

## Keeping Your Instruments Moist

There is nothing more frustrating than receiving instruments in the decontamination area that have dried blood on them. Reducing this concern has always been an issue.

Though it is recognized that contaminated surgical instruments should be cleaned immediately after use, it is observed that this is not always practical. However, dried blood does represent a great challenge to the cleaning of patient used instruments (AAMI ST 79 7.5.2). Many professional groups recommend that the processing of instruments should take place in 30 minutes or less after they are finished being used; any longer could cause possible damage to the instrument.

How long can an instrument wait to begin the cleaning process after its final use is a concern? In fact this could be called "**DHT**" **D**econtamination **H**olding **T**ime. Cooperation from the user of the instruments is important on how they send the instruments back (gross soil still on them or not) to be cleaned can add time to the process. Then keeping the instrument moist and providing safe transport compounds the concern even more.

One reason is because of the D.H.T. factor, it could be minutes to hours and even days in some cases when instruments actually get processed.

Transporting and keeping instruments moist after use so they can be more easily cleaned has many factors:

- Where they are used and how they are taken care of at the site of use during and after usage.
- How will they be transported to protect all staff to the decontamination area for cleaning?
- What is the D.H.T. ?
- How will they be kept moist?

The importance of keeping instruments moist has been noted from the beginning. Perkins states in his book "The Principles and Methods of Sterilization in Health Science" page 237, "...Instruments must be cleaned as soon as possible after use, to avoid rusting or pitting, and to remove soil before it can dry and harden in the serrations and crevices. If stainless steel instruments are permitted to lie around for several hours before cleaning they may acquire a tarnish, which is difficult to remove...therefore, immediately after use the instruments should be rinsed in cold water..." . Staff should not use saline to keep instruments moist because saline can damage instruments. When in doubt what to use to keep instruments moist refer to the manufacture of the instruments.

AORN in their RP: Care of Instruments, states "...instruments should be kept free of gross soil during surgical procedures...cleaning and decontamination should occur as soon as possible after instruments and equipment are used...".They also talk about if the decontamination process will not occur immediately; some type of treatment should be used such as a towel soaked with water (not saline) could be used to cover the items to keep moist. The placing of a wet cloth over instruments after surgery to keep them moist has always been one of the more traditional methods.

Keeping instruments or equipment moist is only one of the issues. The other major issue is: how to safely transport the dirty moist items?

Both the 3<sup>rd</sup> edition of "The Basic of Sterile Processing by Sterile Processing University LLC" and the IAHCSSM 7th Edition Central Service Technical Manual stress that items being transported should be clearly marked with a biohazard label according to OSHA guidelines. Also, if items cannot be transported immediately to the decontamination area they should be kept moist to prevent blood, bloody fluids and other contaminants from drying and possibly causing damage to the instruments.

So the issues are safely transporting instruments that are moist and process them as quickly as possible after use. If you cannot quickly process the items then you must try to keep them as moist (and marked as a biohazard) as possible until they can be properly decontaminated.

A product called Humipak has been developed to help resolve all of these concerns.



They are manufactured from low linting, highly absorbent material sandwiched between two layers of a transparent film laminate. The transparent layers enable observation of the materials kept in the pouch. Water is added to the absorbent material and soiled instruments are kept in the pouch, which is then sealed. This creates a moisture

retaining environment where the instruments remain in a moist state until taken for cleaning. The humid atmosphere helps prevent the drying of protein on instruments. This in turn facilitates an increased efficiency of cleaning the surgical instruments by reducing the time, chemicals and energy required when compared to cleaning dried soiled instruments. A further benefit of such a product design is reduction in the reprocessing costs of contaminated instruments. The bag has a Biohazard label on it and an area to write important information about the items inside the Humipak.

A study was designed to observe the optimum time the blood soils applied on surgical instruments retain their moisture in the Humipak. Two coagulating blood based soils namely citrated sheeps blood coagulated with calcium chloride (ISO/TS 15883-5 M.7.2) and Coagulating Blood Soil (distributed by Healthmark Industries Co.) were used. These coagulating soils pose a tough challenge that closely mimics human blood remaining on patient used reusable medical instruments.

Commonly used reusable stainless steel medical instruments were soiled. Different areas- for example tips, serrated edges, box locks of these instruments were contaminated. The area for soiling and the amount of soil used for each application was variable and not kept uniform in order to closely correlate with the postoperative situations. After applying the soil on these instruments, they were soon placed in the pouch to which the suggested amount of water was added. The pouch was then sealed and placed for observation. The soiled instruments in the sealed pouch were observed after 30 min, 2 hr, 24 hr, 3 days, 5 days and 1 week. These timelines correspond to the potential time the instruments could be left while awaiting cleaning: including same-day, overnight, weekends as well as cases when soiled instruments are brought in from remote locations for proper reprocessing. Instruments contaminated with both the test soils, but left open in trays and not in Humipak were used as a control.

To study moisture retention in soiled cannulated devices, lumens of suction tips were soiled with Coagulating Blood Soil. Cannulated and channeled medical devices often have organic residues trapped in their lumens after patient use. If not cleaned soon after use, this residue build up may dry and be a challenge to reprocess. Suction tips soiled with the coagulating soil were kept in the Humipak for 2 hrs, 4 hrs, 2 days and 3 days, to see if the soil in their lumen remained moist. Their respective controls were left in open air at room temperature. The soiled suctions were then observed by pushing a fleece stem from their proximal end to the distal end. The degree of moistness of soil on the fleece stem as well as the soil that came out of the suctions after pushing the fleece stem was noted.

## **RESULTS**

Both the coagulating soils, namely citrated sheep's blood coagulated with calcium chloride and Coagulating Blood Soil applied to medical instruments and kept in the Humipak did not dry out, but remained moist up to 5 days. When observed after 1 week, the moist atmosphere was still present inside the pouch, but not all the areas of the soiled instruments were observed to be moist. Soils applied to the control instruments, not in the Humipak, dried within a couple of hours.

After all the instruments that sat in the Humipak for 1 week were taken out of the pouch, they were rinsed with flowing tap water to compare their rinsing efficiency with the control. The control instruments that were allowed to dry and left outside the Humipak were more difficult to clean than those that were in the Humipak for 7 days.

The suction tips that sat in the Humipak for 2 hrs and 4 hrs, were observed to be similar to their controls in terms of moisture retention. The control suction tips were still moist after 2 hrs and 4 hrs. However, suction tips in Humipak kept for 2 days and 3 days were observed to be moister than their respective controls. The 3 day time point showed a remarkable difference in the control and the test suction tips. The 3 day control was dried out, whereas the one in Humipak was still wet, indicating its beneficial use when cleaning must wait over the weekend or a long travel time to reach their reprocessing location.

## **CONCLUSIONS**

Blood soils on patient used surgical instruments placed in the Humipak easily retain their moist state for up to 5 days. This prevents the drying of blood and bio-contaminants on the instruments and makes it significantly easier for reprocessing by reducing the effort required to clean.

## **RECOMMENDATIONS**

- 1) Place the patient used instruments in the Humipak as soon as possible after their use.
- 2) Reprocess as soon as possible.

**In closing the Humipak offers these major benefits for CSSD:**



- The transparent film, in addition to maintaining the moist atmosphere, allows the contents to be clearly observed along with any written instructions or content list.
- Contaminants are contained within the Humipak reducing the risk of transmission.
- The sealed packs act as security bags confirming all the contents have been returned.
- A biohazard label is found on the front of the Humipak.

- This product is available in many sizes to accommodate different instrument and tray configurations.
- An ideal product for rural or smaller hospitals that do not have weekend coverage in the CSSD and instruments might wait for hours or days to be processed.
- For hospitals that have limited pick up schedules for instruments, Humipak is ideal to keep instruments moist and clearly marked in a Biohazard bag until pick up and then processing of the instruments.
- Humipak is ideal for flexible scopes that have to be transported back after use for reprocessing. It provides a safe, moist environment with a clearly marked biohazard label on the bag and a place to write down information on the scope.

### **Humipak™ Instructions for Use**

The Humipak™ is a pouch that provides a humid and moist environment delaying the drying of bio-contaminants' on medical items such as surgical instruments.

The Humipak is made of a special absorbent layer, which when wetted creates a humid atmosphere within the Humipak™ pouch. The two layers of transparent film (between the special absorbent layers) maintain the humid atmosphere within the Humipak™ pouch. The transparent film, in addition to maintaining the moist atmosphere, allows the contents to be clearly observed.

The Humipak™ comes in many sizes. Each size requires a specific amount of water (clean source). Example the 420 x 670 mm Humipak™ pouch requires 70 ml. Each Humipak™ pouch has its own specific amount of water that is needed to create the moist and humid environment needed to delay the drying of the bio-contaminants on the medical items (the amount is found on the Humipak™ pouch).

Items placed in the Humipak™ should be cleaned as soon as possible.

1. Pick the correct size of Humipak™ pouch for the items that are to be kept moist until reprocessing.
2. Add the specific amount of water per the directions to the Humipak™ pouch.
3. Water will wick and be absorbed throughout the Humipak™ pouch because of the special absorbent layer between the transparent films.
4. Place items in the pouch.
5. Peel off protective strip from adhesive band.
6. Fold over and press down firmly from the center outwards.
7. Send to the appropriate area for reprocessing as soon as possible.

## REFERENCES

AAMI ST79 7.5.2

ISO/TS 15883-5 M.7.2

Principles and Methods of Sterilization in Health Sciences; John J. Perkins; 2nd Edition

The Basics of Sterile Processing ; 3<sup>rd</sup> edition ; Sterile Processing University,LLC

IAHCSMM Central Service Technical Manual ; 7<sup>th</sup> Edition

Westfield Medical Ltd. <http://www.westmed.co.uk/humipak.htm>

Westfield Medical Ltd. <http://www.westmed.co.uk/WML%20Humipak.pdf>