Effect of Daily Chlorhexidine Bathing on Hospital-Acquired Infection

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Present by 黃曉萍 102.6.4

Category Name	Total Journals	Journal Rank	Quartile
	in Category	in Category	in Category
MEDICINE, GENERAL & INTERNAL	155	1	Q1



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Introduction

- Results of previous single-center, observational studies suggest that daily bathing of patients with chlorhexidine may prevent hospital-acquired bloodstream infections and the acquisition of multidrug-resistant organisms (MDROs).
- Previous studies of bathing with chlorhexidine have been primarily single-center, before-and-after, observational studies, with limited general applicability of results.
- We therefore conducted a multicenter, randomized trial to evaluate the usefulness of bathing with chlorhexidine to reduce the risks of MDRO acquisition and hospital-acquired bloodstream infection among patients at high risk for health care-associated infections.

步驟 I: 研究探討的問題為何?

■ 研究族群 / 問題 (Population/ Problem)

- 1. The ICU patients
- 2. Hospitalized, in six ICUs or bone marrow transplantation units

■ 介入措施 (Intervention)

2% chlorhexidine-impregnatedcloths

■ 比較 (Comparison)

nonantimicrobial washcloths

■ 結果 (Outcomes):

- 1. reductions in the rates of MRSA and VRE acquisition
- 2. reductions in the rates of hospital-acquired bloodstream infection

Intervention	Control
2% Chlorhexidine Gluconate Cloth Patient Preoperative Skin Preparation, Sage Products	Comfort Bath, Sage Products
	<image/>

http://www.sageproducts.com/products/pre operative-care/video.cfm?name=CHG

http://www.sageproducts.com/products/pre packaged-bathing/video.cfm

招募(Recruitment) - 受試者是否具有代表性?

評讀結果: 🗌 是 🗌 否 📕 不清楚 🛛 說明:

- We performed a cluster-randomized, crossover study involving patients hospitalized in six ICUs or bone marrow transplantation units between August 2007 and February 2009. →未說明這幾個收 案單位是哪裡來的?
- 2. Units were <u>randomly assigned</u> to perform daily bathing of patients with either <u>nonantimicrobial washcloths</u> (control) or <u>2%</u> <u>chlorhexidine gluconate (intervention)</u> during the initial 6-month study period, followed by daily bathing with the alternate product during the second 6-month period.
- 3. Approval of the study protocol was obtained from institutional review boards (IRB) at the study centers and the CDC. (in STUDY OVERSIGHT , p535)

步	飘	2:研	究的品	質有多效	子(內在家	改度)?		
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3. The investigators and clinical staff were aware of the use of the								
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每個組別,在研究開始時的情況是否相同?

評讀結果:

□否

不清楚

說明:未清楚說明研究個案基本資料(年齡,風險

因子,疾病嚴重度)與特性,n=3970+3842=7812

□是

Table 2. Incidence of Hospital-Acquired Bloodstream Infections and Acquisition of Multidrug Resistant Organisms (MDROs), MRSA, and VRE.*			
Variable	Intervention Period	Control Period	P Value
No. of admissions	3970	3842	0.32
Total days of care	24,902	24,983	0.85
Central-catheter use (days)	13,425	13,049	0.14
Mean length of stay (days)	6.4	6.4	0.53
MRSA prevalence (%)	13.8	12.8	0.14
VRE prevalence (%)	16.3	15.1	0.24
MDRO acquisition No. of infections Incidence rate (no./1000 patient-days)	127 5.10	165 6.60	0.03
VRE acquisition No. of infections Incidence rate (no./1000 patient-days)	80 3.21	107 4.28	0.05
MRSA acquisition No. of infections Incidence rate (no./1000 patient-days)	47 1.89	58 2.32	0.29
Hospital-acquired bloodstream infection No. of infections Incidence rate (no./1000 patient-days)	119 4.78	165 6.60	0.007
Primary bloodstream infection No. of infections Incidence rate (no./1000 patient-days)	90 3.61	131 5.24	0.006
Central-catheter-associated bloodstream infection No. of infections Incidence rate (no./1000 catheter-days)	21 1.55	43 3.30	0.004
Secondary bloodstream infection No. of infections Incidence rate (no./1000 patient-days)	29 1.20	34 1.40	0.45

- 1. Study period: 12-months.
- 2. The final nine study units included medical, coronary care, surgical, and cardiac surgery ICUs and one bone marrow transplantation unit (Table 1).
 - One unit <u>withdrew</u> from the study, and two units were eliminated from the analysis because of <u>low</u> <u>compliance</u> with the study protocol.
- 3. Only 8 (0.1%) of 7735 patients admitted to the participating units declined to participate in the study, and data from all 7727 patients who agreed to participate were included in an intention-to-treat analysis

維持(Maintenance)-各組是否給予相同的治療?

- 評讀結果:□ 是 □否 ■不清楚 說明: p534

 Bathing was completed according to the manufacturer's Instructions(根據說明書操作)
- 2. washcloths were used in sequential order to rinse all body surfaces(擦拭體表), with the exception of the face during bathing with the 2% chlorhexidine-impregnated cloths in order to avoid exposure of the mucous membranes of the eyes and mouth.
- 3. Nursing personnel monitored patients for skin reactions and reported them to the investigators, who graded skin reactions on a scale of I to 4. (監測皮膚的反應)
- 4. All units performed active surveillance testing for MRSA and VRE throughout the study period.Unit staff obtained swabs from the nares (for MRSA) and perirectal area (for VRE) from patients up to 48 hours after admission to the unit and on discharge from the unit. (主動監測入院48小時的病人MRSA及VRE)

★個案的其他疾病因素及治療???



評估(Measurement) - 受試者與評估者是否對治療方式及(或) 評估目的維持盲法(blind)?



- I. A cluster-randomized , nonblinded crossover trial.
- 2. The investigators and clinical staff were **aware** of the use of the control or intervention bathing product.

Table 2. Incidence of Hospital-Acquired Bloodstream	Infections and Acquisition of Multidrug	Resistant Organisms
(MDROs), MRSA, and VRE.*		

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Mean length of stay (days)	6.4	6.4	0.53
MRSA prevalence (%)	13.8	12.8	0.14
VRE prevalence (%)	16.3	15.1	0.24
MDRO acquisition			
No. of infections	127	165	0.03
Incidence rate (no./1000 patient-days)	5.10	6.60	
VRE acquisition			
No. of infections	80	107	0.05
Incidence rate (no./1000 patient-days)	3.21	4.28	
MRSA acquisition			
No. of infections	47	58	0.29
Incidence rate (no./1000 patient-days)	1.89	2.32	
Hospital-acquired bloodstream infection			
No. of infections	119	165	0.007
Incidence rate (no./1000 patient-days)	4.78	6.60	
Primary bloodstream infection			
No. of infections	90	131	0.006
Incidence rate (no./1000 patient-days)	3.61	5.24	
Central-catheter-associated bloodstream infection			
No. of infections	21	43	0.004
Incidence rate (no./1000 catheter-days)	1.55	3.30	
Secondary bloodstream infection			
No. of infections	29	34	0.45
Incidence rate (no./1000 patient-days)	1.20	1.40	

步驟 3:研究結果的意義為何?



Figure 1. Kaplan–Meier Estimates of Time to Primary Bloodstream Infection.

The cumulative probability of a primary bloodstream infection (BSI) is shown for patients who were bathed with chlorhexidine-impregnated washcloths as compared with those who were bathed with nonantimicrobial washcloths. The overall protective efficacy of chlorhexidine bathing was 30%. The inset shows a more detailed version of the larger graph, with a cumulative probability of primary BSI of up to 0.25.

P.538 Figl

 Among patients who were in the unit for more than 7 days, the relative risk of a primary bloodstream infection was 0.69 (95% CI, 0.47 to 0.99) for patients bathed with chlorhexidine as compared with those bathed with the nonantimicrobial washcloths.

代表暴露因子有保護作用.

Among patients who were in the unit for more than 14 days, the relative risk of a primary bloodstream infection was 0.51 (95% CI, 0.30 to 0.87) among patients bathed with chlorhexidine as compared with those who were bathed with the nonantimicrobial washcloths.

步驟 3:研究結果的意義為何?



Figure 2. Rates of Primary Bloodstream Infections According to the Type of Hospital Unit.

Incidence rates of hospital-acquired primary bloodstream infections are shown among units using daily bathing with either chlorhexidine-impregnated washcloths or nonantimicrobial washcloths (control). BMT denotes bone marrow transplantation unit, MICU medical intensive care unit, and SICU surgical intensive care unit. 1. Reductions in rates of primary bloodstream infections were highest among medical ICUs.

P.540 Fig 2

- 2. The rate of primary bloodstream infections in medical ICUs was 40% lower during the intervention period than during the control period (3.98 vs.6.62 cases per 1000 patient-days). (MICU 下降40%)
- 3. In contrast, the rate of primary bloodstream infections in other units was 17% lower during the intervention period than during the control period (3.10 vs. 3.73 cases per 1000 patient-days) (其他單位下 降17%)

步驟 3:研究結果的意義為何?

- A total of 7727 patients were enrolled during the study.
- The overall rate of MDRO acquisition was 5.10 cases per 1000 patient-days with chlorhexidine bathing versus 6.60 cases per 1000 patient-days with nonantimicrobial washcloths (P = 0.03)
- The overall rate of hospital-acquired bloodstream infections was 4.78 cases per 1000 patient-days with chlorhexidine bathing versus 6.60 cases per 1000 patient-days with nonantimicrobial washcloths (P = 0.007)
- No serious skin reactions were noted during either study period.

討論一

是否建議加護病房家屬購買含 chlorhexidine 成分 的抑菌沐浴乳? • 贊成:14 • 考慮:3

• 不贊成:2





討論二

▶ 是否建議使用洗手用的 Hibiscrub (含 有chlorhexidine成分),稀釋後為加護 病房病人擦澡?

- •贊成:10
- •考慮:9
- •不贊成:0



