

# WHAT'S THE POINT? THE WHY AND THE HOW TO A NEEDLE-FREE IV SYSTEM



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## **Introduction**

The objective of this article is to share the experience of why St. Joseph's Health Care (SJHC) London converted to a needle-free IV system and how the implementation of the system was carried out.

St. Joseph's Health Care London consists of five facilities:

- St. Joseph's Hospital, a full service acute care teaching hospital with a level three NICU (Neonatal Intensive Care Unit)
- Parkwood Hospital, a renowned rehabilitation centre with long-term care and chronic-care beds
- Mount Hope, which is the combination of St. Mary's Hospital and Marian Villa Long Term Care
- Regional Mental Health St. Thomas Psychiatric and Regional Mental Health London.

St. Joseph's Health Care is also an Ambulatory Care Centre - home to the HIV Clinic, Hand and Upper Limb Clinic, Rheumatology Clinic, Ivey Eye Institute, Family Medical Centre and Lawson Research Institute.

The SJHC family has 5500 employees with an amazing 1866 beds.

## **THE WHY**

SJHC has a responsibility to provide a safe environment for our patients, residents and visitors. We also must provide a safe and healthy work place for staff. Everyone has the right to work in a safe environment and we must protect workers with reasonable available technology. It is well known in the healthcare setting that an accidental exposure to bloodborne pathogens such as HIV, hepatitis B and hepatitis C is a serious cause for concern. The most common form of exposure to these and other pathogens is through needle stick injury.

St. Joseph's Health Care and our neighbours, London Health Sciences Centre (LHSC), are both committed to standardization of safety devices, where possible, to prevent needle stick injuries. This has been an important focus of the City-Wide Product Evaluation and Standardization Committee.

The city-wide initiative is a four-part plan:

- Stage 1: conversion of IV sets and lines to needle-free
- Stage 2: conversion of all needles, where possible, to safety device needles
- Stage 3: standardize as contracts renew
- Stage 4: conversion of other sharps (e.g., surgical blades, lancets for micro blood specimens, etc.) to safety devices (i.e., once sharp is used, a guard is activated).

London Health Sciences Centre had converted to a cannula pre-pierced system in 1999. Our primary goal was to identify a simple, needle-free IV fluid delivery system that would significantly reduce the possibility of accidental exposure via needle sticks. Secondary goals included reduction in duplication of currently stocked products, reduction in stock of needles and syringes with needles, and reduction of biohazard waste disposal costs.

It is worth noting that in October of 2000 the United States Senate passed the Needle Stick Safety and Prevention Act. Could this happen in Canada as well? A possible concern for Canadian healthcare settings may be one of involvement in litigation for not providing reasonable available protection.

SJHC had averaged approximately 100 needle sticks per year until 1999 when the number of incidents declined to 78. The incident rate for 2000 is 68.

The numbers however do not reflect a totally accurate picture. This data does not include needle stick injuries to physicians, medical students, nursing students and contract workers (i.e., housekeeping and maintenance workers). Nor does it include data from our mental health facilities. Finally, the current literature indicates a rate of under-reporting for needle stick injuries at 35-50%.

There have been 21 HIV exposures at SJHC since 1986. We have been very fortunate thus far in not having any known sero-conversions as a result of these exposures. The exposures however have very profound effects on the affected employee. The person involved in the high-risk exposure receives immediate first aid, baseline blood work is drawn, and then a physician counsels the employee regarding post-exposure drug prophylaxis treatment. The prophylaxis consists of four to six weeks of Combivir and/or four weeks of Nelfinavir. Both drugs have significant side effects. The counseling assists the person to make an informed decision whether to take the drugs or not.

Follow-up blood work is repeated at two weeks, six weeks, three months and six months. Some facilities have extended this to one year. We follow the CDC guidelines and use the San Francisco General Hospital as our model.

The person is also given initial counseling regarding other precautions to be taken (i.e., practicing safe sex). The first session lasts about three hours with follow-up counseling usually lasting about two hours.

### **Costs**

Who can put a cost on the emotional turmoil experienced by the person with the exposure? There may be a financial loss for that person as well if they are a part time or a casual employee with no sick benefits.

The potential cost of HIV exposure at SJHC is approximately \$2800. The baseline cost of other exposures may vary according to risk level and treatment required but we estimate the cost at \$500 each. Other costs may be incurred in the future - these of course are unknown. There is also the risk of increased WSIB (Workers Safety and Insurance Board) premiums if there is an increase in claims.

All these reasons were very carefully reviewed by the Steering Committee in the consideration of a needle-free IV system.

## **THE HOW**

### **Budget pressures**

The Steering Committee made a presentation to our Senior Leadership explaining the rationale of staff safety, potential cost reductions in consolidating purchase of products from a single vendor, and the reduction in costs associated with needle stick injury management - both human and financial. Preliminary annual cost projection was placed at \$250,000. Senior leadership gave their approval and the cost was built into the annual budget.

### **Comparison of systems**

The decision was made by the Committee to compare the Baxter system presently used at LHSC and the Clave System of Abbott Laboratories. The City-Wide Product Evaluation and Standardization Committee had approved both systems for use. All leaders, directors, coordinators, nurse educators, clinical nurse specialists, respiratory therapists and physician groups were invited to attend a presentation by both vendors. The outcome of this presentation was to put into practice our model of shared leadership. SJHC believes in "point of service opinion" which means the people doing the work should contribute in the decision-making.

### **Evaluation by experienced staff**

The physician group and coordinator group were asked to select two experienced staff members to participate in the evaluation of the systems. Each person was asked to bring with them their usual IV setup or one they would like to convert to needle-free. Two separate rooms were set up - one for each vendor. Each staff member was given an evaluation sheet to rate training information, function and safety, application, quality and ease of use.

The results were collated and the outcome of this well-attended session was the decision to implement the Clave System.

### **Components vs. integrated sets**

Originally the plan had been to go with components or add-ons to use with our present administration sets. The evaluation by users clearly showed they preferred integrated sets and rightly so. Too many pieces leads to confusion and compliance could be jeopardized if the "old way" was still available. The decision was made to implement the integrated sets with the choice of two port vs. three port decided by the individual units. The only component needed would be the one to convert our pump lines to needle-free.

### **Superuser group training**

"Superuser" was the name given to staff that would then become resource people in each unit or department. Their responsibility would be to assist with a smooth implementation process. Training took place over a three-day period.

An implementation date was chosen and the committee worked backwards from that point to determine when staff training would need to occur. We wanted implementation before summer began and knew from past experience one week was needed to train staff.

Posters and newsletters were put up throughout the hospital in halls, the cafeteria, near elevators, in staff rooms. The posters stated "Clave is Coming" and identified the staff training date. Abbott Laboratories supplied posters which showed comparison of old product replaced with this new one. We didn't want anyone surprised by the change coming.

### **Education**

Making the in-services convenient was the key to attendance. One training room was chosen and

sessions were started on the half-hour beginning at 8 a.m. and continuing to 8 p.m. Training was done by Abbott Laboratories and ICU Medical staff. Reminders to attend were sent out over the computer system daily. Staff appreciated and enjoyed the refreshments, pens and notepads that were readily available for them from Abbott Laboratories and ICU Medical.

Housekeeping and maintenance personnel were also encouraged to attend.

### **Implementation**

The individual unit product need was determined and ordered by the materials management group. Supplies were picked, boxed and labeled for each unit.

The staff had been made aware of the changeover date at the in-service sessions and by posters. Again a reminder was put out on the computer system.

### **Exchange teams**

Teams consisting of members of the steering committee, Abbott Laboratories, ICU Medical personnel, materials management staff and Superusers completed the actual physical exchange on each unit. Each team was assigned to specific units to remove old stock and replace it with the new items. Bright yellow stickers were placed on the bins or shelves that contained the new items. This helped as a reminder to staff that something was new and where it was. The biggest exchange was the operating rooms.

The teams began at 1 p.m. and the exchange on all units was completed by 6 p.m. The one-day exchange was very successful for us. We specifically picked Tuesday as the day for the exchange so it wasn't the first workday of the week, and if there were any kinks to work out, the company representatives would be available to assist before the weekend arrived.

### **Post-implementation**

Follow-up post-implementation was done through the Superuser group and our IV team. These groups addressed problems and concerns of staff immediately. The Superusers completed a survey two months after implementation. The survey asked questions about the process used to implement Clave, was there adequate in-service, ease of use, needle-use reduction, compatibility with all IV products, and recommendations.

## What we learned

Do not count on all staff attending in-services. Even if they did attend they may not have a complete understanding of what they heard. Some will say they never heard a thing about it coming. Others will say there should have been more in-services. Training both before and after implementation makes the change successful and accepted by staff.

Someone will still try to use a needle. When this happens it will be evident because the port will leak. Others will forget how to convert the pump lines to Clave.

Some groups/units have unique needs and require flexibility and alternate solutions. The anesthetists for example required the 3-port set in the OR because of the availability of ports nearer the patient's head. NICU has been working with Abbott Laboratories to develop their own IV system needs.

There is always an adjustment period to new products. The first period is one of task orientation (i.e., remove the needle if using a syringe and swab the Clave with an alcohol wipe, connect the syringe onto the Clave and proceed as usual). The next period is that of understanding how it works and seeking new applications for the product.

In conjunction with the IV sets, SJHC uses the CLC2000 positive pressure device on all intermittent central lines. This includes PICC, Hickman, Port-a-cath and subclavian lines. If the CLC2000 is improperly flushed, positive pressure activation will not occur. There was a small problem with the flushing procedure at first, that was easily corrected with extra teaching by the IV team and the Superusers.

## What's next

SJHC will continue to monitor the Clave implementation with the assistance of the Superusers and the IV team. All new staff and students receive in-servicing and feedback is encouraged. The IV team and the Infection Control Nurse monitor any incidence of line infections. At present we have a very low, almost zero, incidence rate.

During the early stages of this whole process it became very evident that there was not enough independent research regarding needle-free IV systems. Canada is sadly lacking in this area and this

has prompted us to begin three studies with the Clave IV system and the CLC2000.

- Study # 1 will be one of extending the IV line changes to 96 hours from the current 72-hour changes
- Study # 2 will study flushing central lines with the CLC2000 Q24h instead of Q8h as is current practice
- Study # 3 will study flushing central lines with the CLC2000 with normal saline only, no heparin.

We will continue to monitor costs and look for areas of potential savings.

Our plan is to complete another survey regarding the implementation of Clave products to see how it has affected the way we do our work. Has it been effective in reducing needle sticks? Has our waste disposal cost declined? How did we fair in annual cost projections? This should be completed around the first anniversary of the Clave implementation at SJHC.

The results of all studies and surveys will be readily shared with all who are interested. This includes our own staff through our newsletters and with other facilities through various formats (i.e., publishing and presentations).

Presently SJHC and LHSC are proceeding with stage two of the city-wide initiative to convert, where possible, to needle safety devices. The budget phase is before us now and we are hopeful to meet the same success as with the implementation of the Clave needle-free IV system.

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