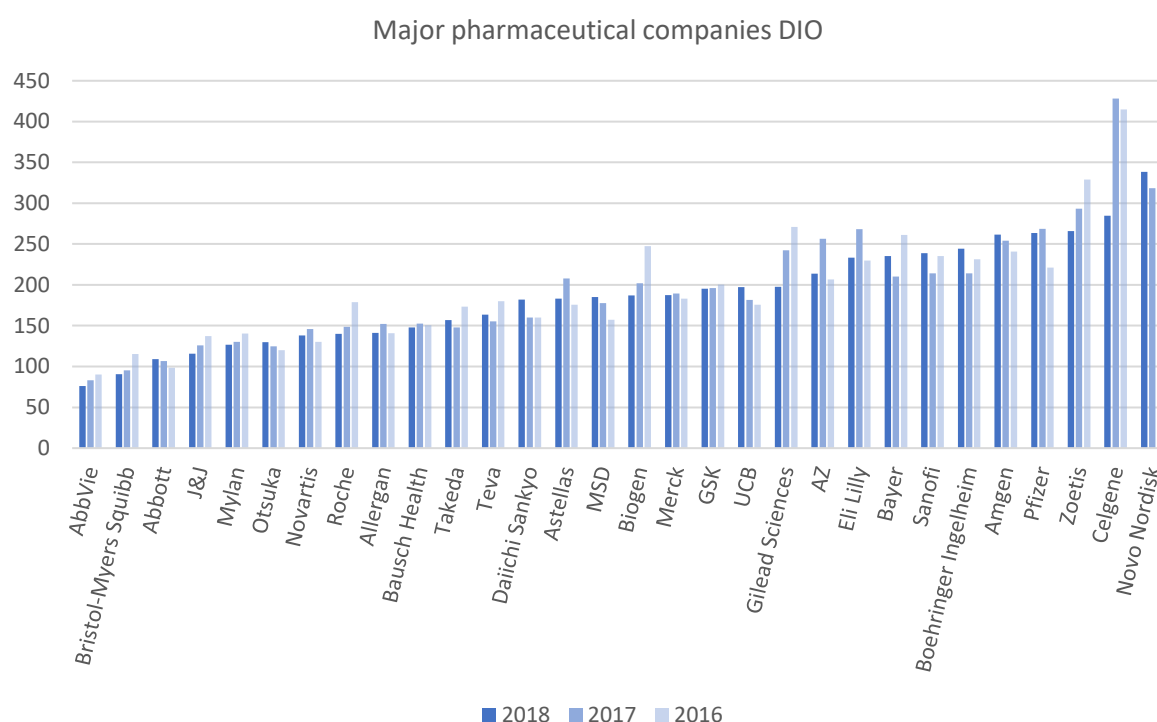


Inventory trends in the pharmaceutical industry



(DIO = Days Inventory Outstanding = inventory value/(cost of sales/365). See notes at the bottom of this paper)

Executive summary

- Inventory remains a major sink of cash for Big Pharma as a whole: \$115 billion across these 30 companies at the end of 2018.
- The opportunity for improvement is high across the industry.
- And the value of that opportunity is great. When an average company in this benchmark reduces its DIO by just one day, \$21 million in cash is freed up.

Despite the many current cost pressures, pharmaceuticals is still a relatively high margin industry, and working capital does not seem to be a priority for many pharmaceutical firms. But all stakeholders, from patients to investors, should take an interest in inventory management, since inefficiencies can lead to both shortages and waste.

DIO is not a metric that should trend to zero, and each company will have a different optimal inventory level based on a number of variables, particularly its product range. But the very wide range of inventory levels evident in this benchmark is at least in part indicative of efficiency. While even the leanest companies are still finding year on year improvements, the opportunity for some of the companies considered is very significant.

Detailed analysis

Inventory serves an important purpose in any industry. In the pharmaceutical industry it is usually a life-saving or life-enhancing purpose. But does the industry as a whole really need the ~6 months stock it held at the end of 2018? We believe not. And we believe that a significant proportion of the working capital tied up in that inventory could be put to better use.

How much inventory should a company have? Each has a different product portfolio, with different manufacturing lead times, supply chains, criticality to life and demand variability. Therefore, each will have its own optimal inventory levels. The only way to really know how much you should stock is through a bottom-up analysis, but few and far between are the companies that can do this.

It is relatively easy to squeeze some cash out of inventory in the short term just by applying top-down pressure on the organisation, but this can have a number of undesirable consequences and is usually unsustainable. Inventory optimization ensures you have enough inventory to meet demand without tying up capital and other resources unnecessarily.

The thirty companies in this benchmark together had ~\$115 billion in inventories at the end of 2018, up from ~\$106 billion at the end of 2016. That's a compound annual growth rate (CAGR) between 4% and 5%, which is slightly higher than revenue growth over the same period (3% to 4%) but somewhat lower than growth in cost of sales (6% to 7%). This indicates a slight improvement in our preferred top-level measure of inventory performance (DIO), which has decreased at a CAGR of 2% on average over the period.

To put this in a different perspective, if DIO had remained constant at end of 2016 levels throughout the period, there would have been an additional \$4.38 billion tied up in inventory at the end of 2018. That's \$146 million per company on average. The companies in this benchmark are gradually getting slightly leaner in inventory overall, but with significant variation between companies.

In DIO terms, 15 companies saw an increase between 2016 and 2018, 14 saw a reduction and 1 stayed the same.

A number of companies have delivered solid year on year (yoy) reductions in DIO. Abbvie, Bristol-Myers Squibb, J&J, Mylan and Roche – all top quartile in this benchmark – have seen average yoy reductions between 5% and 11% for the last two years. Outside of the top quadrant, only four other companies have achieved this. Biogen, Gilead and Zoetis all started from a position of much more substantial stock holdings, and show average annual reductions between 10% and 14%. Technically GSK also fits into this category, but with a very small improvement – it might be fairer to describe GSK's stock position as flat over the 3-year period.

8 companies have seen the opposite trend – year on year increases in days' inventory outstanding. Abbott, Otsuka, Daiichi Sankyo, MSD, UCB, Amgen and Novo Nordisk have all seen average annual increases between 4% and 9% although here the similarity between these companies ends. Abbott, despite the increase, is still the third leanest company in this benchmark from an inventory perspective, while Novo Nordisk is at the other extreme, with ever closer to a full year's stock on hand. And, of course, all of the companies have their own particular circumstances. For instance, given the major malware attack which MSD suffered in June 2017, which left them with little to no IT infrastructure in the short term, and a full recovery that took around 12 months, it is not surprising that they saw increases in inventories each year between 2016 and 2018. It is perhaps a remarkable achievement their position has remained as stable as it has.

These figures also need to be understood in their proper context. The market and companies are not standing still and it is not just a matter of business as usual. Take Bayer as an example. Inventories between 2016 and 2018 have gone from €8.4 billion/DIO 261 (2016), to €6.5 billion/DIO 210 (2017) to €10.9 billion/DIO 235 (2018). Quite a variance over three years, but almost all accounted for by first the spin off of Bayer Material Science as Covestro and then the acquisition of Monsanto.

It is also worth pointing out that year on year increases are not necessarily a bad thing, especially the leaner you get in inventory. Inventory can be a strategic asset and companies in full command of their inventories might decide to deliberately increase holdings to drive higher service levels or to account for new products or supply chains. Although if inventories have not been optimized in the first place, this can just be a case of increasing excesses.

Another factor not directly visible in the DIO figures is the write off or write down in inventories. Celgene, soon to be acquired by Bristol-Myers Squibb, reduced inventories from over 400 days to under 300 between 2017 and 2018. However, according to Celgene's annual report, this drop is down to "raw material charges recorded during 2018". In other words, one assumes, the write-off of obsolete stock. With a gross margin of over 95%, Celgene did not need to put a high priority on keeping lean inventories. Scrapping obsolete inventory is good practice both financially and operationally, but obviously does not free up working capital.

Not that Celgene is alone in writing off or down large amounts of inventory. Companies are not equally transparent on this front, but it is common to see write downs in the tens if not hundreds of millions of dollars each year. It is common practice in the industry to write down the value of inventories built up pending approval of a new drug, so reversals of write downs are not infrequent either, but nevertheless scrapping of obsolete or irredeemable quality rejected stock constitutes a major financial item for a high percentage of companies. From 2018 annual figures we see one company write off as much as \$208 million.

Conclusions

The industry appears to be making progress in inventory management, although slowly. Individual companies illustrate how much can be achieved. Others appear not to be prioritising this lever. The potential for improvement remains large. The pharmaceutical industry is not alone in this. But in a context of margin pressures and lively M&A activity, the opportunities are great.

If you would like to discuss how to take your inventory optimization capabilities to the next level, contact us: information@nventic.com

Notes:

All DIO figures taken from published annual reports for 2016-2018. Most companies in the benchmark use calendar years as financial years, except for Daiichi Sankyo, Takeda and Astellas, where the data used is from the 12 months to 31 March in each year.

The latest Takeda figures used do not include the integration of Shire.

Some companies classify some of their inventories as “other assets” on their balance sheets. We have included such amounts in our DIO calculations where it is visible in the annual accounts.

We have not included any inventories written down, but since pre-release write downs are so common and so substantial (with one over \$900 million in 2018), it would be fair to say that true inventory levels are higher than this benchmark shows.

Boehringer Ingelheim does not report cost of sales, so an estimate has been made based on information in their annual reports and typical ratios from peer companies.