THE ROLE OF CHLORHEXIDINE GLUCONATE (CHG) BATHS IN THE ICU: A LITERATURE REVEIW

ANDREA HAYWARD
UNIVERSITY OF WITWATERSRAND
DEPARTMENT OF NURSING


A DAILY BATH .....OR NOT?

INTRODUCTION

Health care-associated infections(HAI) are known to increase:

- length of hospital stay (LOS),
- cost of care and
- increased mortality (Kaye .2014; Zimlichman. 2013).

HAIs affect between 26% and 35% of ICU patients. (Dramowski and Whitelaw. 2017 SA – 28.5%).

Traditionally infection prevention - focused on limiting cross infection (esp air borne)

- from direct contact with patients,
- environment,
- isolation precautions and
- hand hygiene.

Emphasis shifted to source control – skin colonisation – serves as a source of infection.

AIM AND OBJECTIVES

- AIM

  To revisit the role of the CHG daily bathing in ICU according to recent literature.

- OBJECTIVES

  Determine the impact of CHG baths on common HAI's in the ICU

  Compare recommendations with present hospital policies

METHODS

- **LITERATURE SEARCH**
  - Electronic search of PUBMED, CINAHL, SCOPUS
  - Additional hand search of secondary sources
- **KEYWORDS**
  - Chlorhexidine
  - Chlorhexidine bath/ cloths
  - Infection prevention
  - HAI in ICU
- **INCLUSION CRITERIA**
  - At least one episode of infection/sepsis
  - Confirmed by Lab data
  - Adult ICU
  - English
  - 2013 -2018

DATA EXTRACTED

ASSESSMENT QUALITIES

- 3800 citings found.

RANDOMISED CONTROL TRIALS

BEFORE and AFTER TESTING

} SELECTED

- 8 met the criteria.

HAIs INCLUDED

- CAUTI CLABSI VAP
- SSI MRSA VRE
- Clostridium Difficile

SUMMARY OF FINDINGS

Evidence For Daily Bathing

⇧ Or ⇩ Effective Control Of Bioburden

STUDY	DESIGN	STUDY SETTING	CHG ARM	COMMENTS	OUTCOME
Armellino, D. *et al.,* 2014	Before and after inter-Vention study	New York MICU/SICU Over 1 year 2012 pts	Only "at risk" patients. MRSA and/or central line. Prior to intervention soap and water baths were used on all patients. 2% CHG pre-packaged cloths.	Staff were all given training on CHG baths. MRSA precautions included isolation; hand hygiene; environ mental cleaning; PPE. Pre intervention MRSA rate - 4.1/1000 pt days Post intervention 1.13/1000pt days	72% decrease in MRSA **Supports use of selective CHG bathing to reduce MRSA**

STUDY	DESIGN	STUDY SETTING	CHG ARM	COMMENTS	OUTCOME
Cassir, N *et al.,* 2015	Comparative & paired 2x 6/12 Control- soap and water Intervention grp - CHG	Marseilles France MICU 354	Daily bath Single use No-rinse 2% CHG cloths	No difference in LOS and Vent days (P=0.09) Gm neg bact were responsible for 80% of VAP and UTIs And 48% of BSI. Intervention grp vs control. ... Significant decrease in BSI, VAP and UTI. (P=0.02; 0.02 &0.01 respectively)	Cultures positive for Gm neg bact decreased in intervention grp **but not** cultures positive for Gm pos. **Support for daily CHG bathing**

STUDY	DESIGN	STUDY SETTING	CHG ARM	COMMENTS	OUTCOME
Chen. W *et al.,* 2015	Meta-analysis All before and after studies.	Nanjing, China MICU x 4 SICU x 2 TICU x 1	Daily CHG baths to decrease VAP. Intervention: 13,349 ventilator days. Control : 14,289 ventilator days	Few studies explore the association between CHG baths and VAP. Found that CHG lowered the risk of VAP by 27%	**Supports the daily bathing with CHG for decreasing VAP**
Frost. S *et al.,* 2016	Meta-analysis Before and after studies x 10 RCT x 7	Sydney Australia Adult GICU SICU MICU	Daily CHG bathing.	MRSA; VAP; BSI; CLABSI; CAUTI; VRE; C Difficile	BSI -20% VAP – 18% CLABSI – 56% CAUTI – 7% MRSA – 36% VRE – 37% C Diff – 7% **Support**

STUDY	DESIGN	STUDY SETTING	CHG ARM	COMMENTS	OUTCOME
Lee *et al.*, 2016	Census sample. MRSA targeted /screened	Orange county USA.(all ICUs in 28 hospitals)	All MRSA positive on admission placed under contact precaution. Daily CHG bathing and mupirocin [Bactroban](x 5 days) for all ICU patients	58% reduction in MRSA after 1 year with universal decolonisation	**Support universal decolonisation** **Benefit continues downline**..ie wards, long term acute care units and other non ICU settings.

STUDY	DESIGN	STUDY SETTING	CHG ARM	COMMENTS	OUTCOME
Noto, M *et al.*, 2015	Cluster randomised Cross-over Study VanderBilt Univ Nashville USA	ICU x 5 TICU MICU NICU SICU CICU 9,340	Once daily bathing. 2% CHG cloths OR disposable non - CHG impregnated cloths x 10 weeks. 4488 -CHG 4852 Control CLABSI; CAUTI; VAP; C Diff.	Results thought to be due to a short 10 week period.	Control vs CHG 4+ 4 CLABSI 32+ 21 CAUTI 8+ 17 VAP 16+ 13 C Diff **NO SIGNIFICANT DIFFERENCE** **Also for MRSA and blood culture contamination**

STUDY	DESIGN	STUDY SETTING	CHG ARM	COMMENTS	OUTCOME
Viray, M. *et al.*, 2014	Quasi-experimental Prospective study	Missouri, USA SICU MICU	SICU –intervention MICU – control. x 1 month. C Diff, MRSA, VRE, positive on admission – contact precautions	4% CHG added to water to make 0.125% CHG strength. Basin bathing with standard wash cloths were used.	41.37% decrease in HAI-MRSA in SICU No significant difference in control group **Support for CHG bathing for MRSA**

STUDY	DESIGN	STUDY SETTING	CHG ARM	COMMENTS	OUTCOME
Swan *et al.* 2016	RCT	USA SICU	4% CHG mixed with tap water to make 2% solution.	**Hand hygiene – 84% compliance** undercover observation. CHG baths on alternate days alternating with soap and water LOS longer d/t sicker state	**Success with CLABSI** **No success** with VAP, CAUTI &SSI but **lower levels** than soap and water arm

DISCUSSION

Armillino *et al.,* Chen *et al.,* Lee *et al.,* Viray *et al.*	• Only considered MRSA infections. • Add CHG baths to care practice for MRSA prevention
Cassir *et al.,* Frost *et al.,* Noto *et al.,* Swan *et al.,*	• Considered MRSA, VRE, CAUTI, CLABSI, VAP and C Diff • Add CHG baths to care practice for MRSA prevention
Noto *et al., and* Swan *et al.*	• Showed no significant benefit or **except** a reduction in CLABSI • Add CHG baths to practice for MRSA prevention

SUMMARY

- 8 studies All ICU disciplines
  - 4 RCT
  - 2 before and after
  - 2 Meta-analyses
- Six support daily CHG bathing on evidence
- Two encourage it – “does no harm”

FOOD FOR THOUGHT

- Concerns
  - Organisms in tap water and basins
  - Resistance to CHG
  - Cost

A DAILY BATH ?....YES PLEASE!