Improving the quality of oral hygiene care in intensive care unit

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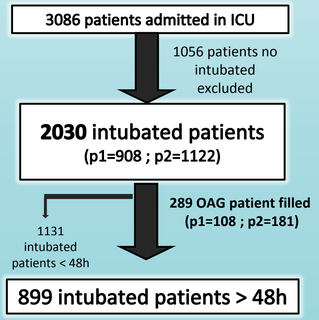
Background and purpose

Ventilator-Associated Pneumonia (VAP) = most common nosocomial infections in Intensive Care Units (ICU). Oral care included in the prevention bundle of VAP and the oral care quality depends on the medical device and the healthcare protocol. Few studies have been carried out to assess the quality of oral care.

Objectives : to measure the quality improvement of oral care following the implementation of a new oral care protocol and to monitor VAP rates during the study.

Methods



- Cohort study of patients receiving mechanical ventilation in 5 adults ICUs (67 beds).
- Oral care with :
  - Foam stick (Period 1=p1)
  - Toothbrushing and aspiration (Intersurgical©)(Period 2=p2)
- Chlorhexidine (0.05%) used for oral care in both periods.

1. Evaluation of oral care by the Oral Assessment Guide (OAG) daily completed by caregivers

	Criteria	Method	Quotation 1	2	3
A	Lip	Look	Smooth, pink and moist	Dry and cracked	Ulceration or bleeding
B	Tongue	Look tissues	Pink and moist and papillae present	Pasty, diminution of papillae with glossy appearance and less colored	Cracked, bloated
C	Mucous membranes	Observe the appearance of tissues	Pink and moist	Inflammatory with the inclusion of white path and no ulceration	Ulceration and/or bleeding
D	Gums	Look	Pink and firm	Inflammatory and edematous	Bleeding easily under finger pression
E	Teeth	Observe the appearances of teeth and the dentition	Clean and no debris	Plaque or debris in local areas et decayed teeth or damage dentures	Plaque or debris generalized

Score = A + B + C + D + E

2. Satisfaction questionnaire filled by caregivers about 2 protocols on the quality, ease of care, and saving of time

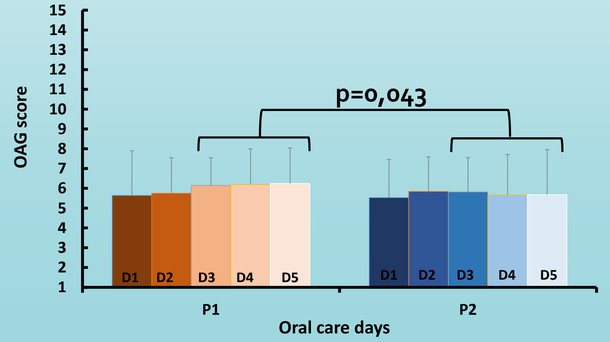
3. Monitoring of VAP

- Diagnosis of VAP performed by a referent physician in each ICUs on the basis of the clinical judgment, microbiologic data and radiographic evidence.

Results

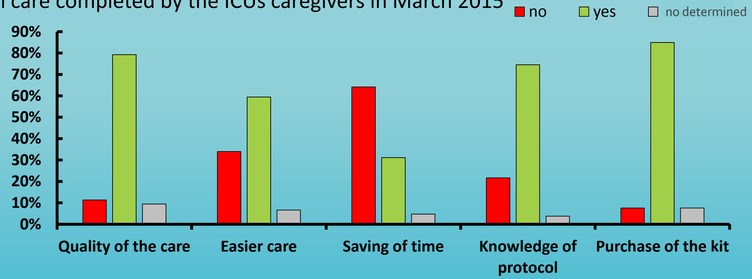
1. Evaluation of oral care by OAG

- 108 OAG filled in the 1srt period and 181 in the 2nd period.
- The 2 period populations were similar according to demographic data.



- From the 3rd day of oral care onwards, the score was significantly lower (*ie* improvement of oral care) during the second period (**p=0.043**).
- No significant difference of oral health between the 2 periods comparing the first two days of oral care.

2. Interpretation of the questionnaire of satisfaction about the quality of oral care completed by the ICUs caregivers in March 2015



3. Determination of the impact of oral care on VAP

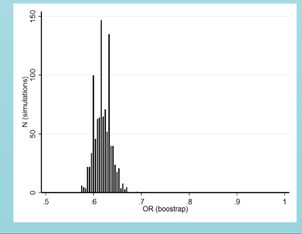
- There was not any significant difference between periods regarding the **VAP risk factors.**

	Period 1		Period 2	
Type of ICUs :	% VAP	VAP for 1000 ventilator days	% VAP	VAP for 1000 ventilator days
cardiovascular	5	25	3	14
medical	8	36	7	38
neurosurgical	23	55	18	34
medico surgical 1	19	37	16	34
medico surgical 2	13	30	9	19
Total	**12.8**	**36**	**8.5**	**25**

- **VAP incidence** for all intubated patients : 12.8% (116/908) on the first period and 8.5% on the second period (p1=12.8%, p2=8.5%, **p= 0.002**).
- **VAP for 1000 ventilator days** : 35.9 on the first period and 25 for the second period (p=0.007).
- **Propensity score :**

Significant difference confirmed by propensity score

OR=0.62; $IQR_{95\%}$=0.59-0.65



Conclusions

- Study performed in **5 ICUs** with different activities.
- Positive impact of a simple oral care protocol with toothbrushing, chlorhexidine and aspiration on oral health of intubated patients and on the **improvement of the quality of care** and satisfaction perceived by the caregivers.
- Even if **VAP** were not the primary outcome in our study the intervention on oral health had also an impact on VAP since they **decreased significantly** during the period 2.
- Pre-post-intervention design could be easily implemented in any ICU.
- Estimated cost of using this kit with 100% compliance is **11 400 euros per year** for the 5 ICUs which is easily counterbalanced by the savings provided with each avoided VAP.