

May 2014

## Max Zero® Cap Conversion

### Needleless connector cap change

The Max Plus® cap by CareFusion, a **positive pressure** cap, is Children's standard needleless connector cap. Current literature recommends neutral pressure caps as the best practice for minimizing line occlusion and blood stream infections. A Value Analysis group evaluated current available neutral caps options. After a pilot in the SSU, the new CareFusion **Max Zero® neutral pressure** cap has been selected for use at Children's. These caps were found to flush easily and take less volume to flush than our current Max Plus® caps. (See features of Max Zero cap beginning on page 2.)

This conversion does **not** impact the current chemotherapy administration set up.

Training and conversion to the Max Zero® will begin in Minneapolis the week of May 12 and in St. Paul the week of May 19. CareFusion reps will be rounding to review appropriate flushing techniques for the Max Zero® cap and answer any questions you may have.

### General Flushing Requirements

For safety and effectiveness all nurses are required to understand the appropriate priming & flushing techniques for the Max Zero® cap. Your clinical educator will be working with you on your unit to verify you have received information on use of this cap. Key points for use of this cap are:

- **Prime** the cap with the cap inverted up. The priming volume of the Max Zero® is 0.1 ml (compared to the previous 0.3 of the Max Plus®)
- 5 ml of NS is the recommended **minimal flushing volume** after blood draws in pediatric patients. For patients needing volume restriction, you may get by with less. (1-2 mls for < 7.5 kg or 3 mls for > 7.5 kg as per standard is minimal allowable volume for clearance)
- Use the **push/pause** method to flush
- To clear blood or thick media based fluids use the **Push-Release-Push** method.
- To prevent syringe reflux, do not "bottom out" the plunger of the syringe
- Clamp lines **after** removal of syringe

When drawing blood for lab draws from an established line, labs should be drawn through the primed cap and flushed as above for total clearance of the line. Adherence to flushing technique and adequate flushing volumes is essential for preservation of the line and infection prevention.

For questions, contact your clinical educator, vascular access nurse or clinical education specialist in CPDP.



## MaxZero vs. MaxPlus



### What's the difference?

- **MaxZero is a "Neutral" Connector per the FDA 510K approval process.**
- **MaxZero is smaller in size with half the priming volume of the MaxPlus**
- **MaxZero internal fluid path design has changed to promote easier flush clearance with less volume**

### What's the same?

- **Flat solid sealed surface which helps promote complete disinfection prior to access**
- **Clear fluid pathway to confirm a complete flush**
- **No reflux on disconnection**

# MaxZero™ needleless connector

## Quick reference guide



### Step 1: Prime and attach

Invert to prime. Attach the fully primed syringe or IV line to the MaxZero needleless connector. Tap while priming to purge all air. Remove the protective cover and attach the MaxZero needleless connector to the hub of the vascular access device. Insert the luer into the hub and rotate it until it stops. Do not overtighten.

#### Helpful hints:

- Prime and remove all air. *Ensures system is free of air, lubricates internal surface.*
- After priming, quickly attach the MaxZero needleless connector or MaxZero needleless connector extension set to the catheter hub. *Prevents air from re-entering primed device.*
- Always grasp the MaxZero needleless connector body during access, placement and removal. *Prevents inadvertent tightening or loosening.*



### Step 2: Disinfect

Before every access, scrub the top of the MaxZero needleless connector with an alcohol pad and allow it to dry.

#### Helpful hints:

- Scrub with alcohol for three seconds, or according to your hospital protocol. *Disinfects access port to assist in infection protection as recommended by the INS and CDC.*
- Allow disinfectant to completely dry prior to connecting. *Disinfectant must evaporate before disinfection is complete. A dry connection helps prevent alcohol related bonding.*



### Step 3: Administer

Trace the lines before connection. Attach the luer from the primed IV set or syringe to the MaxZero needleless connector. If mating luer is a two-piece spin collar, pull the back collar, insert the luer with a straight-in motion and rotate ¼ turn clockwise, then push the spin collar down and tighten. Detach and reattach any time immediate flow isn't achieved.

#### Helpful hints:

- Confirm catheter patency prior to administration according to INS Standards (SAS Method). *Enforces proper nursing practice.*
- Always firmly grasp connector—NOT catheter line. *Reduces inadvertent tightening or loosening.*
- Insert luer slips with a straight-in motion and rotate them ¼ turn clockwise. Never leave luer slips unattended. *Ensures secure connection.*



### Step 4: Detach

To detach, grasp the MaxZero needleless connector and carefully disconnect the syringe or tubing.

#### Helpful hints:

- To disconnect, grasp the body of the MaxZero connector and carefully rotate the luer of the fluid source counter-clockwise. *Reduces catheter movement during disconnect.*
- A small fluid droplet may remain after disconnection due to the solid sealed surface. Swab off with an alcohol pad. *Maintains a dry aseptic surface.*



### Step 5: Flush

Flush the MaxZero needleless connector after each use according to facility protocol. Lock with normal saline or heparinized saline.

#### Helpful hints:

- The MaxZero needleless connector may be used with a saline flush. *Reduces need for heparin.*
- Always flush the catheter immediately after infusion or aspiration. Lower flush volumes can be used for fluid-restricted or pediatric patients. *Flush using push-pause helps maintain patency.*
- Do not bottom out syringe plunger. *Prevents suction during "bottoming out," which may cause reflux.*
- If catheter is multi-lumen, flush all lumens. *Helps reduce occlusions.*