

# Inventory management and analysis in an orthodontic practice



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**Inventory is a word very frequently used yet most often never practiced, in the true sense, by the practitioners of orthodontics. This article clears the mist around the word “inventory” and provides simplistic explanations regarding maintaining and managing inventory in day-to-day clinical practice. Inventory is always dynamic; it is recommended that every individual/practice is different, and it is important to individualize the ways and means of maintaining an inventory and making it work positively toward a successful practice.**

**Investing in good inventory software and delegating the responsibility to a specific person with careful monitoring by the orthodontist is important. The key operative word for inventory management is “Neither Too Much, Nor Too Less.” (Semin Orthod 2016; 22:280–288.) © 2016 Elsevier Inc. All rights reserved.**

## Introduction

Sometimes the technical jargon used complicates matters for a practicing orthodontist, who wants to use the “KIS” (keep it simple) principle for even something which in academic terms has little relevance but cannot be ignored in day-to-day practice. Inventory is the life blood of any supply chain or in our case, any practice. It is imperative to know each part of this supply chain and be able to account for its proper utilization to be able to maintain a balance between all aspects of material purchase, utilization, and stocks to run a successful practice. Most practitioners have their individual methods that range from being arbitrary to specific software dependent. This is our attempt to simplify and sequentialize a relatively non-orthodontic process for the orthodontist.

## What is inventory?

*Inventory* is an idle stock of physical goods that contain economic value and is held in various forms by an organization in its custody awaiting packing, processing, transformation, use, or sale in a future point of time.<sup>1</sup> In simpler terms, this includes everything that an orthodontist uses in his/her practice on a patient as well as in the practice for administration or record maintenance.

Any practice will have to hold inventory (Table 1) of all products/materials used in a day-to-day practice ranging from hand disinfectants to brackets and bands. Any inventory can be in a *complete state* (e.g., pre-welded bands with tube) or in an *incomplete state* (e.g., molar bands and molar tubes). This inventory is held to facilitate future consumption, sale, or further processing/value addition. All inventoried resources have economic value and can be considered as assets of the practice.

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“Our mind takes an inventory of past events and uses them to project the probability of success in the future. Depending on the information it gathers, we either move forward or the fear response is triggered and forward progress is circumvented.” Page 48—Nick Ortner.

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## Inventory management fundamentals

Manufacturing companies such as computer manufacturing or mobile phone manufacturers call the model by name VMI—Vendor Managed Inventory while Automobile industry uses the term JIT—Just In Time, whereas apparel industry calls such a model by name—ECR—Efficient Consumer Response.<sup>2</sup> The basic underlying model of inventory management remains the same.

**Table 1.** Why do practices need to hold inventories.

Meet variations in consumptions.
Cater to cyclical and seasonal demands.
Economies of scale of procurement.
Take advantage of price increase and quantity discounts.
Reduce transit costs and transit times.
Long lead and high-demand items need to be available when required.

The VMI model is the most accepted, and most large practices prefer to have good relations with specific vendors and distributors of products of their regular use or preferences and procure as per their needs. This model is mutually beneficial as the vendor is assured of regular business, and the practices are not required to maintain large stocks. Yet, individual practices, depending upon multitude of factors varying from their location to assess ability to individual preferences, might choose different methods for different products.

Inventory management is extremely important primarily because it determines the quality of a practice, to an extent and, for a fact which many orthodontists might not be aware off, as it impacts the financial health of the balance sheet. Every practice ought to strive to maintain an optimum inventory to be able to meet its requirements and to avoid over or under inventory that can impact the financial figures. Holding inventories helps practices to remain independent and free from vendor dependencies as well as prevents discontinuation in service providers.

*Inventory costs* are the costs related to storing and maintaining an inventory over a certain period of time. Inventory costs are basically categorized into three following headings: (1) ordering cost, (2) carrying cost, and (3) shortage or stockout cost and cost of replenishment. Let us, for example, work with the simple example of bracket kits. The *ordering cost* would be the cost of procurement and inbound logistic costs. Ordering excess quantity will result in carrying cost of inventory. However, ordering less will result in increase of replenishment cost, as these kits might work out to be cheaper when procured in bulk or at conferences. Also, buying smaller quantities can add significant shipping costs that would add to the carrying cost. Also, a lack of kits might adversely affect start-up as there might be a delay in supply from the vendors, which will be categorized as *shortage* or *stockout cost*. Inventory storage and maintenance involves various types

of costs namely: *inventory storage cost* and *cost of capital*. Inventory carrying involves inventory storage and management either using in-house facilities or external warehouses owned and managed by third-party vendors, and these are not so important for small items but might be of importance for products and materials which occupy large amounts of space for storage and typically include cost of building rental and facility maintenance and related costs. Cost of capital includes the costs of investments, interest on working capital, taxes on inventory paid, insurance costs, and other costs associate with legal liabilities. In other words, in addition to the money originally spent to purchase inventory, more money is required to be spent on upkeep while the inventory is in your possession. The longer the inventory is there, the more it will cost in upkeep. Carrying cost is usually expressed as a percentage that represents the cents per dollar that will be spent on inventory overhead per year. Or simply put the cost of the bracket kits that we bought in bulk but because of a lack of enough start-up they are still unused, and since they have been paid for in full at the time of purchase, they are not just occupying space but the money used for their purchase could well have been invested somewhere else and used to generate revenue.

Hence, an inventory is always dynamic. Inventory management requires constant and careful evaluation of internal and external factors, control through planning, and constant review. It is important for smooth functioning of the practice that this be the part of someone's job description. Although everyone should be knowledgeable about the products they routinely use, a point person should do the actual supply ordering with the clinician in the loop about all products ordered.

The purpose of maintaining an inventory in successful operations is as follows:

- a. *Meeting customer demand*: Maintaining an inventory allows a practice to immediately fulfill customer demand for that product. Failing to maintain an adequate supply can lead to disappointed potential customers and lost revenue.
- b. *Protecting against supply shortages and delivery delays*: A supply chain is only as strong as its weakest link; if a practice is not regularly ordering the same product, it is likely that the

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