



# Oral Hygiene Care for Long Term Care Residents: Preventing Negative Outcomes

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# Maintenance Of Oral Health



- ✦ Systemic health through prevention of aspiration pneumonia & blood borne infections
- ✦ Adequate nutritional intake
- ✦ Quality of life
- ✦ Well-being

# Elderly Residents At Risk

- ★ Cognitively impaired
- ★ Diminished swallow and cough reflex
- ★ Functionally dependant
- ★ Dry mouth
- ★ Multiple medications
- ★ High rate tooth decay
- ★ Behavioral problems during oral hygiene



Research Dissemination Core. Iowa City (IA): University of Iowa Gerontological Nursing Interventions Research Center; 2002 Nov. 48 p.

Marik PE. et al. Chest; 2003; 124:328–336

# Oral Cavity Response to Disease and Insult

Mobilizes defense to maintain integrity & function

If initial defense fails, the oral cavity shifts to resisting the invasions impact

If resistance fails (seen in residents at risk) the oral cavity succumbs

Infection

Bleeding &  
Inflammation

Pain

Difficulty  
Eating &  
Communicating

# Epidemiological & Risk Factor Categories for Institutional Pneumonia

- ❖ Residents >75 years old at 6x higher risk
- ❖ 33 out of 1000 nursing home residents require hospitalization for pneumonia per year vs. 1.14 out of 1000 elderly living in the community per year
- ❖ Leading cause of death in nursing home residents
- ❖ Annual cost of nursing home acquired pneumonia exceeds \$8 billion dollars
- ❖ Factors that increase bacterial burden or colonization
- ❖ Factors that increase risk of aspiration



# Oropharyngeal Colonization

## Methodology:

- 89 critically ill adults
- Examined microbial colonization of the oropharynx through out ICU stay
- Used pulse field gel electrophoresis to compare chromosomal DNA

## Results:

- Diagnosed 31 VAPs
- 28 of 31 VAP's the causative organism was identical via DNA analysis

# Oropharyngeal Colonization

## Methodology:

- 49 elderly nursing home residents admitted to the hospital
- Examined baseline dental plaque scores & microorganism within dental plaque
- Used pulse field gel electrophoresis to compare chromosomal DNA

## Results:

- 14/49 adults develop pneumonia
- 10 of 14 pneumonias, the causative organism was identical via DNA analysis

# Significant Independent Predictors of Aspiration Pneumonia

- ❖ Dependant for feeding
- ❖ Dependant for oral care
- ❖ Number of decayed teeth
- ❖ Tube feeding
- ❖ Multiple medical diagnoses
- ❖ Number of medications
- ❖ Dry mouth
- ❖ Smoking



# Oral Assessment & Hygiene: Impact on Nutritional Intake

## ☀ Indicators of Nutritional Risk

- Dry mouth/Reduced salivary flow
  - Multiple medications
  - Mouth breathing/tachypnea
  - Oxygen use
- Chewing problems
- Swallowing problems
- Dentures improperly fit
- Pain



Research Dissemination Core. Iowa City (IA): University of Iowa Gerontological Nursing Interventions Research Center; 2002 Nov. 48 p.

Ledikwe JH. J Am Diet Assoc. 2004;104:1273-4

# Oral Health Problems Linked to Impaired Eating Index

## Methodology

- 22 residents with chewing, swallowing & mouth pain (CSP) vs. 125 without CSP
- Measure demographics, care practices, co-morbidities

## Results

- Residents with CSP: 2x higher # meds ( $p < .008$ ) & disease states ( $p < .001$ ) and significantly lower healthy eating index ( $p < .04$ )

# Role of Salivary Flow

- ★ Provides mechanical removal
- ★ Specific immune components
- ★ Saliva production ↓ with age
- ★ ↓ salivation dulls taste perception, inhibits chewing & swallowing
- ★ ↓ salivation can make speaking & denture wearing more difficult
- ★ Dry mouth contributes to accumulation of plaque and bacteria in saliva

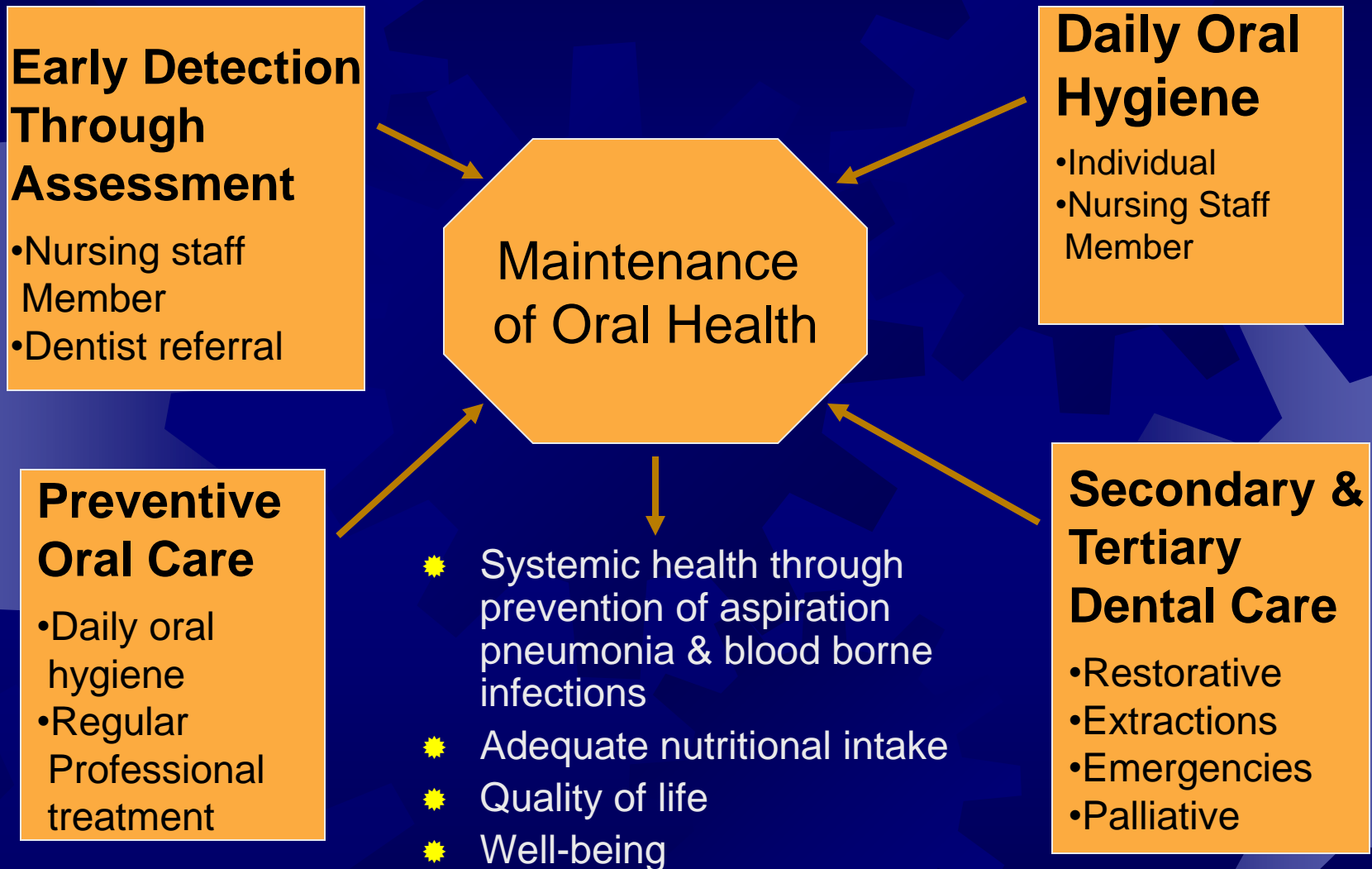


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Research Dissemination Core. Iowa City (IA): University of Iowa Gerontological Nursing Interventions Research Center; 2002 Nov. 48 p.

# Maintenance Of Oral Health





# Early Detection: Oral Assessment Strategies

- ✦ Initiate oral care protocol on:  
(Use MDS L-1, RAP 15 or self performance assessment to identify)
  - Cognitive or functional dependant residents
  - Dependant on ADLS
  - Dry mouth conditions
- ✦ Iowa Oral Health Assessment Tool & Current Oral Hygiene Care





# Baseline/Admission Oral Assessment

Patient: _____				Scores at admission and		
Category	0 = healthy	1 = changes *	2 = unhealthy *	___/___/___	___/___/___	___/___/___
<b>Lips</b>	smooth, pink, moist	dry, chapped, or <u>red at corners*</u>	swelling or lump, <u>white/red/ulcerated patch</u> ; bleeding/ulcerated at corners			
<b>Tongue</b>	normal, moist roughness, pink,	patchy, fissured, red, coated	patch that is <u>red &amp;/or white</u> , ulcerated, swollen			
<b>Gums and tissues</b>	pink, moist, smooth	dry, shiny, rough, red, swollen, one <u>ulcer/sore spot under dentures</u>	<u>swollen, bleeding gums, ulcers/white or red patches, generalized redness or ulcers under dentures</u>			
<b>Saliva</b>	moist tissues, watery and free flowing saliva	dry and sticky tissues, little saliva present	<u>tissues parched and red</u> , very little/no saliva present, saliva very thick			
<b>Natural teeth</b>	no decayed or broken teeth/roots	<u>1-3 decayed or broken teeth/roots</u>	<u>4 or more decayed or broken teeth/roots</u> , or less than 4 teeth			
<b>Dentures</b>	No broken areas or teeth, dentures regularly worn	1 broken area/ tooth or dentures only worn for 1-2 hrs daily	<u>more than 1 broken area/tooth, denture missing or not worn, needs denture adhesive</u>			
<b>Oral cleanliness</b>	clean and no food particles or tartar in the mouth or on dentures	food particles/ tartar/ plaque in 1-2 areas of the mouth or on small area of dentures	food particles/tartar/plaque in most areas of the mouth or on most of dentures			
<b>Dental pain</b>	no behavioral, verbal, or physical signs	verbal &/or behavioral signs of pain such as <u>pulling at face, chewing lips, not eating, aggression</u>	physical signs such as <u>facial swelling, sinus on gum, broken teeth, large ulcers, and verbal &amp;/or behavioral signs such as pulling at face, chewing lips, not eating, aggression</u>			
* arrange for a dentist to assess the resident				TOTAL SCORE		

# Daily/Weekly Oral Assessment

## ASSESSMENT OF CURRENT ORAL HYGIENE CARE

Patient's name: \_\_\_\_\_ Date: \_\_\_\_\_

**Current Oral Status:** *(Check one or both and circle appropriate description)*

- Has natural teeth:                      upper                      lower
- Has removable denture:                      upper                      lower

⇒Patient DOES/DOES NOT wear denture(s) *(Circle one)*

**Self care ability:** *(Check one)*

- can do oral hygiene by self and without reminding
- needs reminding to do own oral hygiene
- remembers to do but needs assistance
- needs reminding and assistance to complete oral hygiene
- needs all oral hygiene to be done by provider
- needs palliative oral hygiene care

**Brushing aid and frequency:** (natural teeth)

- soft toothbrush \_\_\_X/day                       electric toothbrush \_\_\_X/day
- adapted toothbrush \_\_\_X/day                       other: \_\_\_\_\_X/day

**Flossing:** (Check one)                       Yes                       No

**Denture care:**

- denture cleaner (paste) \_\_\_X/day     denture solution (tablets) \_\_\_X/day
- denture brush \_\_\_X/day

**Mouth rinses:**

- Fluoride                       Mouthwash: \_\_\_\_\_                       Warm salt water

**Saliva stimulant:**

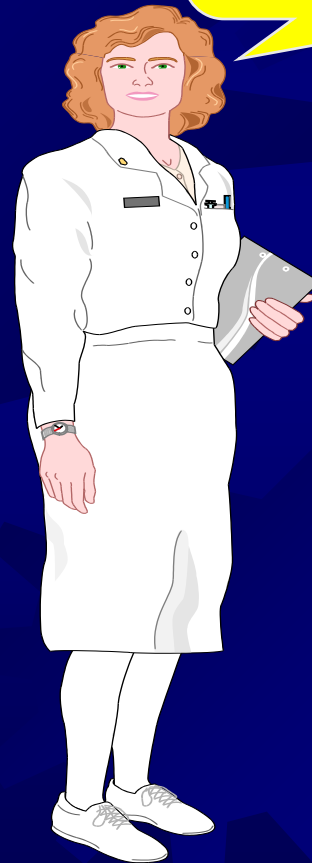
- artificial saliva     Sialagogue pill     sugar-free gum     Other: \_\_\_\_\_

**Noted difficulties with daily care for patient:**

# Practices in Oral Care

- ★ Culture cup,  $\frac{1}{2}$  H<sub>2</sub>O<sub>2</sub>,  $\frac{1}{2}$  sterile H<sub>2</sub>O...little bit of mouthwash
- ★ Lemon glycerine swabs
- ★ Toothette with water &/or mouthwash
- ★ No oral care

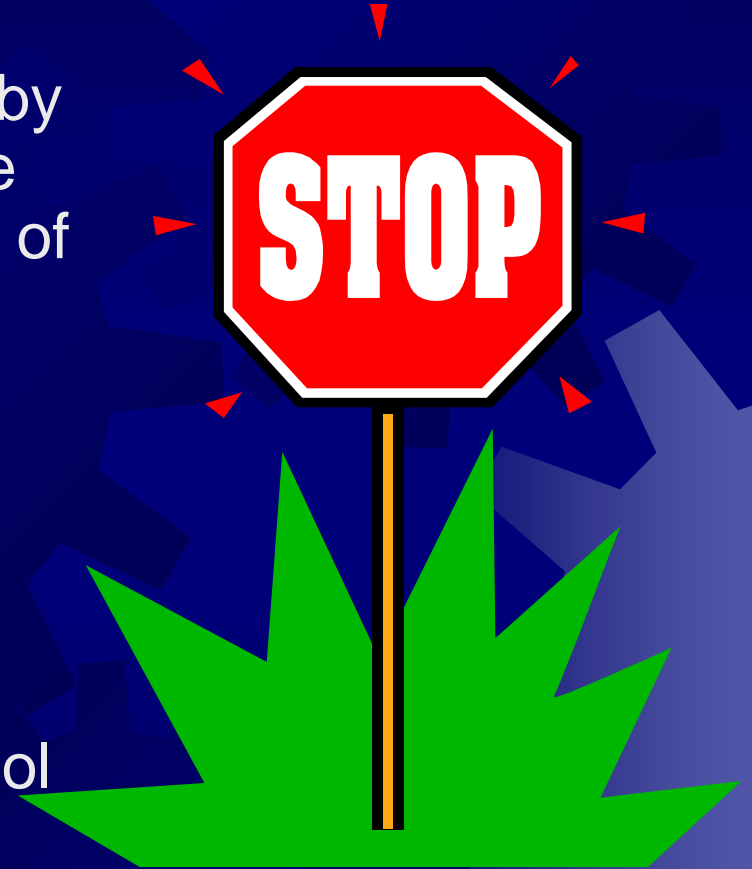
Significant Process Variation





# Lemon & Glycerin Swabs

- ☀ Harmful
- ☀ Hastens drying of mucosa by depleting the saliva reserve caused by over-stimulation of salivary glands by lemon juice
- ☀ Citric acid has no moisturizing capabilities
- ☀ Irritates oral mucosa & decalcifies teeth
- ☀ Glycerin is a trihydric alcohol that absorbs water causing drying



Foss-Durant Am et al. Clin Nurs Res. 1997;6(1):90-104  
Krishnasamy M. Eur J Cancer Care. 1995;4(4):173-177.  
Regnard C et al. Br Med J. 1997;315(7114):1002-1005.  
Van Drimmelen JR et al. Nurs Res 1969;18:327-332

# The Right Cleaning Solution

## 1.5% H<sub>2</sub> O<sub>2</sub>

- ☀ >3% may cause harm .
- ☀ <1% no benefit in plaque removal.
- ☀ Must be diluted properly, not with normal saline.
- ☀ 3x a day mouth rinse with 1.5% H<sub>2</sub> O<sub>2</sub> revealed no mucosal damage, improved plaque scores and overall gingival health.

Gomes BC et.al.Clin Prev Dentistry 1984; 6:21-25  
Boyd RL.Et al. J Clin Periodontol 1989;16:557-563  
Tombes MB et al. Nurs Res 1993;42(6):332-337.



# Safety and Efficacy of 1.5% H<sub>2</sub>O<sub>2</sub> and Baking Soda Dentifrice

## Methodology

- 6-month clinical and laboratory study.
- 62 subjects in experimental group (Sage Products).
- Brushed 3x daily.
- Examined soft and hard oral tissue changes.

## Results

- No signs of tissue irritation, sloughing or blanching.
- No disruption to normal flora.
- Sage products can be used daily without concern for oral irritation, mucosal sloughing or a change in normal oral flora.

# BRUSH & SWAB

- ✦ 77% more clean approximal sites with brushing
- ✦ 44% more clean crevice sites with brushing
- ✦ Benefit of brushing is directly correlated with technique
- ✦ Foam swabs could not remove plaque from sheltered areas on or between teeth

**BRUSH TO CLEAN....SWAB IN BETWEEN**

# Oral Care Options

MD Intervention

RN Intervention

Oral Care

## MD Intervention

- Oral CHG Rinse
- CHG = CDC Level 2
  - (Cardiac Only)
- Requires an order

## Nursing Intervention:

- Head of Bed
- Comprehensive Oral Care
  - Protocols
  - Q meal/moisturizing
  - Education
  - “No order required”

# Oral Hygiene

- ✦ Implementation of an oral care program
- ✦ Systematic method of delivery to improve compliance
- ✦ Clean oral cavity with correct solution
- ✦ Keep oral mucosa moist
- ✦ Brush at minimum least x2 daily
- ✦ Denture cleaning





# Oral Care Reduces Pneumonia In Nursing Homes

## Methodology

- 11 nursing homes in Japan over 2 year period
- 417 enrolled / 366 residents analyzed (death from other causes)
- 184 received oral care program/182 did not
- Tooth brushing after each meal (teeth or dentures) & 1x weekly review by dentist/or hygienist

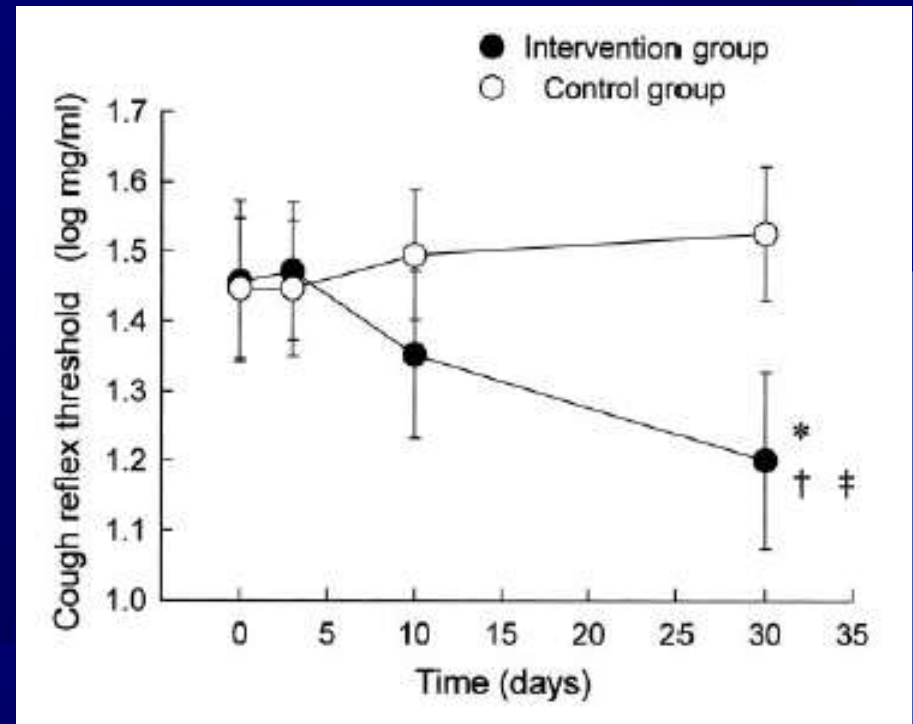
## Results

	No Oral	Oral Care	p value
Febrile	29%	15%	p<.01
Pneumonia	19%	11%	p<.05
Death	16%	7%	p<.01
MMSE		Increase	p<.05



# Oral Care Reduces Pneumonia In Nursing Homes Residents

- ☀ Improves swallowing and cough reflex sensitivities



# Reduction of Microbial Colonization in the Oropharynx & Dental Plaque Reduces VAP

## Methodology

- 377 baseline & 360 intervention MICU mechanically ventilated adults
- Q4 oral care – brush 2x/day
- No different demographic between groups

## Results

- 2002: VAP rate 7.6 per 1000 ventilator days
- 2003: VAP rate 4.4 per 1000 ventilator days
- 42.1% reduction in overall rate

# Proposed Oral Care Plan

## Independent

Weekly assessment  
Encouragement to  
perform tooth  
brushing  
/denture cleaning  
minimum x2 daily

## Dependant on Oral Care

### Ability to expectorate

Assist with brushing  
teeth/clearing out  
debris & /or cleaning  
dentures using with  
1.5% H<sub>2</sub>O<sub>2</sub> after each  
meal/night &  
moisturize following  
cleaning

### Unable to expectorate

Brush teeth (dentures)  
/clear debris using  
suction toothbrush am &  
pm with 1.5% H<sub>2</sub>O<sub>2</sub>  
followed by moisturizing  
Assist oral cleansing  
(dentures)/clear debris  
after lunch & dinner  
using a suction swab  
with 1.5% H<sub>2</sub>O<sub>2</sub> followed  
by moisturizing denture  
cleaning

# Tips To Get Started

- ✦ Perform an initial assessment of the current state of the union on oral care practices within your environment that impact negatively on your residents
- ✦ Build the valuing of changing of those care practices through sharing of the scientific literature with caregivers
- ✦ Select a program & products that allows the care giver to “do the right thing in an efficient manner”



# Pilot Program: Nursing Assistants Providers of Oral Hygiene

## Methodology

- 6 week educational intervention for nursing assistants (1 hr/wk)
- 23 dentate residents split 12 test/11 control
- Assess nursing assistants oral health attitudes and perceptions
- Use of adjunctive material aids to facilitate care
  - Oral hygiene kit: mouth prop, floss, toothbrush with solution
- Measured plaque & gingival indexes at baseline and 12 weeks

## Results

- Plaque index & gingival index scores significantly improved from baseline and when compared to control

Education and a designed program for oral care will make a difference in oral health of LTC residents.



# Tips To Get Started

- ✦ Perform an initial assessment of the current state of the union on care practices within your environment that impact HAP
- ✦ Build the valuing of changing of those care practices through sharing of the scientific literature with caregivers
- ✦ Select a program & products that allows the care giver to “do the right thing in an efficient manner”

# Principles of Oral Care Practices That Allow Caregivers to Do the Right Thing in a More Efficient Manner

- ✦ Commonly handled and familiar
- ✦ Readily available & economical
- ✦ Incorporates care functions into one activity
- ✦ Easy to use, disposable &/or easy to clean
- ✦ Safe pharmacologically
- ✦ ***Usable by a nurse without prescription by a physician***
- ✦ Supports the caregivers ability to consistently do the behavior in a easy efficient manner

# Tips To Get Started

- ✦ Implement the change
- ✦ Measure both process & outcome
- ✦ Celebrate & reward your success and growth as a team
- ✦ Check on a quarterly basis continued compliance with the new program

# Nurses & Nursing Aids Can Make a Difference in the Oral Health of Residents

- ☀ 95% of all oral problem are related to factors that are within the scope of nursing to monitor and manage
  - Screening, preventing infections, nutrition, diet, drug effects on the mouth, trauma to mouth and teeth & habits of oral hygiene.





## Health - Reuters

# Dirty Teeth Can Kill You, U.S. Study Shows

“These findings indicate that dental plaque is a reservoir of respiratory pathogens that can cause pneumonia in hospitalized institutionalized elders,” said El-Solh.

Nursing homes need to help patients maintain clean teeth and dentures, he added.