Mass Meningococcal Immunization Campaign in Middlesex-London, 2001:

Critical Elements for Success

MIDDLESEX-LONDON HEALTH UNIT

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Introduction

This summary describes the rationale for, and implementation of, a two phased meningococcal campaign conducted by the Middlesex-London Health Unit in the spring of 2001. A detailed evaluation of the campaign highlighted numerous critical elements for success when conducting a mass immunization campaign. These critical elements for success follow the description of the campaign and are intended to assist in planning for other emergency responses, such as pandemic influenza or possible bioterrorism events.

Overview

Middlesex-London, Ontario (population 410,000) usually has between one and four cases of meningococcal disease per year. On February 27, 2001, a case of serogroup C meningococcal disease in a seven-year-old boy from north London was reported to the Middlesex-London Health Unit. This was the first case of meningococcal disease identified in 2001. The following day a second case of serogroup C meningococcal disease was reported in a 20-year-old female from north London. One month later on March 25, 2001, a third case of serogroup C meningococcal disease was reported involving a 53-year-old male also from north London. His wife was also considered a possible case, but was never laboratory confirmed. On March 28, 2001, a fourth laboratory confirmed case of serogroup C meningococcal disease was reported in a 20-year-old female from north London.

On April 2, 2001, a decision was made to commence what was to be the first phase of a mass immunization campaign against serogroup C meningococcal disease. The decision to proceed with this campaign was based on recommendations from the Centres for Disease Control and Prevention (CDC) that state that if at least three cases of serogroup C meningococcal disease occur in a community in less than or equal to a three month period, and the primary attack rate exceeds 10 cases per 100,000, immunization should be considered.[1] The polysaccharide, quadrivalent meningococcal vaccine that provides protection against serogroups A, C, Y and W135 was used for this phase of the campaign.

The target population was all Middlesex-London residents 15-24 years of age who lived, worked or attended school (including college and university) in the northern part of London. Between April 9 and April 26, the health unit held 17 high school clinics and seven community clinics. Seven additional community and health unit-based clinics were subsequently scheduled to accommodate those who missed the first set of clinics. During this phase, a telephone information line was established and handled over 2000 telephone calls from the public. As well, the health unit's web site received over 302,000 hits. A total of 25,550 people were immunized during the first phase of the campaign.

On May 1, 2001, approximately nine weeks after the first case, a fifth case of serogroup C meningococcal disease was reported involving a four-month-old baby from south London. On May 4, 2001, the decision was made to proceed with Phase Two of the immunization campaign. This phase was designed to provide meningococcal vaccination to all remaining residents who were under 25 years of age and who lived, worked or studied in the City of London or the surrounding County of Middlesex. Those 2-24 years of age were provided with either bivalent, polysaccharide vaccine against serogroups A and C, or quadrivalent, polysaccharide vaccine against serogroups A, C, Y and W135. As the polysaccharide vaccines are ineffective for children less than two years of age, special clinics were run where the newly licensed conjugate C meningococcal vaccine was provided for this age group.

Between May 9 and May 24, the Health Unit held 10 daytime high school clinics specific for students enrolled at each high school, 69 community clinics for 2-24 year olds, and seven community clinics for children less than two years of age. In addition, five extra clinics were subsequently scheduled to reach those who were not yet immunized. During Phase Two of the campaign, 80,500 people who lived, worked, or attended school in Middlesex-London, including 4,400 children less than two years of age, were vaccinated at health unit clinics. In addition, over 4,600 doses of conjugate C vaccine were distributed to 95 doctors for administration to children less than two years of age. Approximately 700 doses of vaccine were provided to residents living on area First Nation reserves. During the second phase of the campaign from May 4 until June 1, the telephone information line received over 6,300 telephone calls from the public and the web site had over 912,000 hits.

On May 14, 2001, 11 weeks after the original case, a sixth case of meningococcal disease occurred in an 11-year-old boy who had not yet been immunized. This was the final case of serogroup C meningococcal disease to occur as part of this cluster.

In summary, six laboratory confirmed cases of serogroup C meningococcal disease occurred from the end of February to mid-May, 2001. None of the cases were fatal. Approximately 106,000 people were vaccinated in two phases of clinics run by the Middlesex-London Health Unit from the beginning of April to the beginning of June 2001. More than a year since the completion of the campaign, no further cases of serogroup C meningococcal disease have occurred in Middlesex-London.

Planning and Implementing the Campaign

The Middlesex-London Health Unit has had considerable experience in delivering mass immunization campaigns as a result of conducting large scale vaccination programs against measles, hepatitis B and influenza. This experience provided the backbone for planning and implementing the mass immunization campaign. Additional excellent resources included reports such as *Mass Immunization Campaigns: A "How To" Guide Based on the Experience of the February 2000 Capital Health Meningococcal Immunization Campaign*[2], and *Guide to Planning a Mass Immunization Campaign*[3] based on the Waterloo Region Community Health Department experience.

The organization of this immunization campaign was divided into the following five key components:

- Planning, Coordination and Internal Communication
- External Communications
- Mobilizing and Organizing Human Resources
- Supplying the Clinics
- Clinic Operations.

The following information provides a brief description of each of these components.

Planning, Coordination and Internal Communication

Coordinating Committee: The first step in mounting a mass immunization program was to establish a Coordinating Committee involving key personnel. The Coordinating Committee was chaired by the Medical Officer of Health and consisted of all the Health Unit Directors, the Vaccine Preventable Disease Manager, Communications Manager, and personnel who were responsible for the supplies and their transportation. To facilitate communication with the local school boards, a representative from the school boards also attended some of the Coordinating Committee meetings. Official minutes were kept of all meetings.

Throughout the campaign, the Coordinating Committee met on a daily basis to de-brief, revise, and then communicate decisions to the appropriate contacts. All key decisions regarding campaign planning and operations were made by the Coordinating Committee, including decisions regarding the pace of the campaign and expectations for staff involvement and time commitment. This campaign was declared a "public health emergency" by the Medical Officer of Health and required all non-urgent Health Unit programs to be suspended and resulting staff time dedicated to the campaign.

Key decisions made by the Coordinating Committee were communicated through daily visits to the clinics by the Vaccine Preventable Disease Manager, written directives and newsletters, "Frequently Asked Question" sheets, meetings of those who managed the clinics, and voice mail and e-mail messages. Cell phones and pagers with a readily accessible list of all numbers were crucial for timely communication regarding evolving issues.

Site Selection: Clinic sites that met all or most of the following criteria were chosen from across the City and County:

- Centrally located;
- Accessible by public transportation;
- Adequate parking;
- Wheelchair and stroller accessibility;
- Good lighting and comfortable temperature;
- Separate entrance and exit to allow a one way flow of traffic; and
- Adequate space so that there was sufficient room for a registration table, tables to administer the vaccine, an area to reconstitute and draw-up the vaccine, an area for paper work and a post-vaccination waiting area.

High schools were the most commonly chosen clinic locations, but in some areas community centers, arenas, libraries and shopping malls were also used. The local school boards were involved early in the planning process and were extremely helpful in facilitating the use of the schools as clinic sites. The Dental Director was assigned the role of liaising with each clinic location to ensure that a custodian would be present and that the site had all the chairs, tables, waste paper baskets and floor mats required for the clinic.

Population Allocation Planning: High school students were vaccinated during the day at their schools. Elementary school students were vaccinated during the late afternoon and early evening or on weekends at community clinics. To more evenly distribute attendance at each clinic, a system was developed to allocate elementary school students to preferred clinic days and locations according to the elementary schools they attended. Approximately 65% of elementary school students went to the preferred clinic day and location. This system was successful in ensuring that no clinic was excessively busy or excessively slow. The number of people vaccinated at each clinic ranged from 576 to 1,656 with an average of 955 people vaccinated per five-hour clinic.

Food: To facilitate campaign operations, food was provided at all clinic locations and at campaign headquarters. Food consisted of plates of bagels, cheese, crackers, fruits and desserts. Abundant bottled water and beverages were also provided.

External Communications

Accurate, timely and comprehensive communication using a variety of channels is crucial to the success of a campaign of this magnitude. External communication mechanisms used extensively throughout this campaign included a staffed telephone information line and automated telephone messages, the Health Unit web site, media releases and updates, news conferences and briefings, media interviews, paid advertisements, written information to parents sent home through the school system, and written information to physicians and other key community partners.

Telephone Information: During both phases of the campaign, callers to the Health Unit were routed first to an automated messaging system that provided general information on meningococcal disease and the vaccine, as well as, information on upcoming clinics. A staffed telephone information line operated seven days a week from 8:30 am to 8:30 pm. The information line was staffed predominantly by Public Health Inspectors under the direction of the Director of Environmental Health and Chronic Disease Prevention Services. Up to 12 staff members worked the line at any one time. The automatic call distribution (ACD) system allowed up to 10 incoming calls to be handled at one time. "Frequently Asked Questions" sheets were updated on a regular basis and formed the basis of the responses to questions asked over the telephone. All telephone calls were recorded on a written log sheet and compiled daily. In total, over 8,300 calls were handled during the campaign.

Web Site: The Health Unit web site contained up-to-date information on meningococcal disease and the vaccine, as well as, all clinic dates, times and locations. Given the public's increasing comfort with web-based technology, the web site was an invaluable tool for disseminating information. In total, over 1,214,000 hits to the web site were recorded. Questions from the public could also be e-mailed through the web site and were answered by staff members from the telephone information line.

Media: Five advertisements in the local paper were purchased to inform the public of the dates, times and locations of the clinics. A total of eight media releases and 11 media updates were sent during the campaign, and two news conferences and three briefings were held. The Medical Officer of Health was the designated spokesperson during the campaign and conducted daily media interviews regarding the progress of the campaign.

Other Communications: Through close collaboration with the local school boards, every elementary and high school student received written information on meningococcal disease and the vaccine, as well as, the date, time and location of the preferred clinic their school was allocated to attend. Local physicians received eight written communications regarding the meningococcal cases, meningococcal vaccines and clinics. Surrounding health units received copies of all the "Frequently Asked Questions" sheets, newsletters to physicians, and other key communications regarding the campaign. The Board of Health was updated frequently through regular and special meetings and telephone contact.

Human Resources

The first phase of the campaign vaccinated only adolescents and young adults between 15 and 24 years of age. Based on past experience with other clinics, it was estimated that each nurse administering immunizations during this phase could vaccinate 20 adolescents/adults per hour. During the second phase, younger children were also to be immunized so for planning purposes it was estimated that each nurse administering vaccines could immunize 15 clients per hour. During the second phase of the campaign, each community clinic was designed to immunize approximately 1,000 people per clinic. The clinics ran for a five-hour period with the following staff compliment:

- 1 Clinic Immunization Leader who was responsible for the clinical aspects of the clinic;
- 1 Site Manager who was responsible for the administrative aspects of the clinic;
- 14 Registered Nurses or physicians to administer the vaccinations;
- 1 Registered Nurse to manage adverse vaccine reactions such as fainting and anaphylaxis;
- Up to 5 Registered Nurses or Registered Practical Nurses to reconstitute and draw-up the vaccine;
- 2 Immunization Team Assistants to organize and manage the paper work and supplies at the clinic;
- 2 Runners to distribute the vaccine from the area where it was reconstituted and drawn-up to the nurses administering the immunizations;
- 7 Volunteers to distribute consents, direct the clients to the nurses administering the vaccinations and assist in the post-vaccination waiting area.

The recruitment, scheduling and orientation of the large number of nursing staff, physicians, support staff and volunteers was an enormous effort requiring considerable coordination. Sources of nursing staff included internal health unit staff members, external nursing agencies, nearby health units, and independent nurses mostly from local health care agencies. Local physicians assisted in administering vaccinations at health unit clinics, particularly at clinics for children less than two years of age.

Master clinic schedules for each clinic day and location were posted on large bulletin boards. For each clinic date and location, spaces were allocated for the required staff compliment. Under the direction of the Director of Family Health Services, nurses and clerical staff within the agency self-scheduled. External nurses were scheduled through designated Middlesex-London Health Unit staff such as Nurse Managers, Human Resources staff and specific Public Health Nurses. Attempts were made to ensure that each clinic had a combination of Health Unit nursing staff members and external nurses.

Volunteers were scheduled by the Volunteer Coordinator from a previously established pool of Health Unit volunteers. In addition, volunteers were solicited through a media appeal.

Several forms were created for financial / human resource purposes. Information required for payroll and tax purposes was collected for all external staff members. Time sheets were completed by external staff so they would be paid, and by internal staff to monitor the time that the Health Unit dedicated to the campaign.

Supplying the Clinics

Dedicated supply and transportation teams, under the direction of the Director of Research, Education, Evaluation and Development (REED) Services, were staffed by members of Dental Services, REED Services and Environmental Health and Chronic Disease Prevention Services. Several extra staff were hired to assist with supplies and transportation.

Supply Team: The supply component was led by the Health Unit's Program Evaluator and required a large vacant room. All necessary supplies either were provided by the Ministry of Health and Long Term Care or purchased. Along with the usual needles, syringes, cotton balls, alcohol swabs and sharps containers, other supplies included: paper work for clients (e.g. information sheets in English and French, consent forms), paper work for clinic staff (e.g. financial / human resource forms, time sheets, forms for staff to order more supplies for the clinic, folders with orientation information for the nurses), supplies for the nurses' tables where the vaccine was being administered (e.g. vaccine freezer bags, Kleenex boxes, waterless handwash solutions), office supplies (e.g. clipboards, pens, required signs), children's play materials (e.g. crayons, paper, stickers), bottled water for the staff, juices boxes for those feeling ill after vaccination, and donated food for clients if available. Supplies were stored in separate, labeled areas in the large room.

An "Initial Pack List" was designed to indicate the type and quantity of supplies initially required at each clinic. Clinics that remained in the same location for more than one day were initially supplied within excess of two clinic-days worth of supplies. Members of the supply team packed all the supplies required for the clinic into large plastic containers and boxes, placed them in a designated location in the room with signs that clearly indicated the clinic location that was to receive those supplies.

Clinics that were remaining in the same location for additional days submitted one or two supply requisition lists at the end of each clinic. The "Urgent Pack List" indicated items that would be needed during the following day's clinic. Clinics remaining in the same location for two or more days also submitted a "Replenish List" after the clinic. This list identified the quantity of supplies that would be needed to maintain at least two clinic-days worth of supplies at the clinic location based on an inventory of the remaining supplies on hand at the end of the clinic. The supply team packed all the requested supplies on the "Urgent Pack Lists" and "Replenish Lists" and delivered them to the appropriate location for pick-up or transport.

Transportation Team: The transportation team, under the direction of the Health Unit Epidemiologist, rented seven vans since that was the maximum number of clinics that ran concurrently on one day. The transportation team delivered the initial supplies out to the clinic before the first clinic at each location. They also visited each clinic location at the end of the day to pick-up and return the following items back to the Health Unit: thawed ice packs, used forms and filled sharps containers, unused vaccine and newly completed "Urgent Pack Lists" and/or "Replenish Lists". At the end of the clinic, the transportation team also delivered to the clinic any of the supplies requested on the "Replenish List" from the previous clinic in order to maintain the required inventory of two-days worth of supplies at the clinic.

Prior to each clinic, the Clinic Immunization Leader would come to the Health Unit to pick-up the items needed at the upcoming clinic that were not already at the clinic location. These items included: vaccine, frozen ice packs in a cooler, the items ordered on the "Urgent Pack List" from the preceding day, the bags that contained the supplies to manage medical emergencies, and any communications that were issued from the Coordinating Committee.

An "Urgent Delivery System" was also established to provide supplies to clinics when they were needed right away. To order urgent supplies, the Clinic Immunization Leader used a cell phone to call another cell phone that was always answered by a member of the supply team based at the Health Unit. Urgent supplies were delivered to the clinic by an available staff member at the Health Unit. Available drivers included members of the transportation team and those who were staffing the telephone information line.

At the end of the last clinic at each location, the transportation team visited the site and assisted with dismantling the site and returning the supplies to the Health Unit. Supplies were then returned to the appropriate area of the supply room and repacked as necessary for another clinic.

Clinic Operations

Vaccine Supply: The three vaccines used during the course of this campaign were provided by the Ministry of Health and Long Term Care. Some of quadrivalent vaccine used in the first phase came directly from the United States and so did not have time to be approved by Health Canada. This product was therefore made available under the Special Access Program and required that information regarding this program be placed on the consent form. The Menjugate™ vaccine was delivered directly from Italy and delays in shipment resulted in uncertainty as to the timing of the first clinic for children less than two years of age.

Medical Directives and Vaccine Information Sheets: A medical directive for each of the three vaccine products was produced. This medical directive provided the nursing staff with the indications

and contraindications for each vaccine and provided direction about obtaining informed consent. An information sheet for clients to read to ensure that they were informed regarding the vaccine was also produced for each product. In addition, information on Menjugate™ was written for physicians to assist them in administering the vaccine to children less than two years of age who were seen in their offices.

Vaccine Reconstitution: The polysaccharide vaccines came as ten dose vials while the Menjugate™ came as single dose vials. All of the vaccines used in the clinics required reconstitution. This was a time consuming process, particularly for the single dose vials of Menjugate™ since each vial needed to be individually reconstituted.

One of the vaccine products could be reconstituted for up to five days before use, so reconstitution took place in advance of the clinics using that product. In the other clinics in the campaign, including most of the clinics in Phase Two, the vaccine was reconstituted during the clinic at a separate table with up to five nurses (RNs or RPNs). One or two nurses reconstituted the vaccine and marked an "R" on the vial to indicate that it was reconstituted. Two or three other nurses then drew-up the vaccine into individual syringes from the reconstituted vials. The Runners distributed the drawn-up vaccines into the freezer bags on each of the tables where the nurses were administering vaccine.

Clinic Management: Each clinic was managed by a Clinic Immunization Leader and a Site Manager. The Clinic Immunization Leader was a nurse with previous immunization experience. This nurse was responsible for overall clinical operations including providing an orientation for all nursing staff before clients arrived at each clinic, answering all complex vaccination questions and addressing issues related to informed consent. She/he monitored the vaccination practices of the nursing staff and assigned breaks to the nursing staff. As well, the Clinic Immunization Leader ensured the appropriate management of all fainting and anaphylaxis episodes.

The Site Manager was a Health Unit Manager or Director who was responsible for the administrative aspects of the clinic, such as ensuring that professional licenses were verified, human resource-related forms were complete and time sheets signed. The Site Manager was also responsible for orientation and monitoring of the volunteers at the clinic, ensuring the clients flowed smoothly through the clinic, dealing with clients who had administrative concerns and addressing the members of the media who visited the clinics.

The Vaccine Preventable Disease Manager visited each clinic daily to communicate decisions of the Coordinating Committee, reallocate staff between clinics if necessary, and provide support to the clinic.

Clinic Set-Up: A floor plan was designed to outline the ideal clinic set up. This set up included a registration table, tables to receive the vaccine, an area to reconstitute and draw-up the vaccine, an area for paper work and a post-vaccination waiting area. Two nurses worked at each table to administer vaccines to the clients. All staff members arrived at the clinic an hour and a half before it began and assisted with the set-up of the clinic vaccination stations.

Orientation: Prior to the start of each clinic, the Clinic Immunization Leader provided an orientation for the nursing staff. The orientation reviewed the content of the medical directive including administration of the vaccine, contraindications, and how to obtain informed consent. As well, the Clinic Immunization Leader reviewed reconstitution of the vaccine, and holding techniques for children. Each Clinic Immunization Leader had a binder that provided all the relevant information to be covered in the orientation, as well as a list of telephone and pager numbers for key contacts such as members of the Coordinating Committee and the supply team contacts. Similarly, each nurse had a folder with information such as the medical directives, background information on meningococcal disease and the vaccine, information on administration techniques and the information sheets that the clients read in order to provide informed consent.

The Site Manager provided orientation to the volunteers at the clinic that included the process of handing-out and verifying completion of consent forms at the door, directing traffic to the tables were vaccine was being given, and the monitoring of the post-vaccination waiting area. Site Managers also had a binder with the relevant information and the telephone and pager numbers for key contacts.

In both phases of the campaign, some of the orientation information was also provided in large group sessions for internal Health Unit staff several days before the first clinics. In Phase Two of the campaign, large group orientation sessions were held for nursing staff, Immunization Team Assistants, Runners and for the supply and transportation teams.

Flow of the Clinics: A volunteer or the Site Manager gave each client at the clinic a clipboard with an attached pen. The information sheet required for informed consent, and the consent form were inserted onto the clipboard. The client was asked to read the information sheet and fill out the consent form. The clipboard was returned to the volunteer or Site Manager who checked that all the demographic information had been completed. A volunteer then directed the client to a nurse who was available to administer the vaccine and had reconstituted, drawn-up vaccine in the freezer bag at the table.

Nurses who were administering the vaccine would indicate that they were ready to receive new clients by waving a flag. Families were directed to a table as a group, and often were served by nurses on both sides of the table. When the client was directed to their table, the nurse asked the client if they had read and understood the information sheet, answered any client questions, assessed that there were no contraindications for vaccination and ensured that the appropriate person or substitute decision maker was providing the informed consent. Parents held their children during the immunization process and the nurse on the other side of the table or the Clinic Immunization Leader assisted as necessary. Once the immunization was administered, the nurse completed the documentation on the consent form, including the date of vaccination and the arm into which the vaccine was given.

The nurse only needed to initial the consent form as a master list contained the signatures and initials of all nurses working at the clinic. As well, she did not have to write the name of the vaccine or dose as they were preprinted on the form. The lot number also did not have to be written as it was preprinted onto labels that were affixed to each consent form by the Immunization Team Assistant. For the most part, only one lot of vaccine was used at each clinic.

The client was advised to wait in the immunization clinic for 15 minutes after the vaccination and to return to the nurse if they felt unwell. They were given a sheet of information that provided the name and date of the vaccination, specific symptoms to watch for post-vaccination and when to seek medical attention. They were asked to have their doctor inform the Health Unit of any adverse events that arose after leaving the immunization clinic.

Children were given stickers after receiving their vaccine. A volunteer monitored the post-immunization waiting area. Large paper rolls and crayons were provided for the children to color, and donated food was intermittently available for clients. A sick bay was established for clients who were feeling ill post-vaccination. The sick bay was isolated from the rest of the clinic by using barriers to create privacy. In Phase One, the Clinic Immunization Leader monitored clients in the sick bay, while in Phase Two, a nurse with immunization experience was specifically assigned to monitor the sick bay with the support of the Clinic Immunization Leader.

Adverse Events: Two emergency bags with adrenaline, benadryl, air ways, blood pressure cuffs and stethoscopes were available at each clinic. Medical directives for managing fainting and anaphylaxis were readily available for these circumstances. Adrenaline was administered to six clients during both phases of the campaign for urticaria or other allergic symptoms. These individuals were sent to hospital and discharged shortly thereafter with no long-term adverse effects.

Cerebellar ataxia was reported post-vaccination in two individuals, one who received the polysaccharide vaccine and one who received Menjugate™. Both recovered completely.

Three clients unintentionally received diluent instead of reconstituted vaccine. Because these three clients could not be precisely identified, 136 individuals were re-vaccinated to ensure they received the active vaccine.

Evaluation

Within approximately two months of the completion of the immunization campaign, the Health Unit's Program Evaluator conducted an evaluation of the campaign. The purpose of the evaluation was to determine the lessons learned from the experience and the key factors required for a successful mass immunization campaign.

The evaluation was conducted using a qualitative approach. A series of focus groups were held, based on the functional groupings by which staff were organized in carrying out the campaign. In total, 14 focus groups were held based on 11 functional groupings. The focus groups were tape-recorded, and the recordings transcribed and analyzed.

The following were determined to be the critical elements for success in a campaign of this nature. Many of the elements were effectively utilized during this campaign, while others were identified as strategies that would enhance the delivery of future mass immunization campaigns.

Critical Elements for Success

Planning, Coordination and Internal Communication

Campaign Coordination

1. Expect the planning and coordination process to be complex and challenging.

2. Establish a Coordinating Committee to ensure that all crucial components and sub-components of the campaign are represented.

3. Ensure that channels to communicate decisions and important information are operating effectively and consistently, and that there are effective feedback mechanisms in place.

4. Consider appointing a specific individual to monitor and facilitate internal communication and feedback processes between campaign components.

5. Ensure that key roles and tasks are delegated as much as possible to avoid too heavy a burden falling on any individual.

6. Ensure that roles and responsibilities are clearly defined and differentiated among campaign coordinators as well as among campaign staff.

7. Utilize the expertise and knowledge of front line staff as much as possible, while communicating clearly with staff when urgency requires the short-circuiting of normal consultative processes.

8. Routinely assess, adjust and adapt campaign operations as needed and ensure structures are in place to facilitate this process.

Site Selection

9. Consult and involve school boards in the early planning stages to facilitate the use of school facilities for clinic sites.

10. Broadly consult knowledgeable immunization staff about which specific sites may be most suitable for clinics.

Population Allocation Planning

11. Consider allocating the target population equally across specific clinic sites in order to decrease long waiting periods. Criteria to allocate the population could include school attended, residence, postal code, etc.

Food Provision

12. Provide essential food and beverages for staff and volunteers both at clinic sites and at operational headquarters. Ensure that staff and volunteers are advised of what will be available so they can plan accordingly.

Enhancing Internal Communications

13. Clinic Immunization Leaders and Site Managers should have regular meetings. These meetings should provide an opportunity to "compare notes", discuss issues and engage in problem solving. Furthermore, feedback identified from the clinics should be forwarded and explored by the Coordinating Committee, and "best practices" adopted and consistently applied.

14. All changes to campaign practices should be documented and disseminated as required to ensure consistent and efficient implementation. All such documents should be incorporated into campaign binders that are maintained by all key players.

Issues Affecting Staff Response to the Campaign

15. When determining the pace of the campaign, the urgency to prevent new infections must be balanced with the organization's capacity to support and maintain that pace over a given period of time.

16. In the event of a future campaign that would approach or exceed the magnitude of the meningococcal campaign, find ways to share the workload or extend the overall length of the campaign, in order to reduce the intensity and duration of effort demanded of individuals.

17. Clearly and consistently communicate to all staff the level of urgency of the campaign and the expectations for staff involvement and time commitment. It should be recognized that exceptions to standard expectations and time commitments may be necessary. Therefore, anticipate, clearly define, and communicate circumstance where these exceptions may apply.

External Communications

The Phone System

18. Anticipate the required capacity of the phone system to carry out such a campaign, and build the system to handle that capacity. Explore the use of all voice messaging options to ensure easy and effective navigation of the system. This includes menu selections, an "on hold message", and a separate direct inward dial number for an information line.

19. Information on clinic times should be incorporated into the "on hold" message that plays while the caller is in queue waiting for the first available staff person to answer. A significant number of callers will get the information they need and exit the system more quickly.

20. Be prepared to use other means of communicating including: voice mail messaging, cell phones, pagers, and e-mail technology. Ensure that contact information for key players and campaign information for the public is up-dated and disseminated regularly.

21. Remind those carrying cell phones and pagers for campaign purposes to keep batteries well charged and have extra batteries available.

22. Collect information regarding the number and type of calls from the telephone information line directly onto a standardized computerized spreadsheet to facilitate quick analysis and feedback to campaign planners.

The Web Site

23. Make maximum use of web technology as an integral component of the overall communications plan.

Media and Public Relations

24. Complex messages, such as suggested allocation of the target population to clinic sites, should be delivered repetitively through multiple channels to ensure the message is communicated effectively.

25. Strategies should be developed to facilitate communication with people facing literacy, language, socioeconomic and other barriers.

Mobilizing and Organizing Human Resources

Recruiting and Scheduling Staff

26. When recruiting, mobilizing and scheduling staff, delegate as much as possible and ensure clear division of responsibility and clear lines of accountability.

27. Restrict those responsible for making adjustments to the master clinic schedule to one or two designated individuals to ensure that staffing requirements at each clinic are maintained.

28. In order to recruit and mobilize a large number of external nursing personnel as effectively as possible, close collaboration is required within the organization between the nurse leader, human resources and finance staff members.

29. Prior to initiating work at clinics, ensure that all external nursing personnel understand their role and lines of authority with respect to the clinic's management.

30. Establish ongoing contracts with local nursing agencies to cover contingencies such as an emergency immunization campaign. Contracts should be reviewed periodically and should address issues including rate of pay and whether nurses are to be paid for mileage and travel time.

31. When recruiting a large number of nursing staff, anticipate a significant volume of incoming calls. To respond in a systematic manner, ensure that all replies go to a dedicated mailbox with a "leave message only" option. Specifically assign one or more individuals to receive and respond to inquiries from interested external nurses.

32. Ensure that there are sufficient numbers of experienced nurses within your organization available and trained to assume a clinical leadership role at clinic sites.

33. Ensure that there is a critical mass of nurses on staff who are experienced in immunization practices.

34. When scheduling clinic assignments, consider keeping the same key team members working together from one clinic day to the next. Key roles may include the Clinic Immunization Leader and the Site Manager, as well as several health unit staff nurses. This will assist in ensuring that there is a sufficient number of experienced health unit nurses at each clinic to work in collaboration with external nurses.

35. Regular breaks are essential for all staff and volunteers at clinic sites to maintain safe and optimal working conditions. The Clinic Immunization Leader should ensure that this occurs.

36. Invest agency resources to recruit additional volunteers, and subsequently provide sufficient supports to promote retention.

Personnel Information Processing

37. Early in the campaign institute an orientation session facilitated by Human Resources for Site Managers. The session should clearly explain personnel and administrative procedures to ensure that all necessary information from independent practitioners is gathered, and that all forms are filled out completely and correctly.

38. A representative of Human Resources/Finance should be a member of the Coordinating Committee.

Supplying the Clinics

39. Establish a dedicated team to oversee supplies and their transportation to clinic sites. If necessary, hire external casual personnel to support the supply system, and rent delivery vehicles as needed.

40. Consultation should occur between the supply team and clinic staff to ensure that all parties know how the supply system works. This consultation should occur both at the beginning of the campaign and on an ongoing basis.

41. An "urgent delivery" component should be built into the supply system. This component should include direct communication to request urgent supplies. A list of drivers available to make urgent deliveries is also required.

42. All clinic sites should have sufficient containers that are properly labeled to ensure that all supplies are well organized. This allows for easy packing, set-up and inventory control at each clinic site. Consider having one bin per table where vaccine is being administered with all necessary supplies for that table in the bin.

43. A large space should be designated for use as a supply room. The space should be organized to allow all supplies to be placed in clearly, labeled areas. This space should also allow packed supplies to be stored prior to transport and be large enough to store supplies for the maximum number of clinics running on any given day. The space should be easily accessible for loading and unloading of supplies into delivery vehicles.

44. Supply Team Coordinators should understand and anticipate the special requirements for handling sharps containers. Health and safety information regarding sharps containers should be made available to all members of the supply team. Ensure adequate space to sort, manage and dispose of a large volume of bulky containers in the supply room.

45. Supply Team Coordinators should anticipate the rate of depletion of supplies in order to maintain stores at sufficient levels.

46. Provide maps of clinic locations to facilitate deliveries by the Transportation Team and verify in advance the times that supplies are needed at each clinic site.

47. Ensure the Health Unit has a petty cash or corporate credit card system for incidental purchases such as gas, urgent supplies, etc.

48. If vans are rented, establish a secure and reliable system for managing keys when the vans are returned to the Health Unit at the end of the clinic day.

49. Ensure appropriate trolleys or hand trucks are available for lifting and transporting heavy items at the Health Unit and at clinic sites.

Clinic Operations

Clinic Management

50. When using a dual management approach, such as a Clinic Immunization Leader and Site Manger at each clinic, ensure that roles are clearly delineated to promote a team approach to clinic management.

51. Designate a manager to oversee clinic operations. This manager should visit clinics on a regular basis to deliver information, gather feedback, offer support, troubleshoot, re-deploy staff, and link clinic operations to overall campaign coordination.

Clinic Set-Up

52. Establish who has overall responsibility and authority for clinic set-up. That authority should rest with those most experienced in managing clinics, such as the Clinic Immunization Leader. Ensure that key clinic staff, such as the Site Manager and Immunization Team Assistants, are consulted as appropriate.

53. Develop a consistent clinic set-up and apply this model as closely as possible for each clinic, recognizing that some experimentation and adaptation may be necessary.

54. A designated set-up crew, including at least the Clinic Immunization Leader and Immunization Team Assistants should arrive one and a half hours prior to the clinic start time. The remainder of clinic staff should arrive one hour prior to the clinic start time.

55. Limit the number of staff responsible for unpacking and setting out supplies so that this is done in a systematic manner. Similarly, ensure that supplies are packed up at the end of the day in an organized manner to facilitate taking inventory so that supplies can be replenished.

Verification of Credentials of Professional Staff

56. Inform all external professional staff that their certificate of registration and/or medical license must be presented at each clinic. Ensure that these documents are verified by the Site Manager at each clinic and that this verification is appropriately documented. A process should be in place to outline the steps to be taken when a license is not presented or the license has conditions attached to it.

Orientation

57. Steps should be taken to ensure that staff and volunteers at all clinic sites are oriented in a consistent manner and that new information is communicated in a standardized way. This can be facilitated by an orientation check-list, and training sessions for those conducting orientation for clinic staff.

58. If possible, before the immunization campaign begins, provide large group orientation sessions relevant for roles of each functional grouping so that both internal and external staff hear the same information at the same time. For example, separate sessions can be held for each of the following groups: professional staff members who will be working at the clinics; Immunization Team Assistants; clinic volunteers; supply team members; etc.

59. Orientation sessions for professional clinic staff should review immunization techniques, reconstitution and drawing-up procedures, obtaining informed consent, health unit polices regarding witnessed child abuse, proper restraining techniques, and how to handle reluctant children.

Traffic Control

60. Evenly distribute clients across tables where vaccine is being administered, so that no table receives too many clients while others are not well attended. To ensure that this occurs, the role of "Traffic Director" should be assigned to either the Site Manager or a well trained and experienced volunteer.

Obtaining Informed Consent and Processing Forms

61. Develop policies related to informed consent such as age of consent accepted at the clinic, consent for children under foster care, consent for children presenting with an adult who is not their legal guardian, etc.

62. Explore options for providing interpretation services for non-English speaking clients.

63. Routinely mark each consent form with the time of vaccination.

Reconstituting and Drawing-up the Vaccine

64. Designate an experienced health unit nurse to serve as Vaccine Table Captain for the reconstitution and drawing-up table. The role of the Vaccine Table Captain should include: providing orientation; monitoring reconstitution; vial labeling; and drawing-up procedures; and regulating the flow of vaccine to the tables where it is being administered to keep up with the capacity of nurses to administer immunizations. The Vaccine Table Captain should maintain close communications with the Runners and the Clinic Immunization Leaders to regulate the flow of filled syringes to the tables where vaccine is being administered. Special attention to the reconstitution rates is required especially towards the end of the clinic to avoid vaccine wastage.

65. Those nurses reconstituting should initial and mark the reconstituted vaccine vial and indicate on the vial the exact time that the vaccine was reconstituted.

66. Consider the advantages and disadvantages, skills permitting, of staff occasionally switching roles between "giving" and "reconstituting/drawing-up".

Running the Vaccine

67. Traffic Directors and nurses administering vaccine should coordinate the flow of traffic to ensure that clients are sent only to tables that have enough filled syringes.

68. Use a consistent process for ensuring that Runners place vaccines into the cold bags at each table so that the nurse administering the vaccine uses the syringes that were drawn-up and placed in the bag first.

69. Consider closing down some vaccine administration tables as the clinic traffic tapers off towards the end of the scheduled clinic, in order to more easily match supply with demand and avoid vaccine wastage.

Injecting the Vaccine

70. Nurses less experienced in immunization practices should be paired at a table with those more experienced. If possible, consider maintaining this pairing over several clinics to promote a team approach. This team approach is especially valued when needing to handle difficult children.

71. To prevent needle stick injuries, each nurse should have an individual sharps container for disposing of used syringes.

72. Use a variety of approaches to distract and reward children who are being vaccinated. These may include stickers, coloring sheeting, food, etc.

Monitoring Professional Practice

73. If possible, share the role of Clinic Immunization Leader at each clinic site between two experienced immunization nurses to ensure adequate monitoring of professional practice of those reconstituting, drawing-up and administering the vaccine.

References

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[2] Capital Health, Mass Immunization Campaigns: A 'How To' Guide based on experience during the February 2000 Capital Health Meningococcal Immunization Campaign, April 2000.

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