



**4<sup>TH</sup>**  
**WFHSS**  
**CONGRESS**  
**BRUSSELS**  
**18-21 OCTOBER**  
**2023**

## **REPROCESSING DENTAL HANDPIECES :**

### **A HOPE FOR ALL AND DENTAL PRACTICES ?**

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# SEMI CRITICAL DEVICES (1/2)



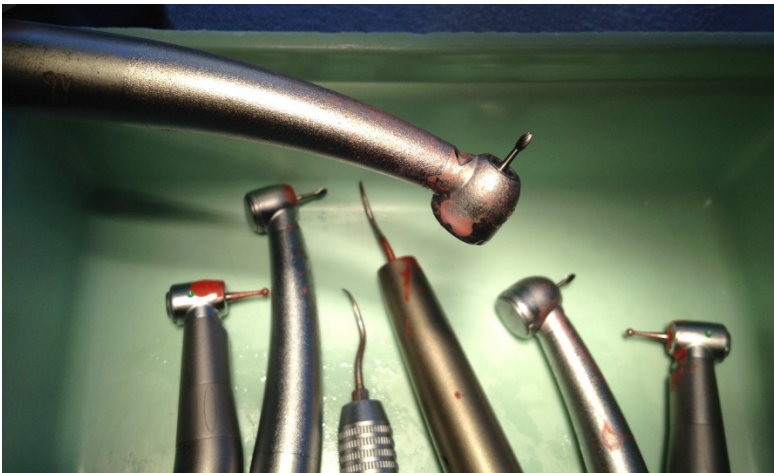
Tooth, saliva, patient's blood, water spray



**Bacterial, viral, particules and tissues  
contamination**

- *Dental Surgery and Stomatology Infection Prevention Guide (France) (2006)*
- *Health Monitoring Institute (France) : Analysis of the infectious risk related to non-sterilization between each patient of rotary instrument holders in dental surgery (2009)*
- *Biofouling of surgical power tools during routine use*  
A. Deshpande (UK) , G.W.G. Smith, A.J. Smith ; *Journal of Hospital Infection* (2015)

# SEMI CRITICAL DEVICES (2/2)



- Predisinfection
- Cleaning / disinfection (A0 = 3000) ++
- Sterilization
- Lubrication

- *Health French Authorities (Santé public France) in 2019*
- *Analysis of the infectious risk related to non-sterilization between each patient of DHP in dental surgery (Santé Public France - 2019)*
- *German Society of Hospital Hygiene, DGKH congress Berlin (2012)*
- *Recommandations by the quality task group-RKI/BArM (2012)*
- *Recommandations by Comident (a dental coordination committee) (2012)*

# What is the problem ?

## Manufacturer's instructions



- Intricate Devices
- No dismantling

## Safety



ISO 15883 compliance

## Users needs



- Fonctional
- Ergonomic



## WD Market

### Complete reprocess in connexion



- Temperature (Sinner cercle)
- Detergent ≠ alcohol-based product
- Lubricant ≠ Lubricant + water

# How could we do ?

Yes we could make it better !



# PROJECT

**(2013 -> 2018)**

**Our philosophy :**  
**Reprocessing DHP safely**  
**is not a matter of speed but of efficiency**

- Reject the use of water/oil emulsion
- Big load capacity
- Avoid the excessive handling of the operators





# PARTNERSHIP

- Thanks for the professionalism and complementarity



*Multiple skills, knowledge in mechanics, industrial automation and engineering*

- 2 identical “DHP” WD called “LDL”
- 2 Patents



# SPECIFICATIONS : A COMPLIANT REPROCESS

- Washing (internal and external)
- Rinsing (internal and external)
- Thermal disinfection (A<sub>0</sub> 3000)  
*Lubrication (A)*
- Drying  
*Lubrication (B)*



**Sterilization**



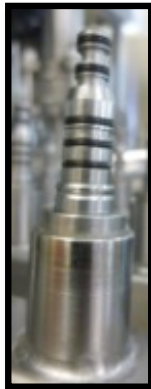
*Lubrication (C)*



- ISO 15883 Standards / A0 : « rotary devices must be in rotation motion when being cleaned »
- Comident (*a dental coordination committee*) (2012)
- French Good Practices (Guidelines)
- Manufacturer instructions



# SPECIFICATIONS : ADAPTERS



*Multiflex*



*Intramatic*

- Suitable connections :

- MULTIflex couplings (turbine rotation)
- INTRAmatic couplings

**No fluid stagnation within the DHP**

# SPECIFICATIONS : LUBRICATE



- After drying

- *Instrumentation Processing (AKI Working Group – Germany) (2012)*
- *Manufacturer instructions*



Multiflex



Intramatic


- Quality of lubricant :

- Specific high speed and dental
- Biodegradable
- Hydrolysis-resistant
  - Kinematic viscosity (DIN 51562-3)  $\approx 16 \text{ mm}^2/\text{s}$  (40°C)
  - Density = 0,86 g/cm<sup>3</sup> (20 °c)

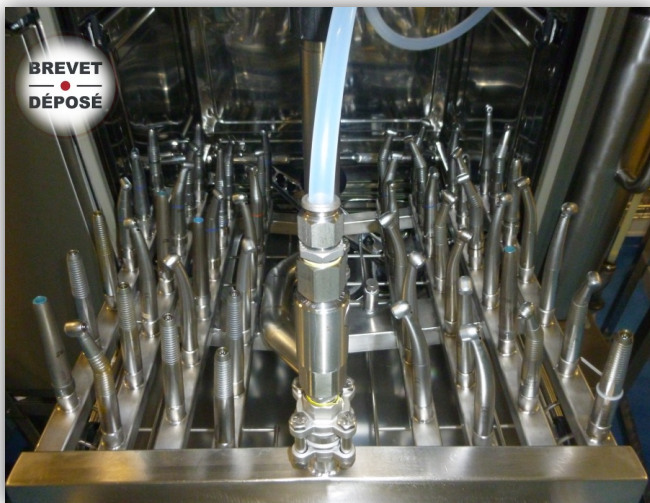
# QUALIFICATION : CLEANING



## Method :

- Soil test (Internal + external surfaces)
- **Protein Residue Test**
- 1<sup>st</sup> OQ + OP : sampling of everything
- reOQ+ OP : sampling of 5 DHP
- Every year compliance with ISO 15883  standard is ensured by a service provider

# QUALIFICATION : DRYING AND LUBRICATION



*Dental wash cart of 52 adapters*

Traces of lubricant ( $\neq$  water)



# FEEDBACK FROM 5 YEARS : USERS

- Internal team survey (2023)  
n = 49 operators

91 %  
YES !



- 300 DHP / day (2023)  
[mini 180 to maxi 416]

Positive areas	Areas for improvement
Better washed, dried and lubricated with this machine (69 %)	Difficulty to disconnect (66%)
Start cycle and traceability (71%) Reprocess in 1 time (72%)	Some DHP disconnect during the cycle (68%)
Easy and safe to connect (68%) Easy to lubricate (35%)	Modularity (25% ) Better access (37%)



# FEEDBACK FROM 5 YEARS : Technical problems

- **Technical problems :**
  - water leak
  - broken door hinge
  - adjustment of the lubricating dryer (due to excessive moisture)
- **Failure rate :** ratio number of service requests / number of cycles

PERIOD	WD (INSTRUMENTS)	LDL
01/06/2018 to 2021	<b>0,5%</b> [0,2% -0,7 %]	<b>1,1 %</b> 1,7 % and 0,4 %
2022	<b>1%</b> [0,3% -4 %]	<b>0,6%</b> 0,6% and 0,6 %
half of 2023	<b>1,3%</b> [0,4% -3,7 %]	<b>2,4%</b> 0,7% and 4,2 %

- **WD Downtime :**
  - 2022 : 0 to 101 days (WD instruments) vs ? (LDL)



Connexion DHP on LDL rack



# FEEDBACK FROM 5 YEARS : Patients safety

- DHP « health » :**

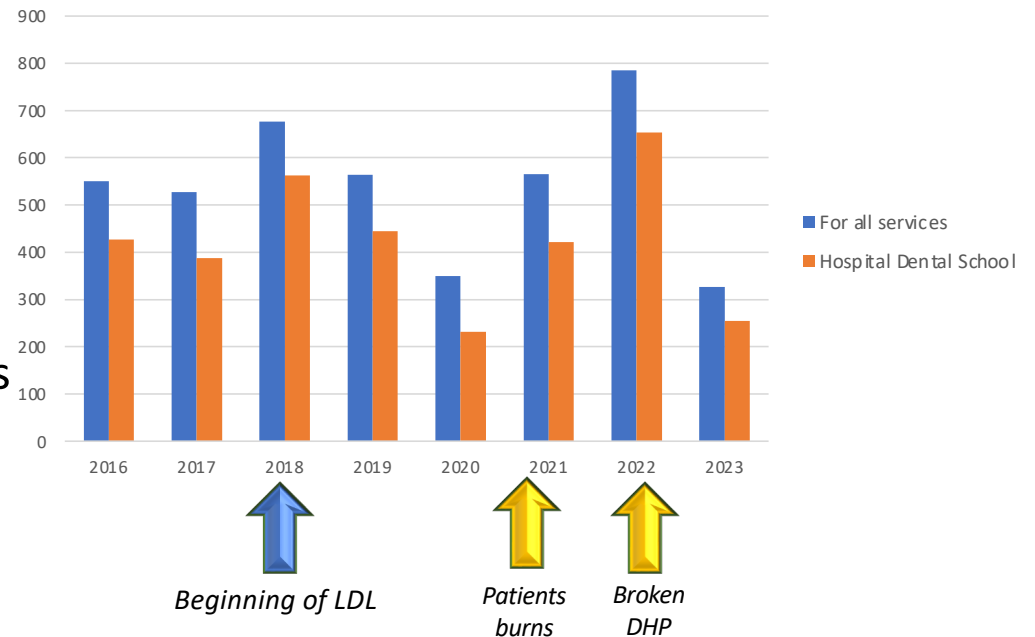
Total number  $\simeq$  1600 DHP (2023)



- June 2018 – 2021 : No problems
- Dec. 2021-2022 : increase in requests
  - ✓ 2 Patients burns (surgery)
  - ✓ Breakages of DHP

- No infections**

DHP service requests



# DISCUSSION

- **Today** washing, rinsing, drying and after lubricate is possible in one machine  
**Not perfect but possible !**
- **To further improve :**
  - Others Indicators
  - Comparatives trials :
    - ✓ with an independent laboratory
    - ✓ with other DHP, 3D printing technology DHP ?...

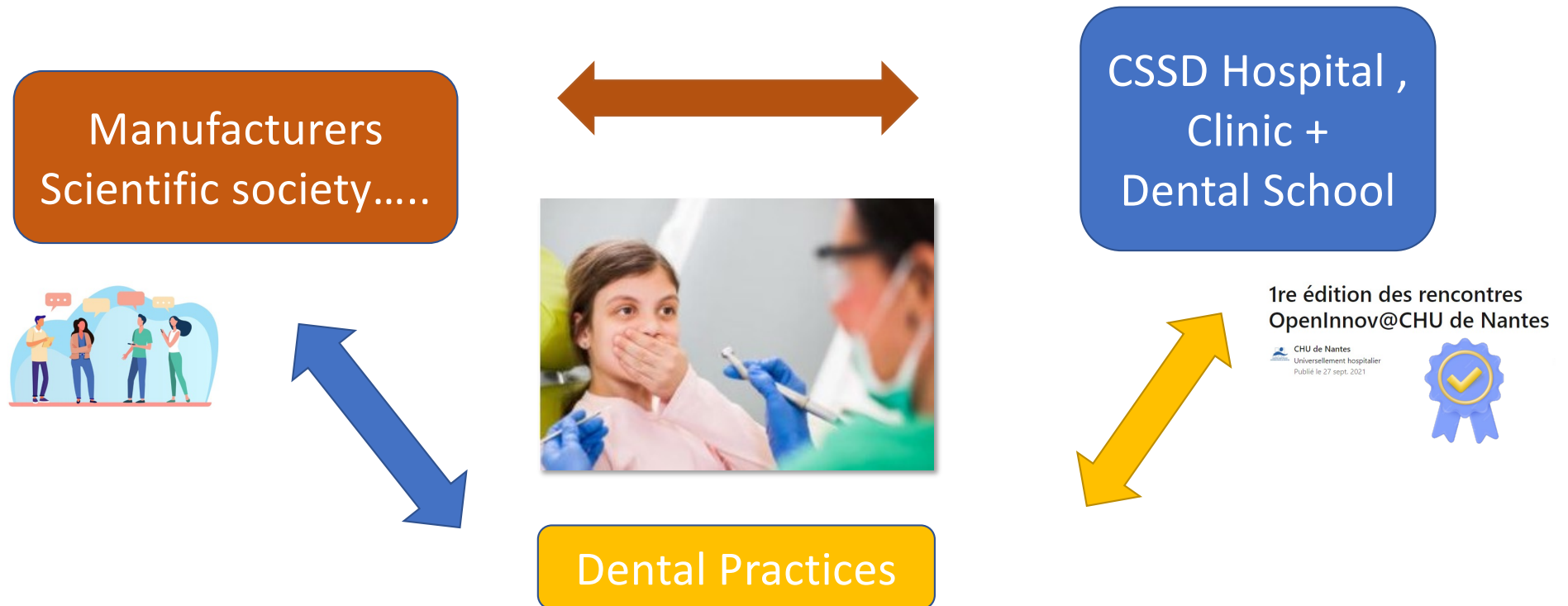


# DISCUSSION

- **About other experiences :**
  - CSSD french survey (october 2023)  
n = 64 french CSSD (28% respondents)
  - ✓ Hospital DHP different origins
  - ✓ Different reprocess
  - ✓ 35 % lubricant stain
  - ✓ 44% additional handling
  - ✓ 72 % agree to improve WD market



# CONCLUSION





Yes we make it better !



Please share your stories or your opinions