

Color-Coded EMS Vending Machine Carriers in Mason City, Iowa

The Mason City Fire Department placed a medication vending machine into service shortly after its inception in 2004. The VendNovation vending machine has been instrumental in securing, dispensing and tabulating medication vending transactions and remains an integral part of Mason City Fire Department EMS operations.

Mason City Fire Department EMS, along with other EMS agencies, was recently faced with certain challenges regarding ever-changing medication package sizes & medication substitutions. Initially, and for several years, MCFD placed the medications into a small locking plastic bag or on a “half-pipe” made of PVC, the latter making it easier to dispense medications packaged in a Carpuject pre-loaded syringe. Medications that were packaged in pre-filled syringes and carried in a cardboard single-dose package were, and continue to be, stocked in the coils of the machine. This constant change forced MCFD staff to change the coil size and size of the “chute” on a regular basis. In addition, as the individual Carpuject syringes were placed in a narrow coil and stocked in larger quantities, it made counting the individual syringes difficult as the light dimmed toward the rear of the coil. This manual count of the Carpuject, usually scheduled medications, is done at each shift change by the Shift Captain.



Figure 1

In response, Deputy Chief Dave Johnson, the MCFD EMS Chief developed a color-coded carrier technology to assist staff not only in dispensing medications of different sizes and packaging, but also to rapidly identify counts of each medication stocked in the machine (see figure 1).

First, calculations and sizing regarding the maximum size of medication currently supplied by the MCFD drug vendor was completed. This enabled maximum carrier and corresponding chute sizing and a standardized size for a carrier, which are 4 inches long and 1.5 inches in diameter.

Secondly, carriers were constructed from clear plastic tubes and colored flexible vinyl end caps, all with the same dimensions. Each medication was placed in a carrier, which accommodated anything from a small glass ampule to a pre-filled syringe. Next, a color-coding system was developed and a standard quantity of 7 items was designated for each chute.

The system utilizes carriers with the following color end-cap system starting at the front of the chute (see figure 2):

- Carriers 1 and 2 are green
- Carriers 3 and 4 are blue
- Carriers 5 and 6 are white
- Carrier 7 is red



Figure 2

As stated before, this system has made it very convenient to glance at the carriers in the machine and tell almost instantly what the status of the stock is. For example, if a medic looks at a chute and the front carrier is blue with a white one behind it, they can quickly deduce that the chute quantity is 4. If they see a lot of red in the machine...it's time to restock!

When a carrier is emptied, it is placed in a designated carrier receptacle for re-use (see figure 3). The vending machine is typically stocked on a weekly basis. The addition of a retail-style labeling gun makes the process even easier for labeling the carriers with expiration dates.



Figure 3

The fire service has long had a reputation for not “re-inventing the wheel” and sharing ideas to help one another with new advances in our industry. Certainly others have faced this challenge and have most likely developed their own strategies for dealing with medication challenges. This is just an illustration of how one department rose to the challenge and developed a solution that works for them.