LOCATION:
Duncan, Canada

YEAR:
2006

STATUS:
Laureate

CATEGORY:
Medicine

NOMINATING COMPANY:
Sybase

ORGANIZATION:

Ts'ewulhtun Health Centre

PROJECT NAME:

Mustimuhw HIS

Summary

"Nuts'amaat Sqwaluwun"

One Heart, One Mind

Nuts'amaat Sqwaluwun means working together with one heart and one mind. This is the First Nations teaching that has guided the development of MUSTIMUHW (pronounced Moose tee mook, a Coast Salish word, meaning all of the people) Health Information System.

MUSTIMUHW provides a model for the seamless integration of health information technology into community health services delivery. Community and capacity development are the cornerstones of its operation. The software recognizes the vital role that culture plays in the health of indigenous populations and promotes independence at every level with an Electronic Health Record that supports prevention and self care.

Introductory Overview

Health is more than the absence of illness.

Health is an asset that allows people to live to their fullest capacity.

Health is physical, mental, emotional and spiritual.

Everything in a person's life affects their health.

All things are connected.

It has been recognized that the more control a community has over its own health services, the more likely that they are going to meet the needs of the community members. This is particularly true in populations that have had their power eroded as a result of colonization policies and practices.

The Tsewulhtun Health Centre has created an environment where the practice of the health care workers involves actions that recognize, respect and nurture the unique cultural identity of First Nations' people, safely meeting their needs, expectations and rights.

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Paramount to the Health Centre's development is the goal to incorporate the traditional ways of the Cowichan People into its programs and services, which demonstrate respect for individuals, families and the community. They deliver services that encourage and enable individuals to adopt healthy lifestyles by taking control of their health.

At Tsewulhtun, community healthcare begins with pre-natal support, infant development, and continues through to the members' adult and elder years. Members are encouraged to become involved in their health at all levels, promoting education, proper nutrition, immunization, and self care.

The Health Centre team consists of 70 staff. Using the former paper-charting method of record keeping, staff spent a considerable amount of time looking through charts for information. This resulted in less time spent by the health care staff interacting with the member, and ultimately less care.

The vision of the leadership at Tsewulhtun prompted the earlier development of a DOS based health information system, which contributed to a commendation by the Auditor General of Canada for their accountability to their Community Health Plan and to their funding agencies. And while this system was quite an improvement over a manual system, by the year 2000 the staff realized their services were outgrowing their original software.

As they had before, they evaluated available products, including FNHIS, a free system from Health Canada.

The first thing they looked for was the system's ability to contribute to culture and community capacity. This component was not found in available software which tended to focus heavily on the clinical aspects of care.

Another key factor was the ownership of the data. The database for off-the-shelf systems would typically be installed at the health centre, but FNHIS maintained …and controlled… the database for that system on government servers.

Most systems were able to meet reporting requirements, but were obviously designed in back offices, not on the front-lines where the staff deliver the actual services. Tsewulhtun wanted a system which would empower the frontline staff to be more effective in caring for their community members. This also meant the system must be used at the various points of service delivery, which includes the health centre, schools, homes, etc.

An Electronic Health Record (EHR) that is multi-disciplinary and comprehensive, covering the wide scope of services and health professionals at the Health Centre must be an essential part of any new system. The EHR necessitates appropriate security, protection of privacy, and the need for a system that is always available.

In 2002, Tsewulhtun decided on a custom programmed solution and hired a software firm to carry out the design of their new system. In February 2003, programming began. The MUSTIMUHW software became fully operational in April 2003 and is a comprehensive, member-centred electronic health record and a community-based health information system.

Benefits

MUSTIMUHW was developed to better meet the Information system needs of Tsewulhtun

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Health Centre by incorporating its values, mission and goals.

MUSTIMUHW creates greater efficiency in times where staff resources are limited, and ultimately allows for more interaction time between the healthcare provider and the member.

Contributes to Culture:

The screens are attractive and familiar to the members. Through staff interaction with the people and the computer, members are invited to participate in the documentation of their care and encouraged to take an active role in their health.

As an example of integrating healthcare and culture, one Health Centre has re-named their pre-natal assessment "A Mother's Story". This document contains all the information defined by the government's Reproductive Care Guidelines, and presents it in a culturally relevant way. The nurse prints the completed assessment for the mother. The moms and dads love this feature and they take the information to their extended family, who all participate in and celebrate the planning for this new life. This supports family-centred care, a central tenet of First Nations culture.

Supports Capacity Building:

The use of MUSTIMUHW effectively empowers the members to take care of their own health through the development of personal health care goals in collaboration with the health services team. Ownership of member data lives with the First Nation. This key feature supports concept of Nation building and facilitates greater control and accountability of information and reports.

Interfacing:

The value of accurate and useful information is multiplied if it can easily interface with other systems.

Work is currently underway to implement Immunization record transfer via HL7, the international standard for interfacing health systems. MUSTIMUHW's ability to interface via Health Level 7 extends its effectiveness and lays the groundwork for international interoperability.

Portability:

Nurses who must travel to various communities are using MUSTIMUHW on laptops. This requires data synchronization: the nurse works in field with a complete database available and the changes synchronize with the master database when she is able to connect to the internet at some point.

"We replicate data from the SQL Anywhere database to staff with laptops to enable them to make home visits and complete charting while in the home. We need all the flexibility of a large scale health information system, but we also need it to operate in small villages," states Bill Aumen of Aumen Consulting, the MUSTIMUHW software developers.

 Reporting:

Much of the reporting in MUSTIMUHW is accomplished by having the software populate Microsoft Excel spreadsheets. This results in easy-to-understand graphs on the front tab, with detailed supporting data on the following tabs. The overall graphs are presented to the entire community at Annual General Meetings.

Marketability:

MUSTIMUHW was designed with the intent to market the software to other community health centres.

18 other First Nations communities, representing a population of over 15,000 members, have purchased the software for use in their community health centres.

Because MUSTIMUHW allows each Nation to incorporate their own pictures, cultural symbols and teachings, it supports the integration of health care into the culture of their community. This capability reinforces the meaning of health within the context of the culture; the important role that culture plays in the health of individuals, families and the community; and the vision of health that they share for the future.

The communities that use our software agree that one of the key features is the unique design that incorporates and celebrates the culture of the Aboriginal people that are using the system.

There are communities around the world that share the same cultural values that guide the delivery of Tsewulhtun's programs and services. These same values determined the design of the software.

Incorporating those values into MUSTIMUHW give it the ability to serve other communities in the same way.

The Importance of Technology

The technology used in the development of MUSTIMUHW is not new, however, the unique compilation of available technology to meet the specific needs of the community healthcare workers that are using it, is.

 MUSTIMUHW is written in Sybase's PowerBuilder and utilizes an iAnywhere SQL Anywhere database. These tools provide large-system capabilities that can also be easily utilized in remote health centres with no IT support. Quality development tools compliment a world class programming team. Our developers prefer PowerBuilder because they believe it is still the most effective 4th generation development tool available today.

We chose SQL Anywhere because we needed a database that:

1. Has the performance, and reliability, to support large organizations, and at the same time would be affordable to the health centre in a community of only 125 people.

2. Could easily support our data synchronization needs for mobile devices with minimal programming effort.

3. Would not require a Database Administrator to keep it running smoothly.

MUSTIMUHW utilizes many Microsoft Word assessment and evaluation forms that are stored in the member's health record in the database. These documents account for a large amount of space in the database, so SQL Anywhere's ability to maintain performance under those conditions is an essential feature.

Additionally, SQL Anywhere easily supports the environment common to many of the remote communities who use MUSTIMUHW: a system that must be "always available, but not always connected" to a central database.

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Originality

Strengths-based approach to Health Care:

MUSTIMUHW promotes a strengths based approach to care. This approach enables member involvement in setting personal health care goals and integrates all available resources into the plan. The concept of a strengths based approach also supports the necessity of control of information being held by the community, not by the government and is used to build capacity in our communities.

Interactive and member focused:

By streamlining the process of record-keeping, the health centre team has more time to spend with the members.

"If the member understands what is put in their chart, they can take those words to help them express their needs with their physician. In the past, this has been really difficult for many of our community members…finding the words," says Darlene Sharpe, Community Health Nurse at Tsewulhtun Health Centre.

Best Practices:

MUSTIMUHW facilitates best practices for documentation of care and accountability, collecting both quantitative and qualitative data.

Integrates technology into culture:

Each First Nation has certain visual images that are important to their culture. The staff can load these into the system to print on the reports clients receive as well as show up on the screens clients view during visits. When your objective is to get people more involved in their own care, this feature makes a big impact.

MUSTIMUHW is a versatile platform. Groups can customize the software to display their own imagery, values and scope of services.

Other features include:

•On-line charting – the entire public health record is designed to be accommodated in electronic form.

•A template of policies and procedures that meet the requirements of the Access to Information and Privacy Acts

•Communicable Disease Control – Immunizations, scheduling, follow-up, CDC mandatory reporting.

• Counseling

• Bring forward or "to do" system.

• Home Care – scheduling, timekeeping, charting and reporting

• Housing Module

• Growth charts & immunization records at the touch of button.

• Regular program reports showing utilization over time.

• Reporting that meets the criteria of the Funding Agencies and Health Authorities for the targeted programs.

• Charting formats to accommodate any number of programs and health care providers.

• Dental Clinic – Scheduling, charting and reporting.

• Patient Transportation – Scheduling, tracking expenditures and reporting.

The value of designing software with the front-line users has been recognized for some time now, but the implementation of that method has not been as widely used as it should be. Front-line design is a cornerstone of our approach.

The value of integrating professional healthcare practice with local culture has also been the subject much research. MUSTIMUHW implements that principle. The software was built for the user to work interactively with the member when charting and recording their health care visit, which promotes involvement and encourages the member to become active in taking care of their own health.

Success

We have been using Mustimuhw for 3 years now and we are very happy with the software. The biggest advantages of Mustimuhw for our Health Centre are:

- It is a great asset to tracking the health history of our members as well as the activity history of our staff and health centre.

-Is easy for our staff to use.

-Meets all our reporting needs to our government and funding agencies.

-Is adaptable to meet the needs of the various health programs we run.

Kevin Wilson

Office Manager

Hailika'as Heiltsuk Health Centre

Community based decisions on health care delivery:

The graphs presented at the Annual General Meetings have already helped the community make some important decisions on service delivery: One year, the community asked for more home visits by the staff. This became a priority, and a year later, the graphs showed home visits had increased by 15%. However, it also showed that the extra home visiting had come at the cost of group work, which had declined by the same amount. This helped the community understand that within the finite resources available, there are trade-offs. After some discussion, the members decided to go back to building up the group work, because they felt this was more valuable to the community as a whole.

The MUSTIMUHW Health Information System has provided many benefits to our community:

•Ownership of the data resides with the community.

•The system reflects our cultural uniqueness.

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•Responsibility for decision making is at the community level.

•Accessibility of information is facilitated.

•There is enhanced accountability to the community as well as to funding agencies and health authorities.

MUSTIMUHW provides much needed information on the programs and services so that decision-making, proposal-writing, planning, implementation and evaluation are all improved

Success indicators that are built into the system can be customized to meet the needs of the organization. Tsewulhtun has targeted immunization rates, breastfeeding rates, percentage of target population served, and the average number of encounters for any group of individuals or program. Costs per member or costs per encounter for any program can be easily calculated.

Since the implementation of MUSTIMUHW, the centre is operating at peak efficiency. The software has provided a management tool that measures both the efficiency and effectiveness of resources.

Members also are involved in monitoring their successes. These successes are based on the individuals' development goals and are recorded in their electronic health file.

All front-line staff who see the system are immediately clamoring for their health centre to purchase the software. They can easily see how their time will be more effective and required documentation made easier.

Difficulty

With the goal of developing a health information system that better suited the needs of an indigenous community health centre, the development team spent a considerable amount of time consulting with the health care front line staff.

The inclusion of the staff in the early stages of development, the careful consideration of their needs and the incorporation of the appropriate technologies, has ensured a smooth transition for use of MUSTIMUHW at the Health Centre. The development aspect that proved to be the most challenging was the marriage of culture and technology. The development team was charged with ensuring that the software reflected the values and customs of the First Nations people that it would serve. The software had to be versatile enough to be personalized for other communities who would purchase it for use.

Extensive consultation with the staff, elders and cultural advisors, established the critical use of visual aids. Incorporating cultural values and graphics were design features that would support the cultural representation in the software and could not impede the functionality of the system.

Tsewulhtun applied for government grants to support development of the software. They believed the software would not only meet their own needs, but would be of great value to many other communities.

When funding was not forthcoming, Tsewulhtun made the commitment to fund the development themselves, believing the value in supporting service delivery would return the investment.

That quickly proved to be the case after implementation and word-of-mouth accounts of the

staff's enthusiasm has caused other communities to purchase the software from Tsewulhtun, providing a measure of cost recovery for funds invested.

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