



Aspiration and Aspiration Pneumonia  
Prevention  
at  
California Pacific Medical Center  
The Journey

Bing Tschai, RN, MSN

Pam Marshall, RN

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# Goals

- 1. Review Aspiration and Aspiration Pneumonia Prevention improvement processes implemented at CPMC**
- 2. Discuss lessons learned**

# Definitions

## Aspiration

- the inhalation of oropharyngeal or gastric contents into the larynx and lower respiratory track (*Irwin, 1999*).

## Aspiration Pneumonia

- an infectious process caused by the inhalation of oropharyngeal secretions (food, liquid, or gastric contents) that are colonized by pathogenic bacteria (*Marik, 2001*).

# Incidence of Aspirations

- Between 50% to 75% of patients receiving mechanical ventilation
- Up to 70% of patients with altered levels of consciousness
- Up to 45% of normal patients during sleep
- Up to 40% of patients receiving enteral feedings

*McClave et al. (2002)*

# CPMC Aspiration & Aspiration Pneumonia Prevention

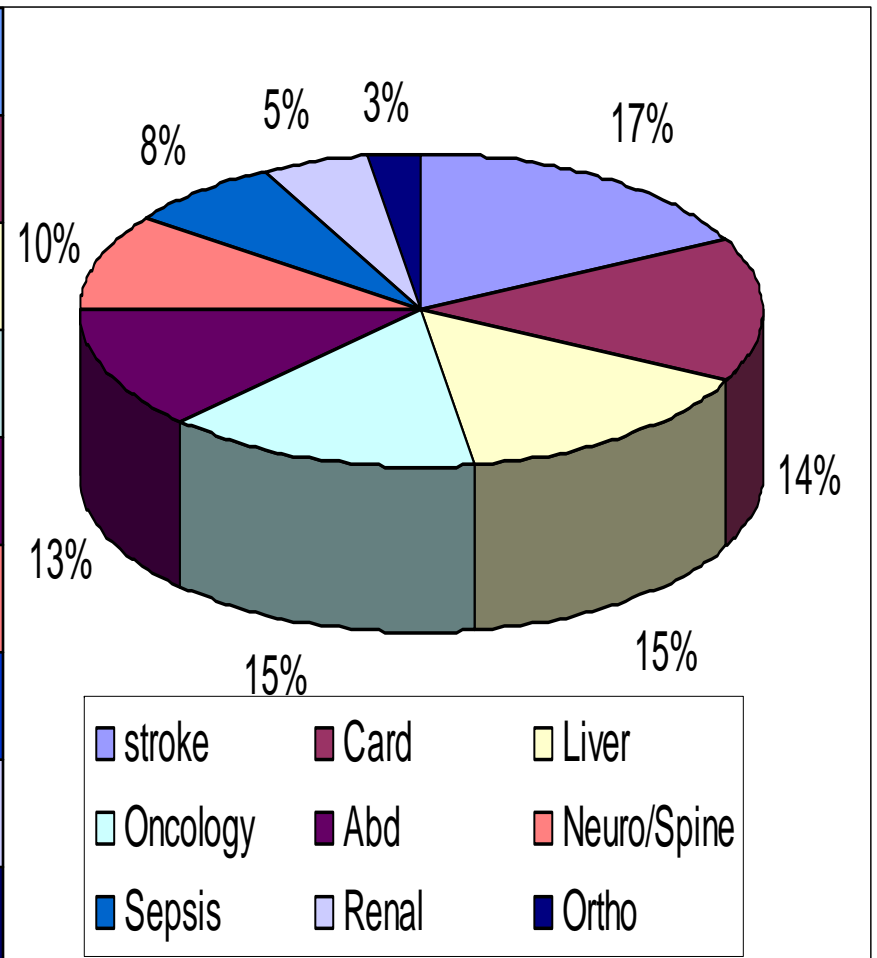
- **The Set-up**  
    **Situation**  
    **Patient story**
  
- **The Data**

**CPMC**  
**Aspiration Not Present On Admission**  
**2005 N=127**

<b>Discharge Disposition</b>	<b>Total</b>	
<b>EXPIRED</b>	<b>40</b>	<b>31%</b>
<b>DISCH TO SNF</b>	<b>40</b>	
<b>HOME OR SELF CARE</b>	<b>18</b>	
<b>HOME WITH HOME HEALTH SERVICES</b>	<b>15</b>	
<b>DISCH/TRANS TO OUTSIDE INST</b>	<b>8</b>	
<b>DISCH TO ANOTHER HOSP</b>	<b>5</b>	
<b>AGAINST MEDICAL ADVICE</b>	<b>1</b>	
<b>Grand Total</b>	<b>127</b>	

# Aspiration Mortality and Services 2005 N=40

<b>Stroke</b>	<b>7</b>
<b>Card</b>	<b>6</b>
<b>Liver</b>	<b>6</b>
<b>Oncology</b>	<b>6</b>
<b>Abd</b>	<b>5</b>
<b>Neuro/Spine</b>	<b>4</b>
<b>Sepsis</b>	<b>3</b>
<b>Renal</b>	<b>2</b>
<b>Ortho</b>	<b>1</b>



# CPMC Aspiration & Aspiration Pneumonia Prevention

- **Multidisciplinary Team Approach (6/2006)**
  - **Physicians and Nurse Practitioners**
  - **Registered Nurses (RN)**
  - **Speech Language Pathologists (SLP)**
  - **Patient Care Assistants (PCA)**
  - **Clinical Dietitians and Nutrition Services**
  - **Respiratory Therapists (RT)**
  - **Quality Coordinator**

# Evidence Based Practices

- **Guidelines for Preventing Health-Care Associated Pneumonia, 2003 (Tablan et al & Healthcare Infection Control Practices Advisory Committee, Centers for Disease Control and Prevention (CDC), 2004)**
- **Guidelines for the Management of Adults with Hospital-acquired, Ventilator-associated, and Healthcare-associated Pneumonia (American Thoracic Society, 2005)**

# Prevention of Aspiration Pneumonia Recommendation Highlights

- **Increase HOB 30°-45°**
- **Frequent and Thorough Oral Hygiene**
- **Routinely verify appropriate placement of feeding tubes**
  - *Tablan et al., CDC. (2004)*
- **Implement Dysphagia screening program**
  - *Hinchey et al., Stroke (2005)*
- **Implement Oral-Hygiene program**
  - *Bowman et al., Critical Care Nursing Quarterly (2005)*

# Aspiration & Aspiration Pneumonia Bundle Approach

## **6 Bundle Elements:**

- 1. Assess ALL patients for aspiration risk**
- 2. Bedside Swallow Screening**
- 3. Suction set-up at bed-side**
- 4. HOB at 30 degrees**
- 5. Frequent Oral Care**
- 6. Safe care delivery of 1:1 supervise/assist meals**

# Patient Safety:

# Aspiration Pneumonia Prevention



**1** RN identifies patients at risk



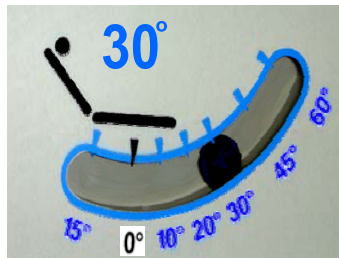
**2** No food, liquid, or medications until RN does Swallow Screening or Dysphagia Evaluation done by Speech



**3** Suction is set up at bedside & ready



**4** HOB is elevated at 30° at all times . . .



**5** Frequent mouth care



**6** Assist or supervise 1:1 precaution patients at meal time



. . . and at 60°–90° for meals

# 1:1 Assist or Supervision Meal Tray



Teal meal tray stays in food cart, and not to be placed in patient's room

# CPMC Aspiration & Aspiration Pneumonia Prevention

## Documents:

- Aspiration & Aspiration Pneumonia Prevention Protocol
- Oral Care Protocol
- Nursing Bedside Swallow Screening Tool

# CPMC Aspiration & Aspiration Pneumonia Prevention

## Equipments:

- Suction Set-ups at the Bedside
- Suction tooth brushes and swabs
- Teal color meal trays

# CPMC Aspiration & Aspiration Pneumonia Prevention

## PCIS Order Sets / Documentation & Communication Tools:

- Incorporate asp risk assessment in patient flow sheet and Nursing Admission Data Base
- Asp prevention bundle elements are printed on the Patient Shift Care Summary once a Nurse identifies patient on PCIS as at risk for aspiration.
- PCIS documentation of Nursing bedside swallow screening.
- Standardized Speech Pathology Therapist orders to clearly identify patients who require 1:1 Assist or 1:1 Supervision at meal time. (so dietary knows who gets a Teal Tray)

# CPMC Aspiration & Aspiration Pneumonia Prevention

## PCIS Order Sets / Documentation & Communication Tool:

- Warning label placed next to the Teal meal tray
- On demand print out of unit specific 1:1 Assist or 1:1 Supervision patient list
- Physician notification of aspiration risk when diet order is placed
- Aspiration Precaution Sign at Head of Bed

# CPMC Aspiration & Aspiration Pneumonia Prevention

## Education Tools:

- 'Bundle' poster
- Oral Care Table
- Bedside Swallow Screening Tool
- Risk Assessment Flow Chart
- Teaching modules (long and short):
  - Nursing Bedside Swallow Screening
  - Oral Care

# CPMC Aspiration & Aspiration Pneumonia Prevention

## General roll out strategies:

- 1st week of roll out month: In-service on Bundle concept esp. **Teal** meal tray delivery for 1:1 assist and Supervise patients
- 2nd week: **Teal** meal tray roll out
- 3rd week: Oral Care in-service, includes family education
- 4th week : Nursing Bed side Swallow Screening in-service, includes family education
- Education with RNs at new hire orientation & PCAs at skill days

# CPMC Aspiration & Aspiration Pneumonia Prevention

## General roll out strategies:

It has taken a few Villages

- Stroke Team built the foundation
- PACE Council reinforced education & fine tuned the Aspiration Prevention Protocol
- Speech Pathology Therapist provided expertise with swallow screening techniques
- Nutritional Services coordinates assembling and delivery of Teal
- Quality orchestrates the plan and conducts inservices

# CPMC Aspiration & Aspiration Pneumonia Prevention

## Measurement:

Administrative data to capture Patients who have a discharge diagnosis of Aspiration Pneumonia which is not present on admission (NPOA):

- Incident ; count and rate
- Mortality; count and rate

# CPMC Aspiration & Aspiration Pneumonia Prevention

## Counter Balance

- Increase Referrals to Speech Pathology
- Potential of meal trays staying in cart longer
- De-emphasis of Speech Pathology services other than evaluation of dysphagia
- Kept NPO for extended periods of time while awaiting more formal consults.

# CPMC Aspiration & Aspiration Pneumonia Prevention

## Implementation Status

- Completed 17/22 (77%) targeted areas in 3 Campuses
- Remaining areas are 2 ICU, 1 ICU Step Down, and 2 Med surg units

# CPMC Aspiration & Aspiration Pneumonia Prevention

## Data Slide



# CPMC Aspiration & Aspiration Pneumonia Prevention

## **Lessons learned: the good..**

- Overwhelming Staff endorsement of concept at all levels
- Different color meal tray gains most support
- Processes by which patient's Aspiration Risk Status is communicated to various discipline has to be part of the workflow
- Availability of electronic order entry and ancillary (nursing, speech, dietitian) notes entry make our plan of intervention possible

# CPMC Aspiration & Aspiration Pneumonia Prevention

## **Lessons learned: the challenges...**

Difficulties in using mortality as primary end point to measure aspiration prevention effort.

Lack of a systemic way to obtain accurate data in the measurement of When, Where, and How an aspiration event occurred

# CPMC Aspiration & Aspiration Pneumonia Prevention

## Next Steps:

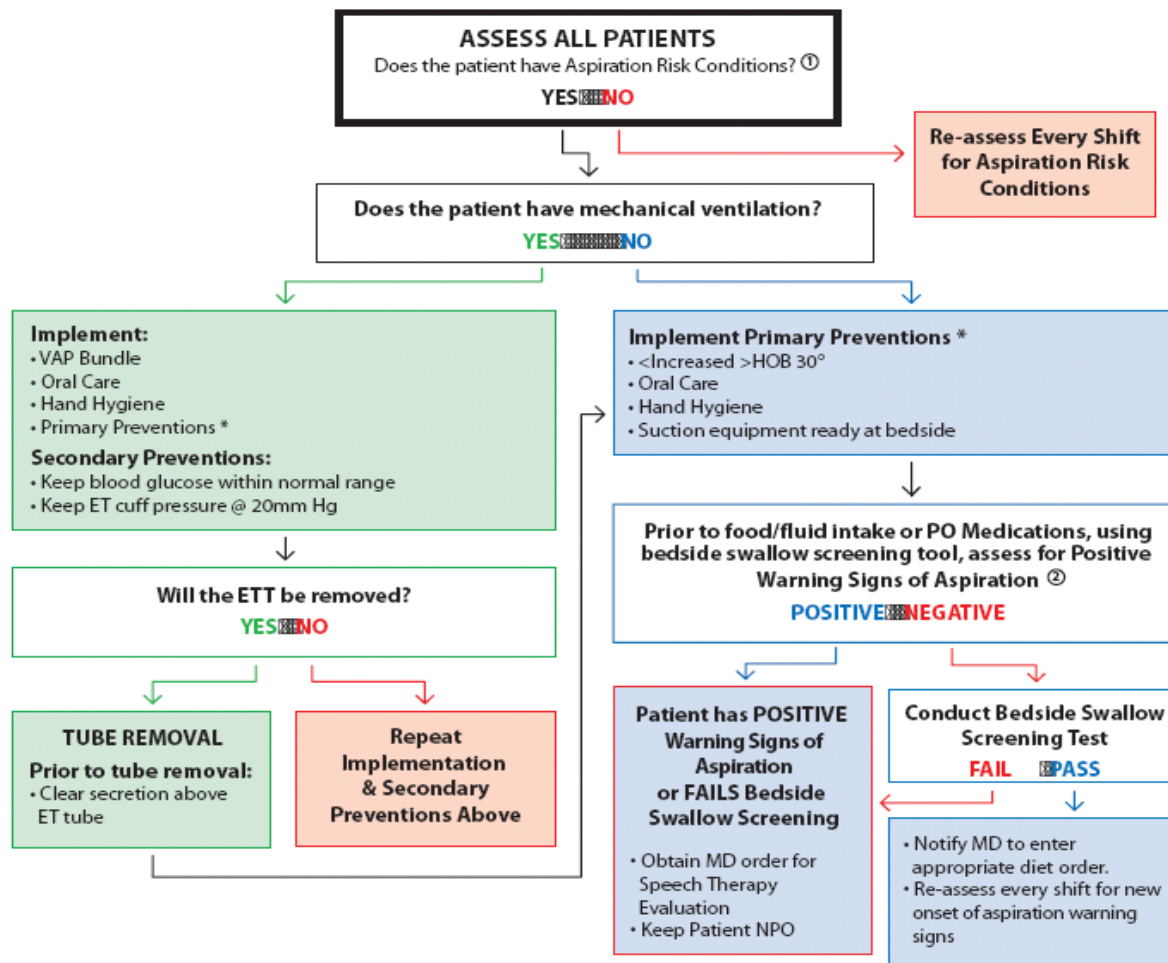
- Complete roll out of bundle to remaining units
- Data drill down and feed back to the staff
- Reconvene PI team to discuss alternate measurement indicators
- Project presentation to Population Committees and Administration

# CPMC Aspiration & Aspiration Pneumonia Prevention

## TOOLS



# Adult Aspiration Pneumonia Prevention Algorithm



## ① ASPIRATION RISK CONDITIONS

- Neurological Disorder
- History of Aspiration
- Dysphagia or Reflux
- Mechanical Ventilation and Post-mechanical intubation
- Frail Condition
- Pulmonary Condition or with high oxygen need (>5 liter of O<sub>2</sub>)
- Surgical Manipulation of Head or Neck
- Medications that Delay Gastric Emptying (such as Dopamine and Propofol)
- Patients who are on tube feedings

## ② POSITIVE WARNING SIGNS OF ASPIRATION

- Facial Drooping
- Drooling
- Slurred Speech
- Weak / No Voice / "Wet" Voice
- Weak / Absent Cough
- Tongue Deviated to One Side
- Lethargy
- Inability to Follow Commands



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**NURSING  
BEDSIDE SWALLOW  
SCREENING TOOL**

Addressograph

The risk of aspiration and aspiration pneumonia can be minimized with the assessment of the patient's ability to swallow prior to having anything by mouth including medications. All patients at risk must remain NPO until a swallowing screening has been completed. Patients who are at risk include and not limited to those with **ischemic or hemorrhagic stroke, cognitive impairment, history of aspiration, post mechanical intubation, post injury/condition of head, neck, or throat, etc.**

Patients who have difficulties with this bedside swallowing screening need to remain NPO and to be referred for a formal swallowing evaluation provided by a speech therapist.

It is important to always look for warning signs that may be indicative of difficulties and/or abnormalities with swallowing.

**A. Assess For Warning Signs**

- Lethargy
- Facial droop or drooling
- Slurred speech/weak voice/no voice/wet voice
- Weak/absent cough
- Tongue deviated to one side
- History of aspiration
- None of the Above** → Proceed to B

**At least one condition present** → Patient is at risk to participate in swallow screening:

- Stop**, do not proceed with swallowing screening procedure
- Maintain NPO (including medications)
- Notify Physician
- Request M.D. order for dysphagia evaluation by speech pathology therapist

**B. Assess Patient's Readiness to Participate (must be able to do all 3):**

- 1. Able to maintain alertness
- 2. Able to follow simple directions (with interpreter if needed)
- 3. Able to sit in upright position (propped with pillows if needed)
- All Yes** → Proceed to C

**If unable to do all 3** → Patient is not yet appropriate for swallow screening:

- Maintain NPO (including medications)
- Notify Physician
- Continue assessment for readiness every shift
- When able to do all, proceed with C

**C. Swallow Screening Procedures:**

	Step 1	Step 2	Step 3	Step 4
<b>Patient Response (observe patient at each step)</b>	Ice chips or a small sip of water (3-5 ml) by teaspoon	Sips of water from a cup	Sips of water from a straw	Swallow Screening completed
<b>Able to swallow, proceed to next step</b>	Yes →	Yes →	Yes →	Notify M.D. to place diet order
<b>Has at least one problem listed below with swallowing:</b>	1. <b>Stop</b> the screening process 2. Maintain NPO 3. Notify M.D. to place an order for Speech Pathologist to perform dysphagia evaluation			
Coughing				
Choking				
Throat clearing				
Breathless/color Change				
Wet gurgling sound				
Other				

Nursing Swallow Screening (NSS) Summary:

- FAIL** - Maintain NPO, notify M.D., and obtain an evaluation from a speech therapist
- PASS** - Obtain a diet of choice and observe for first meal
- FAIL** - (override based on clinical judgment) - Maintain NPO, notify M.D., and obtain an evaluation from a speech therapist.

Completed by: \_\_\_\_\_ (print name) on \_\_\_\_\_ (date/time)



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# Oral Care Reference Table

Patient Types	Tooth Brushing		Mouthwash/Mouthrinse		Mouth Moisturizer	Denture Care	Removal of Subglottal Secretions
	How Often	With What	How Often	With What			
<b>Self Care, Non-intubated,</b>	Daily	Soft Bristle Tooth Brush & Toothpaste	PRN	Antiseptic Mouthwash		Daily removal & Cleaning	
<b>Dependent Care, Non-intubated,</b>	AM & PM	Suction Tooth Brush & Antiseptic Mouthwash	Q 4 Hours	Suction Swab with Antiseptic Mouthwash	Q 4 hours (Following Mouth Wash)	Daily removal & Brushing with toothpaste	
<b>Critical Care, Non-intubated</b>	AM & PM	Suction Tooth Brush & Antiseptic Mouthwash	Q 2 Hours	Suction Swab with Antiseptic Mouthwash	Q 2 hours (Following Mouth Wash)	Daily removal & Brushing with toothpaste	
<b>Intubated, on Mechanical Ventilation</b>	AM & PM	Suction Tooth Brush & Antiseptic Mouthwash	Q 2 Hours	Suction Swab with Antiseptic Mouthwash	Q 2 hours (Following Mouth Wash)		AM & PM Prior to ET Tube repositioning Prior to deflation of ET cuff

**Helpful Hints:**

1. **Oral Care** involves the teeth, gum and oral mucosa, tongue, upper palate, saliva and lips
2. **Position Patient's head** to the side or place in semi-fowler's position as tolerated
3. **Suction Toothbrush and Suction Swab:** use with Antiseptic Mouth Wash; apply suction throughout the tooth brushing session, to prevent oral care products and secretions from going down the patient's throat
4. **Brush** with gentle pressure while moving in short horizontal or circular strokes
5. **Place swab** perpendicular to the gum line and apply gentle mechanical action for one to two minutes; rotate swab as you remove it from the patient's mouth
6. **Apply mouth moisturizer** inside entire oral cavity and on lips

# Posting at Head of Bed

SWALLOWING PRECAUTIONS	
Name: _____ Date: _____	
Pt must be <b>ALERT</b> and <b>UPRIGHT</b> when eating or drinking, and 30 minutes thereafter.	
Assistance / Supervision: _____	
Diet Level	Strategies
Solids : _____ _____	_____
Liquids: _____ _____	_____
Straw: O.K. / NOT O.K.	Meds:
<ul style="list-style-type: none"> <li>• <b>Small</b> sips/bites</li> <li>• <b>Alternate</b> solids and liquids</li> <li>• <b>Slow</b> eating pace</li> </ul>	<ul style="list-style-type: none"> <li>• <b>No talking</b> while chewing and swallowing</li> </ul>
<b>STOP</b> feeding patient if persistent signs of aspiration:	
<ul style="list-style-type: none"> <li>• Wet/gargling voice quality</li> <li>• Coughing/choking</li> </ul>	<ul style="list-style-type: none"> <li>• Significant congestion</li> </ul>
Speech Pathologist, Pager # _____	

# 1:1 Assist or Supervision Meal Tray & Warning Label



```

DESKTOP 7000 HCM
File Edit View Help
TSCHAI, YUE BING RN YBT .
ABEDI, SANDRA H
UM
CASE MGMT MASTER GUIDE
▶ UTIL. MANAGEMENT DATA ▶ CARE PLANS
▶ POWER OF ATTORNEY
FOR HEALTHCARE
▶ NSE TO NSE DATA
▶ COMPLETE NSG DATA
▶ CPD PATIENT ORDER
▶ PATIENT INFO-GRAM
▶ PATIENT PRINTOUTS
▶ CLINICAL PATHWAY CHARTING
▶ REMOVE CHARTING ERROR
RETURN
ERR TYPE RETRIEVE
  
```

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DESKTOP 7000 HCM
File Edit View Help
TSCHAI, YUE BING RN YBT .
ABEDI, SANDRA H
N
NURSE TO NURSE DATA
▶ ACTIVITY
▶ ADL/EMOTIONAL NEEDS
▶ BLADDER TRAINING
▶ BOWEL TRAINING
▶ CATHETER CARE
▶ DIETARY AIDS
▶ DISCHARGE PLANNING
▶ DRESSINGS
▶ INCENTIVE SPIROMETRY
▶ OBSV/US/WEIGHT
▶ RADIATION ONCOLOGY
▶ PICC PROTOCOL:
▶ ADULT
▶ PEDIATRIC
▶ POSITIONING
▶ PRECAUTIONS
▶ RESTRICTIONS
▶ SAFETY MEASURES
▶ SKIN MAINTENANCE
▶ TEACHING GOALS
▶ UNIT TESTS/DRAINS
▶ VASCULAR ACCESS
▶ ADD INTERN/RESIDENT
RETURN
ERR TYPE MASTER RETRIEVE
  
```

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DESKTOP 7000 HCM
File Edit View Help
TSCHAI, YUE BING RN YBT .
ABEDI, SANDRA H
N90
PRECAUTIONS
ASPIRATION
ASSAULT
BLEEDING
ELOPEMENT
RESTRICT TO UNIT
FALL
FIRE SETTING
IMMUNOSUPPRESSED
NEUTROPENIC
DRUG WITHDRAWAL
ALCOHOL WITHDRAWAL
SEIZURE
SEXUAL
THROMBOCYTOPENIC
SUICIDE (SELECT FIRST)
LEVEL I 0 30 MIN
LEVEL II 0 15 MIN
LEVEL III 1:1
▶ NRSG ORDS
RETURN
ERR TYPE MASTER RETRIEVE REVIEW
  
```

# PCIS Nursing Documentation

# Aspiration Precaution PCIS Patient Care Summary Print out

```
DESKTOP 7000 HCM
File Edit View Help
6 4 2 0 8 RAY #5 CPMC RAY < >
PCIS2 NEW
04/07 HEPATITIS B VACCINE 50MCG GIVEN 04/01
04/07 MENINGOCOCCAL VACCINE REFUSED 04/01
04/07 PNEUMOCOCCAL VACCINE GIVEN 04/01
04/07 TETANUS VACCINE GIVEN 01/07
02/04 ADMIT DX: TESTING

POWER OF ATTORNEY FOR HEALTHCARE:
02/04 PT. DOES NOT HAVE POWER OF ATTORNEY FOR HEALTHCARE
...PT. IS CRITICALLY ILL AND UNABLE TO RESPOND RAYW

NURSE TO NURSE COMMUNICATIONS:
05/06 PRECAUTIONS: ASPIRATION RAYW
05/06 ASPIRATION PRECAUTION: KEEP HEAD OF BED UP AT LEAST
30 DEGREES IF NO CONTRAINDICATIONS RAYW
05/06 ASPIRATION PRECAUTION: PERFORM ORAL CARE PER PROTOCOL RAYW
05/06 ASPIRATION PRECAUTION: CHECK THAT BEDSIDE SUCTION
EQUIPMENT IS PLUGGED IN AND FUNCTIONING RAYW

RETURN BACK NEXT MASTER ERASE-ALL
ERR ENTER
```

# Aspiration Precaution PCIS Patient Care Summary Print out

```
DESKTOP 7000 HCM
File Edit View Help
64208 RAY #5 CPMC RAY < >
PCIS2 NEW
05/06 ASPIRATION PRECAUTION: CONDUCT SWALLOW SCREENING
BEFORE FIRST PO (INCLUDES PO MEDICATIONS) RAYW
05/06 SWALLOW SCREENING CONDUCTED ON: 05/05/08...FAILED,
BASED ON CLINICAL JUDGEMENT (MAINTAIN NPO; NOTIFY MD
TO OBTAIN AN EVALUATION FROM A SPEECH THERAPIST) RAYW

THIS PATIENT HAS NO CURRENT MEDICAL ORDERS

LAST PAGE
WONG, RAYMOND M 06400206 PATIENT CARE SUMMARY
-*
RETURN BACK MASTER ERASE-ALL
ERR ENTER
```

QI-P -0996  
09/16/08 09:51

CALIFORNIA PACIFIC MEDICAL CENTER-SAN FRANCISCO CA  
(QASPIR) PAGE 001

1:1 SUPERVISION/ASSIST WITH MEALS ORDERS - D-3S

359A BAILEY, LESLIE  
09/10 15:34 22 DIET: ASPIRATION PRECAUTION, 1:1 SUPERVISION WITH  
MEALS; PATIENT NEEDS TO BE SUPERVISED AT MEAL  
TIME TO FOLLOW ASPIRATION PRECAUTION  
RECOMMENDATIONS --STRAW OK, CUES TO DECREASE RATE  
EATING. , <09/10/08>, (SAR).(TSCA)

360A BURKE, WILLIAM  
09/12 11:07 805 DIET: ASPIRATION PRECAUTION, 1:1 SUPERVISION WITH  
MEALS; PATIENT NEEDS TO BE SUPERVISED AT MEAL  
TIME TO FOLLOW ASPIRATION PRECAUTION  
RECOMMENDATIONS, <09/12/08>, (N )..(SZBF)

NO MORE 1:1 SUPERVISION/ASSIST WITH MEALS ORDERS (D-3S)

LAST PAGE

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# Unit Specific 1:1 Meal Tray List Print-Out