

# **IHI Bundle**

(Updated December 2011)

- 1. Prevent Ventilator-associated Pneumonia**
- 2. Prevent Central line associated Bloodstream Infections [CLABSI]**
- 3. Preventing Catheter-Associated Urinary Tract Infections**
- 4. Prevent surgical site infection**

# Bundle

1. Small & Straightforward
2. A grouping of best practices with respect to a disease process that individually improve care, but when applied together result in substantially greater improvement
3. IHI(Institute for Healthcare Improvement)에서 VAP에 적용 시작
4. Component  
3~5 evidence-based practice  
Best care에 필수항목 (과학적 증명)
5. All or nothing

# **1. Prevent Ventilator-associated Pneumonia**

- 1. Elevation of the head of the bed(HOB) to between 30 and 45 degrees**
- 2. Daily “sedation interruption” and daily assessment of readiness to extubate**
- 3. Peptic ulcer disease (PUD) prophylaxis**
- 4. Deep venous thrombosis (DVT) prophylaxis(unless contraindicated)**
- 5. Daily oral care with chlorhexidine.**

# 1. Prevent Ventilator-associated Pneumonia [예시]

등록번호	<input type="text"/>	<input type="text"/>	<input type="text"/>	주치의	<input type="text"/>	입원일	<input type="text"/>
병동/병실	<input type="text"/>			진단명	<input type="text"/>		

  

VAP bundle checklist	BSI bundle checklist	Weaning protocol checklist
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부서명 : ☒ SICU ☐ MICU ☐ CCU ☐ BICU    전입일 :     기록일 :    

  

[ Day ]

기록일시 :     기록자 :

HUP 30° : ☒ 예 ☐ 아니요    ☐ Shock    ☐ 체위변경불가    ☐ 기타     기관발관여부사정 : ☒ 예 ☐ 아니요

PUD Prophylaxis : ☐ IV 약제사용 ☒ PO 약제사용    DVT : ☐ IPC ☒ Stocking    ☐ 약제사용    ☐ 수혈    ☐ 수술    ☐ 출혈

☒ E-T tube cuff pressure :      구강간호 : ☒ 약제     ☒ 저장 후 인증

미인증자료

  

[ EVENING ]

기록일시 :     기록자 :

HUP 30° : ☒ 예 ☐ 아니요    ☐ Shock    ☐ 체위변경불가    ☐ 기타     기관발관여부사정 : ☐ 예 ☐ 아니요

PUD Prophylaxis : ☐ IV 약제사용 ☒ PO 약제사용    DVT : ☐ IPC ☒ Stocking    ☐ 약제사용    ☐ 수혈    ☐ 수술    ☐ 출혈

☒ E-T tube cuff pressure :      구강간호 : ☒ 약제     ☒ 저장 후 인증

미인증자료

  

[ NIGHT ]

기록일시 :     기록자 :

HUP 30° : ☐ 예 ☐ 아니요    ☐ Shock    ☐ 체위변경불가    ☐ 기타     기관발관여부사정 : ☐ 예 ☐ 아니요

PUD Prophylaxis : ☐ IV 약제사용 ☐ PO 약제사용    DVT : ☐ IPC ☐ Stocking    ☐ 약제사용    ☐ 수혈    ☐ 수술    ☐ 출혈

☐ E-T tube cuff pressure :      구강간호 : ☐ 약제     ☒ 저장 후 인증

미인증자료

## **2. Prevent Central line associated Bloodstream Infections [CLABSI]**

- 1. Hand hygiene**
- 2. Maximal barrier precautions**
- 3. Chlorhexidine skin antisepsis**
- 4. Optimal catheter site selection with avoidance of using the femoral vein for central venous access in adult patients**
- 5. Daily review of the necessity with prompt removal of necessary lines.**

## 2. Prevent Central line associated Bloodstream Infections [CLABSI]

### 1. Hand hygiene

- Before and after palpating catheter insertion sites  
(Note: Palpation of the insertion site should not be performed after the application of antiseptic, unless aseptic technique is maintained.)
- Before and after inserting, replacing, accessing, repairing, or dressing an intravascular catheter
- When hands are obviously soiled or if contamination is suspected
- Before and after invasive procedures
- Between patients
- Before donning and after removing gloves
- After using the bathroom

## 2. Prevent Central line associated Bloodstream Infections [CLABSI]

### 2. Maximal barrier precautions

- Empower nursing to enforce use of a central line checklist to be sure all processes related to central line placement are executed for each line placement.
- Include maximal barrier precautions as part of your checklist for central line placement.
- Keep equipment stocked in a cart for central line placement to avoid the difficulty of finding necessary equipment to institute maximal barrier precautions.
- If a full-size drape is not available, apply two drapes to cover the patient. Or consult with the operating room staff to determine how to procure full-size sterile drapes, since these are routinely used in surgical settings.

## 2. Prevent Central line associated Bloodstream Infections [CLABSI]

### 3. Chlorhexidine skin antisepsis

- Prepare skin with antiseptic/detergent chlorhexidine 2% in 70% isopropyl alcohol.
- Pinch wings on the chlorhexidine applicator to break open the ampule (when ampule is included).  
Hold the applicator down to allow the solution to saturate the pad.
- Press sponge against skin, and apply chlorhexidine solution using a back-and-forth friction scrub for at least 30 seconds.  
Do not wipe or blot.
- Allow antiseptic solution time to dry completely before puncturing the site (~ 2 minutes).



## **2. Prevent Central line associated Bloodstream Infections [CLABSI]**

### **4. Optimal catheter site selection with avoidance of using the femoral vein for central venous access in adult patients**

- Empower nursing to enforce use of a central line checklist to be sure all processes related to central line placement are executed for each line placement.
- Include optimal site selection as part of your checklist for central line placement with room to note appropriate contraindications, e.g., bleeding risks.

## 2. Prevent Central line associated Bloodstream Infections [CLABSI]

### 5. Daily review of the necessity with prompt removal of necessary lines.

- Include daily review of line necessity as part of your multidisciplinary rounds.
  - State the line day during rounds to remind all as to how long the line has been in, (e.g., Today is line day 6.)
  - Include assessment for removal of central lines as part of your daily goal sheets.
  - Record time and date of line placement for record-keeping purposes and evaluation by staff to aid in decision making.
  - Define an appropriate timeframe for regular review of necessity, such as weekly, when central lines are placed for long-term use
- Daily review was designed for the intensive care population and may not be appropriate when long-term use over weeks or months is planned.

## 2. Prevent Central line associated Bloodstream Infections [CLABSI] Check list

### Central Line Procedural Checklist

**Indication:** To document procedural practices in the CCU related to insertion technique for: CVP lines, dialysis access ports, and central lines (including PICC).

Type of catheter:	<input type="checkbox"/> Central Line	Location: _____
	<input type="checkbox"/> CVP	Location: _____
	<input type="checkbox"/> Dialysis Catheter	Location: _____
	<input type="checkbox"/> PICC Line	Location: _____
Is this a NEW line:	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Is the procedure:	<input type="checkbox"/> Elective	<input type="checkbox"/> Emergent <input type="checkbox"/> _____
	<input type="checkbox"/> Re-wire	<input type="checkbox"/> Re-position

Procedural Checklist		
Safety Practice	YES	YES (After Reminder)
<b>Before procedure, did the provider:</b>		
➤ PERFORM PROCEDURAL PAUSE		
Perform patient ID X 2	<input type="checkbox"/>	<input type="checkbox"/>
Announce the procedure to be performed	<input type="checkbox"/>	<input type="checkbox"/>
Mark / assess site	<input type="checkbox"/>	<input type="checkbox"/>
Position patient correctly for procedure	<input type="checkbox"/>	<input type="checkbox"/>
Assemble equipment / verify supplies	<input type="checkbox"/>	<input type="checkbox"/>
Utilize relevant documents (chart / forms)	<input type="checkbox"/>	<input type="checkbox"/>
Order follow-up Radiology images (PRN)	<input type="checkbox"/>	<input type="checkbox"/>
➤ Cleanse hands? (ASK, if unsure)	<input type="checkbox"/>	<input type="checkbox"/>
➤ Prep procedure site with Chloraprep? *30 seconds for dry site **2 minutes for moist site (esp. femoral)	<input type="checkbox"/>	<input type="checkbox"/>
➤ Use large drape to cover patient in sterile fashion?	<input type="checkbox"/>	<input type="checkbox"/>
<b>During procedure, did the provider:</b>		
➤ Wear sterile gloves during catheter insertion?	<input type="checkbox"/>	<input type="checkbox"/>
➤ Wear hat, mask, and sterile gown?	<input type="checkbox"/>	<input type="checkbox"/>
➤ Maintain sterile field?	<input type="checkbox"/>	<input type="checkbox"/>
➤ Use ultrasound/Sonasite if appropriate?	<input type="checkbox"/>	<input type="checkbox"/>
➤ Did assisting physician follow the same precautions? (hand washing, mask, gloves, gown)	<input type="checkbox"/>	<input type="checkbox"/>
➤ Did all staff and patient in the room wear a mask?	<input type="checkbox"/>	<input type="checkbox"/>
<b>After the procedure:</b>		
➤ Was sterile technique maintained when applying dressing?		
➤ Was dressing dated?		

Name of Intensivist: \_\_\_\_\_

Name of Procedure MD \_\_\_\_\_

Name of Assisting MD \_\_\_\_\_

Name of RN (auditor): \_\_\_\_\_ Today's Date: \_\_\_\_-\_\_\_\_-\_\_\_\_

Room: CCU Bed # \_\_\_\_\_

## 2. Prevent Central line associated Bloodstream Infections [CLABSI] [예시]

등록번호				주치의		입원일	
병동/병실				진단명			

  

VAP bundle checklist	BSI bundle checklist	Weaning protocol checklist
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I. General Information

작성일 :

  

1. 입원일 : 2013-02-03      2. 중환자실 입/퇴실일 :  C -  C      기간 :

3. 진료과 : ☐ 1) MP ☐ 2) MN ☐ 3) MC ☐ 4) MM ☐ 5) MO ☐ 6) MD ☐ 7) NS ☐ 8) BS ☐ 9) GS ☐ 10) NEU ☐ 11) CS ☐ 12) OS ☐ 13) EM

4. Underlying disease : ☐ 1) Infection ☐ 2) cardiovascular dz ☐ 3) Gastrointestinal dz ☐ 4) Neurologic dz  
☐ 5) Malignancy ☐ 6) respiratory dz ☐ 7) Others

5. present diagnosis : ☐ 1) Infection ☐ 2) cardiovascular dz ☐ 3) Gastrointestinal dz ☐ 4) Neurologic dz  
☐ 5) Malignancy ☐ 6) respiratory dz ☐ 7) Others

  

II. Infection control

1차 삽입

2차 삽입

3차 삽입

4차 삽입

5차 삽입

  

6. 삽입일 :  C -  C      기간 : 33 일

7.1 시술자

8. 삽입부위 : ☐ 1) Subclavian ☐ 2) Jugular ☐ 3) Femoral

9. 시술 전 손 위생 ☐ YES ☐ NO      10. 시술 후 손 위생 ☐ YES ☐ NO      11. 삽입시 모자착용 ☐ YES ☐ NO

12. 마스크 착용 ☐ YES ☐ NO      13. 멸균가운 착용 ☐ YES ☐ NO      14. 멸균장갑 착용 ☐ YES ☐ NO

15. 환자 멸균 대방포 적용 ☐ YES ☐ NO

16. ☐ 거즈 드레싱, ☐ 필름 드레싱

7.2 시술보조자

9. 시술 전 손 위생 ☐ YES ☐ NO      10. 시술 후 손 위생 ☐ YES ☐ NO      11. 삽입시 모자착용 ☐ YES ☐ NO

12. 마스크 착용 ☐ YES ☐ NO      13. 멸균가운 착용 ☐ YES ☐ NO      14. 멸균장갑 착용 ☐ YES ☐ NO

15. 환자 멸균 대방포 적용 ☐ YES ☐ NO

  

III. 카테터 관련 혈류감염

16. 뚜렷한 다른 원인 없이 적어도 다음 한 가지에 해당 : ☐ Yes ☐ No      ☐ 1) fever(>38 ° )      ☐ 2) Chills      ☐ 3) Hypotension

17. Blood culture : ☐ Yes ☐ No      시술자

18. 미생물 결과 (17번에서 예인 경우만 해당)

☐ 1) No growth

☐ 2) 해당미생물

### **3. Preventing Catheter-Associated Urinary Tract Infections**

- 1. 1. Avoid unnecessary urinary catheters**
- 2. 2. Insert using catheters aseptic technique**
- 3. 3. Maintain urinary catheters based on recommended guidelines**
- 4. 4. Review urinary catheters necessity daily and remove promptly**

### **3. Preventing Catheter-Associated Urinary Tract Infections**

#### **1. Avoid unnecessary urinary catheters**

- Perioperative use for selected surgical procedures;
- Urine output monitoring in critically ill patients;
- Management of acute urinary retention and urinary obstruction;
- Assistance in pressure ulcer healing for incontinent patients; and
- As an exception, at patient request to improve comfort (SHEA-IDSA) or for comfort during end-of-life care (CDC).

# 3. Preventing Catheter-Associated Urinary Tract Infections

## 2. Insert using catheters aseptic technique

- Utilize appropriate hand hygiene practice (in accordance with Centers for Disease Control and Prevention or World Health Organization guidelines) immediately before insertion of the catheter.
- Insert catheters using aseptic technique and sterile equipment, specifically using:
  - gloves, a drape, and sponges;
  - sterile or antiseptic solution for cleaning the urethral meatus; and
  - single-use packet of sterile lubricant jelly for insertion.
- Use as small a catheter as possible that is consistent with proper drainage, to minimize urethral trauma.

# 3. Preventing Catheter-Associated Urinary Tract Infections

## 3. Maintain urinary catheters based on recommended guidelines

- Maintain a sterile, continuously closed drainage system.
- Keep catheter properly secured to prevent movement and urethral traction.
- Keep collection bag below the level of the bladder at all times.
- Maintain unobstructed urine flow.
- Empty collection bag regularly, using a separate collecting container for each patient, and avoid allowing the draining spigot to touch the collecting container.



## 3. Preventing Catheter-Associated Urinary Tract Infections

### 4. Review urinary catheters necessity daily and remove promptly

- Include catheter necessity in the daily nursing assessments at the start of every shift, with the requirement to contact physician if criteria are not met.
- Develop nursing protocols that allow for removal of urinary catheters if criteria for necessity are not met and there are no contraindications for
- Implement automatic stop orders for 48 to 72 hours after insertion, with continuation only when indication is documented in renewal order.
- Place reminders in paper patient records requiring physicians to document indication for continuation of catheter
- Use alerts in computerized ordering systems to indicate to physicians the presence of a catheter, and require documentation for continued need.

## **4. Prevent surgical site infection**

- 1. Appropriate use of antibiotics**
- 2. Appropriate Hair Removal**
- 3. Controlled postoperative serum Glucose in cardiac surgery**
- 4. Immediate postoperative normothermia in colorectal surgery**

## 4. Prevent surgical site infection

### 1. Appropriate use of antibiotics

- Prophylactic antibiotic received within 1 hour prior to surgical incision\*
- Prophylactic antibiotic selection for surgical patients consistent with national guidelines  
(as defined in JC/CMS Specification Manual and SCIP for Measure SCIP-Inf-2)
- Prophylactic antibiotics discontinued within 24 hours after surgery end time (48 hours for cardiac patients)

## 4. Prevent surgical site infection

### 2. Appropriate Hair Removal

- Ensure adequate supply of clippers and train staff in proper use.
- Use reminders (signs, posters).
- Educate patients not to self-shave preoperatively.
- Remove all razors from the entire hospital.
- Work with the purchasing department so that razors are no longer purchased by the hospital.

## **4. Prevent surgical site infection**

### **3. Controlled postoperative serum Glucose in cardiac surgery**

- Implement one standard glucose control protocol for cardiac surgery.
- Regularly check preoperative blood glucose levels on all patients to identify hyperglycemia; this is best done early enough that assessment of risk can be completed and treatment initiated if appropriate.
- Assign responsibility and accountability for blood glucose monitoring and control.

## 4. Prevent surgical site infection

### 4. Immediate postoperative normothermia in colorectal surgery

- Prevent hypothermia at all phases of the surgical process.
- Use warmed forced-air blankets preoperatively, during surgery, and in PACU.
- Use warmed fluids for IVs and flushes in surgical sites and openings.
- Use warming blankets under patients on the operating table.
- Use hats and booties on patients perioperatively.
- Adjust engineering controls so that operating rooms and patient areas are not permitted to become excessively cold overnight, when many rooms are closed.
- Measure temperature with a standard type of thermometer.