# Vernon MO, Hayden MK, Trick WE, et al. *Archives of Internal Medicine*, 2006

**Chlorhexidine Gluconate to Cleanse Patients in a Medical Intensive Care Unit: The Effectiveness of Source Control to Reduce the Bioburden of Vancomycin-Resistant *Enterococci***

**Purpose:** To evaluate impact of daily chlorhexidine gluconate (CHG) bathing on vancomycin-resistant *enterococci* (VRE)

* **Design:** Single-center, three-phase clinical trial in one Medical ICU
	+ Patients in an ICU received daily bathing per different protocols over three sequential phases
		- First phase: 5 months bathing with soap and water
		- Second phase: 5 months bathing with 2 percent CHG cloths
		- Third phase: 5 months bathing with non-medicated cloths
* **Results:** Compared with soap and water, bathing with CHG led to decrease in VRE on patient skin, healthcare workers’ hands, and in the environment

While this study did not assess methicillin-resistant *Staphylococcus aureus* (MRSA), it was early evidence that CHG bathing could reduce skin colonization and further transmission of pathogens.

# Climo MW, Sepkowitz KA, Zuccotti G, et al. *Critical Care Medicine*, 2009

## The Effect of Daily Bathing with Chlorhexidine on the Acquisition of Methicillin-resistant *Staphylococcus aureus*, Vancomycin-resistant *Enterococcus*, and Healthcare-associated Bloodstream Infections: Results of a Quasi-experimental Multicenter Trial

**Purpose:** To determine whether daily CHG bathing would decrease incidence of colonization and bloodstream infections (BSIs) due to MRSA and VRE among ICU patients

* **Design:** Multi-center before-after interventional design of six ICUs at four academic centers
	+ Patients in the ICU received daily bathing with soap and water for 6 months, which was then switched to a CHG solution for 6 months
* **Results:** Compared with soap and water, patients who received CHG bathing reduced overall multi drug-resistant organism (MDRO) acquisition rate by 21 percent, MRSA or VRE acquisition rate by 23 percent, all-cause BSI rate by 31 percent, and central line-associated bloodstream infection (CLABSI) rate by 51 percent

An important finding of this study is that there is no evidence of resistance when CHG is used for daily bathing.

# Bleasdale SC, Trick WE, Gonzalez IM, et al. *Archives of Internal Medicine*, 2007

## Effectiveness of Chlorhexidine Bathing to Reduce Catheter-associated Bloodstream Infections in Medical Intensive Care Unit Patients

**Purpose:** To determine whether patients bathed with CHG have a lower incidence of BSI compared with soap and water

* **Design:** Single-center, 2-arm crossover clinical trial in a Medical ICU
	+ Patients received either daily bathing with soap and water or 2 percent CHG cloths
* **Results:** With CHG bathing, there was a reduction in CLABSI and reduction in bacterial colonization on skin

CHG daily bathing was effective at reducing rates of CLABSI and blood culture contamination in ICUs.

# Popovich KJ, Hota B, Hayes R, et al. *Infection Control & Hospital Epidemiology*, 2009

## Effectiveness of Routine Patient Cleansing with Chlorhexidine Gluconate for Infection Prevention in the Medical Intensive Care Unit

**Purpose:** Examine effectiveness of real-world patient cleansing with CHG on rates of CLABSI and blood culture contamination

* **Design:** Single-center Medical ICU study
	+ Discontinued daily bathing with soap and water and replaced with 2 percent CHG cloths
* **Results:** Cleaning with CHG cloths was best method to reduce VRE, gram positive bacteria, gram negative bacteria, and yeast

CHG daily bathing was effective at reducing rates of CLABSI and blood culture contamination in ICUs.

# Climo MW, Yokoe DS, Warren DK, et al. *New England Journal of Medicine*, 2013

**Effect of Daily Chlorhexidine Bathing on Hospital-acquired Infection**

**Purpose:** Determine if daily bathing of patients with CHG prevents hospital-acquired BSIs and acquisition of multidrug-resistant organisms (MDROs), which had previously been studied in observational studies

* **Design:** Cluster randomized, nonblinded crossover trial in nine adult ICUs at six hospitals
	+ Randomly assigned 2 percent CHG cloths or nonantimicrobial washcloths for 6-month phase, assignment swapped after 6 months
* **Results:** Use of CHG led to 23 percent lower MRSA/VRE acquisition and 28 percent lower acquisition of BSIs

Daily bathing with chlorhexidine-impregnated washcloths significantly reduced the risks of acquisition of MDROs and development of hospital-acquired bloodstream infections.

# Milstone AM, Elward A, Song X, et al. *Lancet*, 2013

## Daily Chlorhexidine Bathing to Reduce Bacteraemia in Critically Ill Children: a Multicentre, Cluster-randomised, Crossover Trial

**Purpose:** Assess whether daily CHG bathing would reduce bacteremia in critically ill children compared with standard bathing practices

* **Design:** Unmasked, cluster randomized, two-phase crossover trial in 10 pediatric ICUs in five hospitals
	+ Patients older than 2 months received either daily standard bathing practices or 2 percent CHG bathing for 6 months
* **Results:** Daily bathing with CHG resulted in a 36 percent lower risk of bacteremia

This study determined that CHG bathing in pediatric patients is not only safe but is effective in preventing bacteremia.

# Huang SS, Septimus E, Kleinman K, et al. *New England Journal of Medicine*, 2013

**Targeted Versus Universal Decolonization to Prevent ICU Infection**

**Purpose:** To determine whether universal or targeted decolonization is more effective in the ICU at preventing MRSA infections

* **Design:** Pragmatic, cluster randomized trial, in which 74 ICUs in 43 hospitals were randomly assigned one of three strategies
	+ Group 1: MRSA screening and isolation
	+ Group 2: Targeted decolonization (MRSA screening, isolation, and decolonization of MRSA carriers)
	+ Group 3: Universal decolonization (no screening, and decolonization of all patients)
* **Results:** Universal decolonization in ICU reduced MRSA clinical cultures by 37 percent and BSIs by 44 percent

Universal decolonization is more beneficial than targeted decolonization in the ICU for prevention of MRSA.

# Huang SS, Septimus E, Kleinman K, et al. *Lancet*, 2019

## Chlorhexidine Versus Routine Bathing to Prevent Multidrug-resistant Organisms and All-cause Bloodstream Infections in General Medical and Surgical Units (ABATE Infection Trial): a Cluster-randomised Trial

**Purpose:** Evaluate the use of CHG bathing in non-ICUs to determine effect on MDROs and bacteremia, specifically MRSA clinical cultures in non-ICUs

* **Design:** Cluster randomized trial of 53 hospitals
	+ Assigned either routine bathing method or CHG, with targeted nasal mupirocin
* **Results:** The general population saw no difference, but in patients with devices, there was a 31 percent reduction in all-cause bacteremia and a 37 percent reduction in MRSA or VRE clinical cultures compared with control

This study outlines the evidence of decolonization with CHG for non-ICU settings.

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