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

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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
<table>
<thead>
<tr>
<th>Discharge Disposition</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPired</td>
<td>40</td>
</tr>
<tr>
<td>DISCH TO SNF</td>
<td>40</td>
</tr>
<tr>
<td>HOME OR SELF CARE</td>
<td>18</td>
</tr>
<tr>
<td>HOME WITH HOME HEALTH SERVICES</td>
<td>15</td>
</tr>
<tr>
<td>DISCH/TRANS TO OUTSIDE INST</td>
<td>8</td>
</tr>
<tr>
<td>DISCH TO ANOTHER HOSP</td>
<td>5</td>
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<tr>
<td>AGAINST MEDICAL ADVICE</td>
<td>1</td>
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<tr>
<td>Grand Total</td>
<td>127</td>
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</table>
Aspiration Mortality and Services
2005 N=40

<table>
<thead>
<tr>
<th>Service</th>
<th>Cases</th>
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<tbody>
<tr>
<td>Stroke</td>
<td>7</td>
</tr>
<tr>
<td>Card</td>
<td>6</td>
</tr>
<tr>
<td>Liver</td>
<td>6</td>
</tr>
<tr>
<td>Oncology</td>
<td>6</td>
</tr>
<tr>
<td>Abd</td>
<td>5</td>
</tr>
<tr>
<td>Neuro/Spine</td>
<td>4</td>
</tr>
<tr>
<td>Sepsis</td>
<td>3</td>
</tr>
<tr>
<td>Renal</td>
<td>2</td>
</tr>
<tr>
<td>Ortho</td>
<td>1</td>
</tr>
</tbody>
</table>
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- 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)

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
  - Hinchev 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

Feed me..
1:1 Assist or Supervision Meal Tray

Teal meal tray stays in food cart, and not to be placed in patient’s room.
Documents:

• Aspiration & Aspiration Pneumonia Prevention Protocol

• Oral Care Protocol

• Nursing Bedside Swallow Screening Tool
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**Equipments:**

- Suction Set-ups at the Bedside
- Suction tooth brushes and swabs
- Teal color meal trays
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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)
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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
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
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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
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
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
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.
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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
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Data Slide
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
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
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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
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TOOLS
Adult Aspiration Pneumonia Prevention Algorithm

**ASSESS ALL PATIENTS**
Does the patient have Aspiration Risk Conditions? 

- **YES** — Implement Primary Preventions *
- **NO** — Re-assess Every Shift for Aspiration Risk Conditions

- **YES** — Does the patient have mechanical ventilation?

**Implement:***
- VAP Bundle
- Oral Care
- Hand Hygiene
- Primary Preventions *

**Secondary Preventions:**
- Keep blood glucose within normal range
- Keep ET cuff pressure @ 20mm Hg

**Will the ETT be removed?**
- **YES** — Prior to tube removal:
  - **NO** — Repeat Implementation & Secondary Preventions Above

**TUBE REMOVAL**
- Prior to tube removal:
  - Clear secretion above ET tube

**Implement Primary Preventions***
- Increased HOB 30°
- Oral Care
- Hand Hygiene
- Suction equipment ready at bedside

**Prior to food/fluid intake or PO Medications,** using bedside swallow screening tool, assess for Positive Warning Signs of Aspiration

- **POSITIVE** — Conduct Bedside Swallow Screening Test
  - **PASS**
  - **FAIL** — Notify MD to enter appropriate diet order
- Re-assess every shift for new onset of aspiration warning signs

**Patient has POSITIVE Warning Signs of Aspiration or FAILS Bedside Swallow Screening**
- Obtain MD order for Speech Therapy Evaluation
- Keep Patient NPO

**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 O2)
- Surgical Manipulation of Head or Neck
- Medications that Delay Gastric Emptying (such as Dopamine and Propofol)
- Patients who are on tube feedings

**POSITIVE WARNING SIGNS OF ASPIRATION**
- Facial Drooping
- Drooling
- Strurred Speech
- Weak / No Voice / "Wet" Voice
- Weak / Absent Cough
- Tongue Deviated to One Side
- Lethargy
- Inability to Follow Commands
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.

<table>
<thead>
<tr>
<th>A. Assess For Warning Signs</th>
<th>At least one condition present -&gt; Patient is at risk to participate in swallow screening:</th>
</tr>
</thead>
<tbody>
<tr>
<td>_Lethargy</td>
<td>o Stop, do not proceed with swallowing screening procedure</td>
</tr>
<tr>
<td>_Facial droop or drooling</td>
<td>o Maintain NPO (including medications)</td>
</tr>
<tr>
<td>_Slurred speech/weak voice/no voice/wet voice</td>
<td>o Notify Physican</td>
</tr>
<tr>
<td>_Weak/absent cough</td>
<td>o Request M.D. order for dysphagia evaluation by speech pathology therapist</td>
</tr>
<tr>
<td>_Tongue deviated to one side</td>
<td></td>
</tr>
<tr>
<td>_History of aspiration</td>
<td></td>
</tr>
<tr>
<td>_None of the Above</td>
<td>Proceed to B</td>
</tr>
</tbody>
</table>

| B. Assess Patient's Readiness to Participate (must be able to do all 3): |
|-----------------------------|---------------------------------------------------------------------------------------|
| 1. Able to maintain alertness       | If unable to do all 3 -> Patient is not yet appropriate for swallow screening:       |
| 2. Able to follow simple directions (with interpreter if needed) | o Maintain NPO (including medications)                                                |
| 3. Able to sit in upright position (propped with pillows if needed) | o Notify Physican                                                                  |
| All Yes -> Proceed to C          | o Continue assessment for readiness every shift                                       |
|                                 | o When able to do all, proceed with C                                                |

<table>
<thead>
<tr>
<th>C. Swallow Screening Procedures:</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Response (observe patient at each step)</td>
<td>Ice chips or a small sip of water (3-5 ml) by teaspoon</td>
<td>Sips of water from a cup</td>
<td>Sips of water from a straw</td>
<td>Swallow Screening completed</td>
</tr>
<tr>
<td>Able to swallow, proceed to next step</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Notify M.D. to place diet order</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Has at least one problem listed below with swallowing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stop the screening process</td>
</tr>
<tr>
<td>2. Maintain NPO</td>
</tr>
<tr>
<td>3. Notify M.D. to place an order for Speech Pathologist to perform dysphagia evaluation</td>
</tr>
<tr>
<td>Coughing</td>
</tr>
<tr>
<td>Choking</td>
</tr>
<tr>
<td>Throat clearing</td>
</tr>
<tr>
<td>Breathless/color Change</td>
</tr>
<tr>
<td>Wet gurgling sound</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>

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)
## Oral Care Reference Table

<table>
<thead>
<tr>
<th>Patient Types</th>
<th>Tooth Brushing</th>
<th>Mouthwash/Mouthrinse</th>
<th>Mouth Moisturizer</th>
<th>Denture Care</th>
<th>Removal of Subglottal Secretions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self Care, Non-intubated,</strong></td>
<td>Daily</td>
<td>Soft Bristle Tooth Brush &amp; Toothpaste</td>
<td>PRN</td>
<td>Daily removal &amp; Cleaning</td>
<td></td>
</tr>
<tr>
<td><strong>Dependent Care, Non-intubated,</strong></td>
<td>AM &amp; PM</td>
<td>Suction Tooth Brush &amp; Antiseptic Mouthwash</td>
<td>Q 4 Hours</td>
<td>Suction Swab (Following Mouth Wash)</td>
<td>Daily removal &amp; Brushing with toothpaste</td>
</tr>
<tr>
<td><strong>Critical Care, Non-intubated</strong></td>
<td>AM &amp; PM</td>
<td>Suction Tooth Brush &amp; Antiseptic Mouthwash</td>
<td>Q 2 Hours</td>
<td>Suction Swab (Following Mouth Wash)</td>
<td>Daily removal &amp; Brushing with toothpaste</td>
</tr>
<tr>
<td><strong>Intubated, on Mechanical Ventilation</strong></td>
<td>AM &amp; PM</td>
<td>Suction Tooth Brush &amp; Antiseptic Mouthwash</td>
<td>Q 2 Hours</td>
<td>Suction Swab (Following Mouth Wash)</td>
<td>AM &amp; PM Prior to ET Tube repositioning Prior to deflation of ET cuff</td>
</tr>
</tbody>
</table>

**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

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*California Pacific Medical Center*
*A Sutter Health Affiliate*
*With You. For Life.*
SWALLOWING PRECAUTIONS

Name: __________________ Date: __________

Pt must be **ALERT** and **UPRIGHT** when eating or drinking, and 30 minutes thereafter.

Assistance / Supervision: __________________________

<table>
<thead>
<tr>
<th>Diet Level</th>
<th>Strategies</th>
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</thead>
<tbody>
<tr>
<td>Solids: ________________</td>
<td>________________</td>
</tr>
<tr>
<td>________________</td>
<td>________________</td>
</tr>
<tr>
<td>________________</td>
<td>________________</td>
</tr>
<tr>
<td>Liquids: ________________</td>
<td>________________</td>
</tr>
<tr>
<td>________________</td>
<td>________________</td>
</tr>
<tr>
<td>________________</td>
<td>________________</td>
</tr>
<tr>
<td>Straw: O.K. / NOT O.K.</td>
<td>Meds:</td>
</tr>
<tr>
<td>________________</td>
<td>________________</td>
</tr>
<tr>
<td><strong>Small</strong> sips/bites</td>
<td><strong>No talking</strong> while chewing and swallowing</td>
</tr>
<tr>
<td><strong>Alternate</strong> solids and liquids</td>
<td></td>
</tr>
<tr>
<td><strong>Slow</strong> eating pace</td>
<td><strong>Significant congestion</strong></td>
</tr>
<tr>
<td>STOP feeding patient if persistent signs of aspiration:</td>
<td></td>
</tr>
<tr>
<td>• Wet/gargling voice quality</td>
<td>• <strong>Significant congestion</strong></td>
</tr>
<tr>
<td>• Coughing/choking</td>
<td></td>
</tr>
</tbody>
</table>

Speech Pathologist, Pager #
1:1 Assist or Supervision Meal Tray & Warning Label
PCIS
Nursing Documentation
Aspiration Precaution
PCIS Patient Care Summary Print out
Aspiration Precaution
PCIS Patient Care Summary Print out

05/06
ASPIRATION PRECAUTION: CONDUCT SWALLOW SCREENING
BEFORE FIRST PO (INCLUDES PO MEDICATIONS)
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)

THIS PATIENT HAS NO CURRENT MEDICAL ORDERS

LAST PAGE

WONG, RAYMOND M 06400206 PATIENT CARE SUMMARY

RETURN BACK MASTER ERASE-ALL ENTER
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