

Packaging color plays an integral role in [shaping consumer perception of pharmaceuticals](#). However, it is also making medication use easier and safer for patients by affecting not just *which* medications they take, but *how* they take them. The World Health Organization reports that 50% of people with chronic illnesses do not take their medication as prescribed, leading to preventable hospitalizations, creating undesirable health outcomes, increasing mortality rates, and “incur[ring] costs of approximately \$100 billion per year.”¹ While non-adherence is not a new issue, heightened awareness of the problem is spurring pharmaceutical companies to turn to specialized adherence packaging to facilitate proper medication use for both prescription and over-the-counter drugs. Producing effective adherence packaging relies on thoughtful design that encourages correct use as well as precise color measurement to maximize efficacy, user-friendliness, and safety.

Causes of Non-Adherence

The reasons for non-adherence are multiple and complex, but some common factors include misunderstandings regarding dosing instructions, confusion regarding use, and simple forgetfulness.² The problem is particularly pronounced amongst people who take multiple medications, require multiple daily doses, have cognitive impairment issues, or have difficulty reading or understanding printed instructions. Elderly populations face increased barriers to adherence while also experiencing heightened vulnerability to negative effects brought on by incorrect drug usage.

The Function of Color in Adherence Packaging

Color is playing a central part in the development of packaging designed to encourage correct medication use. By acting as an instant visual cue, color can function as shorthand for a variety of dosage and usage instructions and assist patients in taking their medications as prescribed. Color coding may be applied to indicate drug potency, what time of a day a medication is to be taken, and to complement calendarized packaging systems to increase ease-of-use.

Some pharmaceutical companies have already found significant success by using color to promote compliance in concert with other adherence-enhancing measures. A study published in the *Doverpress Patient Preference and Adherence Journal* examined the impact of the DiovanHCT Shellpak reminder package, a 30-day unit-dose packaging system that includes calendarized, color-coded days and weeks.³ Researchers studied behavioral differences between 4,500 patients using the adherence package and 4,500 patients using standard packaging. They found that patients who used adherence packaging had a 7% higher medication possession ratio, a 13% higher proportion of days covered, and refilled their prescriptions 4 days earlier than those using standard pharmaceutical packaging. The DiovanHCT Shellpak is regarded as a preeminent example of adherence packaging and was awarded 2011 Compliance Package of the Year by the Healthcare Compliance Packaging Council, which has consistently recognized packaging with easy to decipher color-coding elements.⁴

The Critical Role of Color Measurement

When color is employed to serve a critical medical function, accurate color measurement is paramount to ensure success. In the case of adherence packaging, consumers are relying on predictable, precise pigmentation for crucial information that can dictate not only behavior, but health outcomes. With this in mind, an article in *Pharmaceutical Engineering* described color matching as the “primary area of quality assurance focus” in adherence packaging printing.⁵

Spectrophotometric instrumentation offers the best method for monitoring color in paper and plastic packaging materials to ensure consistency, accuracy, and overall quality both within a particular package and between packages. Unencumbered by the [limitations of the human eye](#), these tools can detect even slight differences in pigmentation that can significantly impact how consumers understand package information and use their medications. By [quantifying color data to create a standard](#) and recognizing your tolerance for variation, spectrophotometers can instantly alert you to color shifts that fall outside your parameters, giving you the opportunity to quarantine defective product before it is released into the marketplace. The precision

offered by spectral analysis allows your carefully chosen color schemes to be realized with ease to optimize health and wellbeing of consumers.

Full article with photos available here:

<https://www.hunterlab.com/blog/color-pharmaceuticals/color-coding-the-value-of-color-measurement-in-pharmaceutical-adherence-packaging/>