ON-LINE CONTENT

DEVELOPMENT, IMPLEMENTATION, AND EVALUATION OF A COMMUNITY- AND HOSPITAL-BASED RESPIRATORY SYNCYTIAL VIRUS PROPHYLAXIS PROGRAM

MARIANNE BRACHT, RN, RSCN,[1] MICHAEL HEFFER, BSC.PHM MHSC,[2,4] AND KAREL O'BRIEN, BCH, BAO, MB, FRCP(C)[3]

ABSTRACT

PURPOSE: To implement and deliver a respiratory syncytial virus prophylaxis (RSVP) program in response to the Canadian Pediatric Society recommendations.

METHODS: A novel program was designed to provide inpatient RSVP for at-risk infants cared for in 1 tertiary care newborn intensive care unit (NICU). This inpatient program was part of a coordinated approach to RSVP, designed and implemented by 3 hospitals. An RSVP program logic model was created and used by a multidisciplinary team to evaluate the in-house program and identify areas of program activity requiring improvement.

RESULTS: Following the 2000 to 2001 RSV season, a compliance and outcomes audit was performed in the tertiary center; 193 infants were enrolled in the RSVP program and 162 infants had received RSVP in the NICU [Mean = 1.64 doses]. Telephone follow-up with the parents of discharged infants identified that 159 infants (98%) had successfully completed their full course of RSVP. Using the RSVP program logic model, 5 areas for program improvement were identified including infant recruitment, patient transfer/discharge processes, product procurement, preparation/distribution/administration of doses, and healthcare team communication.

CONCLUSIONS: Interdisciplinary collaboration is an important factor in the success of the RSVP program and has supported a consistent model of care for the delivery of RSVP. The program logic model provided a useful structure to systematically review the RSVP program in this organization.

KEY WORDS: respiratory syncytial virus, prophylaxis, inpatient, palivizumab, antibodies monoclonal, program logic model, program development, program evaluation, infant, premature, neonatal nursing, pharmacists, interprofessional relations.

The Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) both confirm that respiratory syncytial virus (RSV) infection remains a major cause of lower respiratory tract infection among preterm infants, newborn infants, and children.[1] Respiratory syncytial virus causes 50% to 90% of hospitalizations for bronchiolitis, and 20% to 50% of those are for pneumonia in the winter months.[2] A monthly intramuscular injection of palivizumab, an RSV monoclonal antibody, decreases the incidence and severity of RSV disease.[3]

By 2 years of age, 99% of all children will have had at least 1 RSV infection. Although the majority are asymptomatic, approximately 15% to 25% of these

Address reprint requests to Marianne Bracht, RN, RSCN, Room 775, Pediatrics, Mount Sinai Hospital, 600 University Avenue, Toronto, ON, Canada. E-mail: mbracht@mtsinai.on.ca

From the Neonatal Intensive Care Unit,[1] the Department of Pharmacy,[2] and the Department of Pediatrics,[3] Mount Sinai Hospital, Toronto; and The Leslie Dan Faculty of Pharmacy,[4] University of Toronto, Toronto, Ontario, Canada.

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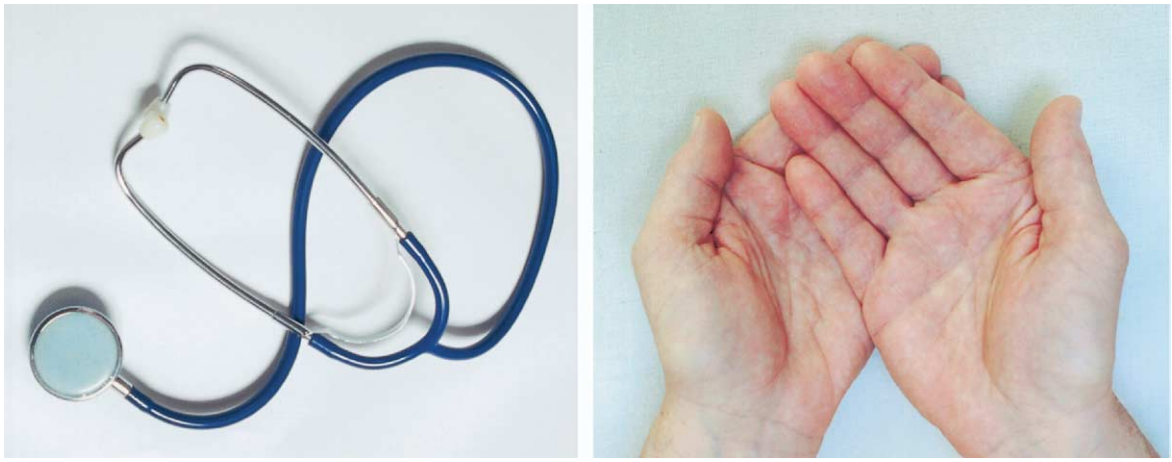

Figure 1. Integral to any infection-control program is the education of staff about the modes of transmission, the manifestations, and the importance of RSV nosocomial infections. RSV can survive for as long as 6 hours on stethoscopes and 30 minutes on hands.[8–10]

children are admitted to the hospital with RSV-related bronchiolitis.[2] Preterm infants (<33 weeks gestation), infants born with congenital heart disease, and children with immunodeficiency, are among the most susceptible to RSV disease, rehospitalization, and associated morbidity and mortality. Approximately 25% of these high-risk infants are readmitted to hospital with severe RSV disease.[4–7]

RSV is transmitted through respiratory secretions, droplets, large particles, and fomites. The virus survives on hard surfaces for up to 7 hours and is still detectable after 30 minutes on cloth, paper, and stethoscopes (Fig 1).[8–10] The incubation period of the virus is 2 to 8 days; once the infant is infected, the virus can be shed for up to 4 weeks.[2] These characteristics make RSV a prime candidate for causing nosocomial outbreaks in newborn nurseries, neonatal intensive care units (NICUs), and pediatric intensive care units (PICUs).[11–13]

Environmental risk factors for severe RSV disease include exposure to smoking, poverty and crowded households, and day care exposure. Twins or higher order multiples and infants whose parents have a lack of education are also at higher risk.[2] In addition to the concerns regarding immediate morbidity associated with RSV infection, reinfection, and the need for subsequent rehospitalization, questions have been raised regarding the long-term consequences of RSV lower airway disease, specifically asthma, and allergies.[14–16]

The Public Health Cost of RSV

An effective treatment for RSV disease has not yet been developed. Ribavirin, used as an inhalation treatment for RSV, had limited efficacy and is no longer approved for use in Canada. A focus on strategies to prevent RSV is imperative.

Presently, a passive immunoprophylaxis, humanized monoclonal antibody (IgG-1), palivizumab (Synagis; MedImmune, Gaithersburg, Md), administered as a monthly injection during the RSV season, is available on the North American market. Palivizumab has been proven safe, convenient, and highly effective in preventing severe RSV disease; it does not interfere with the administration of other vaccines.[17–21]

The public health cost of RSV infection has been evaluated. A prospective cohort study was conducted to quantify the cost of healthcare resources for children from birth to 4 years hospitalized with RSV infection. This study estimated the average cost of an RSV-related hospital stay of 3.8 days to be $1512 (Canadian). The authors concluded that interventions directed at shortening or preventing hospital admissions would decrease healthcare costs.[22]

The Impact-RSV study, a multicenter placebo controlled trial, demonstrated a 55% reduction in rehospitalization of high-risk infants (preterm and those with bronchopulmonary dysplasia) who received monthly injections of palivizumab during the RSV season in the outpatient setting.[3] A prospective study of RSVP after NICU discharge demonstrated that palivizumab was well tolerated and compliance with this multiple-dose regimen was high (97.8% completed courses of 444 infants)[20]; these findings confirmed the results of another major randomized clinical trial.[19]

The use of RSV intravenous immune globulin (Respigam) was also shown to decrease the incidence of RSV hospitalization. Although ideal for many populations (e.g., the immunocompromised infant), the product was found to be cumbersome and impractical to administer.[23]

This article describes how 1 hospital implemented and evaluated an inpatient RSVP program that focused on providing protection to hospitalized premature infants and assuring completion of RSVP after hospital

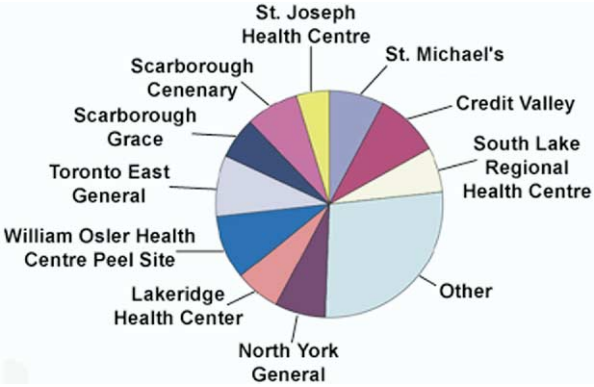

Figure 2. For 2000 to 2001, the proportion of infants (N = 193) who were no longer ventilated and deemed medically stable, then transferred from the tertiary center (MSH) to approximately 27 community hospitals in south central Ontario. These centers are either a perinatal Level II center or a Level II nursery.

discharge, within the framework and collaboration of 3 tertiary centers in south central Ontario. The challenges of communication, parent and healthcare provider education, and stakeholder buy-in are discussed.

Development of a Collaborative RSVP Program

The RSVP collaborative program was initiated by a group of physicians from 3 tertiary centers following the October 1999 published recommendations from the Canadian Pediatric Society (CPS)[17] and American Academy of Pediatrics (AAP)[18] regarding RSVP for high-risk infants. This committee grew to include a nurse coordinator and a pharmacist from each site. The 3 centers were: Mount Sinai Hospital (MSH), a 63-bed unit; Women's College Campus of Sunnybrook & Women's Health Sciences Center (SWHSC), a 41-bed unit; and The Hospital for Sick Children, a 38-bed unit.

Once infants cared for in these 3 centers are no longer ventilated and are deemed medically stable, they are then retrotransported to 1 of approximately 27 community hospitals that are either perinatal Level II centers or Level II nurseries (Fig 2). After discharge, pediatricians and family healthcare providers provide general pediatric care.

Centralization of the RSVP program was impractical because of the vast distances between hospital and community sites, which would affect parental transportation, cost, and time. A formalized needs assessment was not conducted; however, a decentralized program structure was created, based on discussion with our community pediatrician partners.

The goal of the collaboration was to develop a uniform method of program delivery whereby all eligible infants, both in the tertiary centers and following transfer and/or discharge, receive RSVP (Table 1). Strategies to achieve this goal included developing uniform policies, procedures, and written information for parents, community hospitals, and healthcare providers, and educating parents and healthcare professionals regarding RSV disease and its prevention (Fig 3). The CPS and AAP guidelines focused solely on infants after discharge from the NICU and did not address inpatient use. The RSVP collaborative program made the conscious decision to extend RSVP to high-risk hospitalized infants.

Consensus Development

The first step was to develop consensus regarding RSVP guidelines for both hospitalized and nonhospitalized infants, understanding that the use of RSVP does not replace strict infection-control measures such as handwashing, parent education, and isolation of infants infected with RSV. The following 3 hospital-specific criteria were developed using the CPS guidelines as a template:

- Each eligible infant is to receive at least 1 RSVP prior to discharge home or transfer to another Level II center;
- Infants born <28 weeks gestation will have their first RSVP deferred until medically stable;
- Infants 28 weeks and <33 weeks gestation will receive RSVP as soon as stable.

The decision to start the program in the hospital was primarily logistical. The program was designed to ensure that every eligible infant received RSVP and his or her parents received necessary education to prevent RSV-related rehospitalizations. This was achieved by initiating the first RSVP injection during hospitalization. Additionally, a nosocomial RSV outbreak in the 2 Toronto perinatal units the previous year revealed the difficulties in controlling nosocomial spread. The use of in-hospital RSVP has been shown to be of benefit in preventing nosocomial spread of RSV infection.[11–13]

Development of Educational Materials

The second step was the development of pamphlets, letters, and educational material for parents and NICU staff (Fig 4). The group embraced the family centered care philosophy. The object was to educate parents so that they are well informed about the importance of RSV prevention and RSVP. The expected outcome of the education was parental cooperation to ensure that their infants successfully completed the prescribed course of RSVP.

An RSV Parent Education and Communication Toolkit was developed; it consisted of 3 parent information letters and an educational pamphlet. The first letter provides information on RSV and RSVP and is given to parents during the summer months, informing them that they will be contacted prior to the RSV

Table 1. Comparing the Statements on the Recommended Use of Monoclonal Anti-RSV Antibody (Palivizumab) in Canada and the United States[17,18]

Canadian Pediatric Society (CPS) National Advisory Committee on Immunization (NACI)[17]

1. Children 24 months of age or younger with BPD who require oxygen within 6 months preceding the RSV season.
2. Infants born at 32 weeks gestation or earlier who are 6 months of age or younger with or without BPD at the start of the RSV season.
3. Infants <2 years of age with hemodynamically significant cyanotic or acyanotic CHD (requiring corrective surgery or on cardiac medication for hemodynamic considerations) should be considered for monthly palivizumab prophylaxis during the winter season. The decision to provide prophylaxis with palivizumab in this population should be made based on the degree of physiological cardiovascular compromise.
4. Other infants who are assessed to be at high risk of having a severe outcome from RSV.

Academy of Pediatrics (AAP) Statement on RSV Immunoprophylaxis[18]

1. Infants <2 years of age with CLD who require medical therapy at the start of the RSV season.
2. Infants <28 weeks gestation in the first 12 months.
3. Infants <2 years of age with CLD who require medical therapy at the start of the RSV season.
4. Infants between 32 and 35 weeks gestation with 2 or more risk factors:
   - Child care attendance
   - School age siblings
   - Exposure to environmental pollutants
   - Congenital airway abnormality
   - Severe muscular disease
5. Infants <2 years of age with hemodynamically significant cyanotic or acyanotic CHD:
   - Medical therapy for CHF pre or post surgery
   - Cyanotic heart disease
   - Moderate to severe pulmonary hypertension
   - Moderate to severe cardiomyopathy

Abbreviations: BPD = bronchopulmonary dysplasia; CLD = chronic lung disease; RSV = respiratory syncytial virus; CHD = congenital heart disease; CHF = congestive heart failure.

season. The second letter, mailed before the RSV season, provides information on RSV and instructs the parents to make an appointment with their healthcare provider. The third letter given to parents during the RSV season explains the RSVP program in the NICU. The parent-education pamphlet, in a question-and-answer format, discusses RSVP and prevention, and accompanies each parent information letter. Please visit the *Advances in Neonatal Care* Web site (*www.advancesinneonatalcare.org*) to review and download the RSV Parent Education and Communication Toolkit.

The RSV Provider Toolkit materials, developed for the healthcare team, included RSVP posters, a palivizumab product information sheet, and a healthcare provider information and documentation letter. The product information sheet includes information on reconstitution, stability, administration, precautions, and adverse effects. The healthcare provider letter is the form for documenting and recording dates of RSVP, adverse reactions, and contact information. Please visit the *Advances in Neonatal Care* Web site (www.advancesinneonatalcare.org) to review and download the RSV Provider Toolkit.

The third step taken by the group was to provide educational sessions in all 3 tertiary centers. The audience included nurses, pharmacists, pediatricians, and other neonatologists. Further in-service sessions were arranged for front-line staff in each of the NICUs. These included presentations on RSV disease, sharing of educational materials and information (Table 2), and distribution of guidelines and procedures. In addition, an RSV information binder was created and placed in the NICU, and information posters were displayed for staff and parent learning.

Tertiary Center Program Implementation

The 63-bed NICU at MSH accepts 900 admissions a year. During the RSV season there are approximately 200 infants who are eligible for RSVP; 90% of these infants receive their first dose in the unit. Approximately 10 to 12 infants a week receive either their first or a subsequent dose of palivizumab; the pharmacy prepares 230 to 320 doses each season.

Using the collaborative framework for the delivery of RSVP, specific in-hospital procedure guidelines were developed under the direction of the Neonatal Quality, Utilization and Risk Committee. A nurse working a 0.6 FTE (full-time equivalent) coordinates the RSVP program. Throughout the RSV season, which in eastern Canada is November to April, eligible infants are identified on a daily basis. Information for parents is left at the infant's bedside a few days before the identified date for RSVP. The parents are then informed of the program; in-depth information on RSV prevention is discussed and verbal consent for admin-

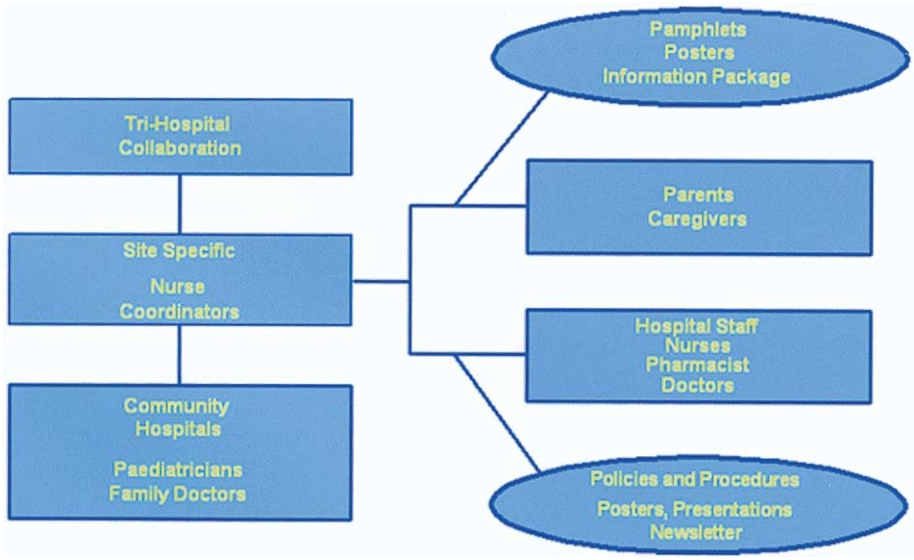

Figure 3. Flow chart designed and used by the 3 tertiary centers to initiate an RSVP program for south central Ontario.

istration of palivizumab is obtained and documented in the patient chart. A bright pink card is placed at the infant's bedside, identifying that the infant has been enrolled in the program. The palivizumab vial is then ordered from the manufacturer.

The pharmacist plays an integral part in the preparation and administration of RSVP doses. He or she receives an updated list of eligible infants from the nurse coordinator on a weekly basis. During daily NICU rounds, the pharmacist informs the team when infants are due for their RSVP. After the nurse coordinator obtains verbal consent, the pharmacist writes a "suggest order," which the attending healthcare provider cosigns prior to administration of the dose.

Figure 4. RSVP Parent and Provider Education Toolkits prepared by the 3 tertiary centers. Manila envelope for the healthcare provider contains the palivizumab product information sheet, healthcare provider information letter and documentation form, current RSV prevention update bulletin and RSVP request form, parent education pamphlet, and yellow immunization card. Toolkit available at the *Advances in Neonatal Care* Web site (*www.advancesinneonatalcare.org*).

The doses are prepared in the pharmacy under sterile conditions using a laminar flow hood. For economic reasons, the patient-specific doses are drawn up at the same time using as few vials as possible to minimize waste. To streamline the weekly workload of pharmacy technicians, there are 2 designated days per week for preparing the doses. If the discharge or transfer of an infant occurs on short notice, doses may be prepared and administered on any day. To ensure that the dose is administered before the expiration date, the pharmacy dispenses the dose with a fluorescent orange reminder card.

The infant's nurse administers the RSVP as an intramuscular injection, which is documented on the medication administration record. It is also further documented on the infant's immunization card, hospital discharge summary, healthcare provider's letter, pharmacy drug distribution computer program, and patient profile. The nurse coordinator confirms that the injection has been administered and records this information in the RSVP database.

Following the administration of the first RSVP injection, all information pertaining to the infant's RSVP course is left at the infant's bedside. This information accompanies the infant to the discharge hospital or, if the infant is discharged home, it is given to the parents to take to their infant's healthcare provider.

According to the CPS guidelines some infants already discharged will be eligible for RSVP in the following RSV season. Therefore, parents are contacted and informed about the need for a second course of RSVP for their infant. In addition, parents of eligible infants born out of RSV season must also be contacted.

Table 2. RSV Web Resource List

Resource	Description
Canadian Paediatric Society 100-2204 Walkley Road Ottawa, ON K1G 4G8, Canada 613-526-9397 www.cps.ca	This organization is a national advocacy association committed to the health needs of children and youth.
American Academy of Pediatrics Northwest Point Boulevard Grove Village, IL 60007-1098, USA 847-434-4000 www.aap.org	This organization offers a variety of educational materials and AAP guidelines for various conditions; includes links to other organizations and publications.
MedImmune Inc One MedImmune Way Gaithersburg, MD 20878, USA Customer Support Network 877-633-4111 www.medimmune.com	Manufacturer of immunoprophylaxis agent for RSV. Offers a family and healthcare provider guide to information and resources. There is a link to RSV information and Synagis (MedImmune, Inc., Gaithersburg, Md) (palivizumab).
rsvshield www.rsvshield.ca	A Canadian resource center for healthcare professionals and parents of premature infants and other infants at risk of serious RSV infection.
RSV Info Center www.rsvinfo.com	Provides a comprehensive overview of the most common cause of lower respiratory tract infections in children.

Abbreviation: RSV = respiratory syncytial virus.

Parents receive written and verbal information about the RSVP program during their infant's hospitalization. Before the RSV season, an information package is mailed to them. This package includes an unsealed information package to read and take to their infant's healthcare provider. This envelope contains the current RSV prevention update bulletin and RSVP request form, the healthcare provider information letter and documentation form, and the palivizumab product information sheet. This process empowers the parents to actively participate in their infant's RSVP follow-up.

The RSV nurse coordinator contacts each family by telephone before the RSV season to ensure that they have received the information package, to verify that they have booked an appointment with their primary healthcare provider, and to answer questions that may have arisen when they received the information package.

Program Evaluation Methods

It is becoming increasingly important to demonstrate to senior healthcare administrators that the delivery of programs is cost effective. The RSVP implementation team strove to ensure that the RSVP program had the following ideal characteristics of an efficiently run program:

1. A leadership team of key healthcare providers;
2. A clearly identifiable target population;
3. Timely and reliable modes of communication;
4. Consistent information provided to client regarding program;
5. Consistent management of patient processes by the healthcare provider;
6. Convenient accessibility to the program service by the target population;
7. Product that is easily procured and distributed;
8. Adequate stability and ease of administration of the product;
9. A tracking system to ensure completion of program intervention;
10. Links with industry and government to ensure accessibility to product.

The authors used a program logic model evaluation tool to determine if the RSVP program met the ideal criteria outlined above.[24] A program logic model is a diagrammatic representation of a program. It depicts the relationship between program objectives and program activities, and helps program developers link program activities to specific objectives and measurable indicators (Fig 5). Program logic models have been shown to assist in the continuous improvement of healthcare programs.

The multidisciplinary team collaborated to create the RSVP program logic model, ensuring that each discipline's perspective of the program process was considered. For each program component, the team

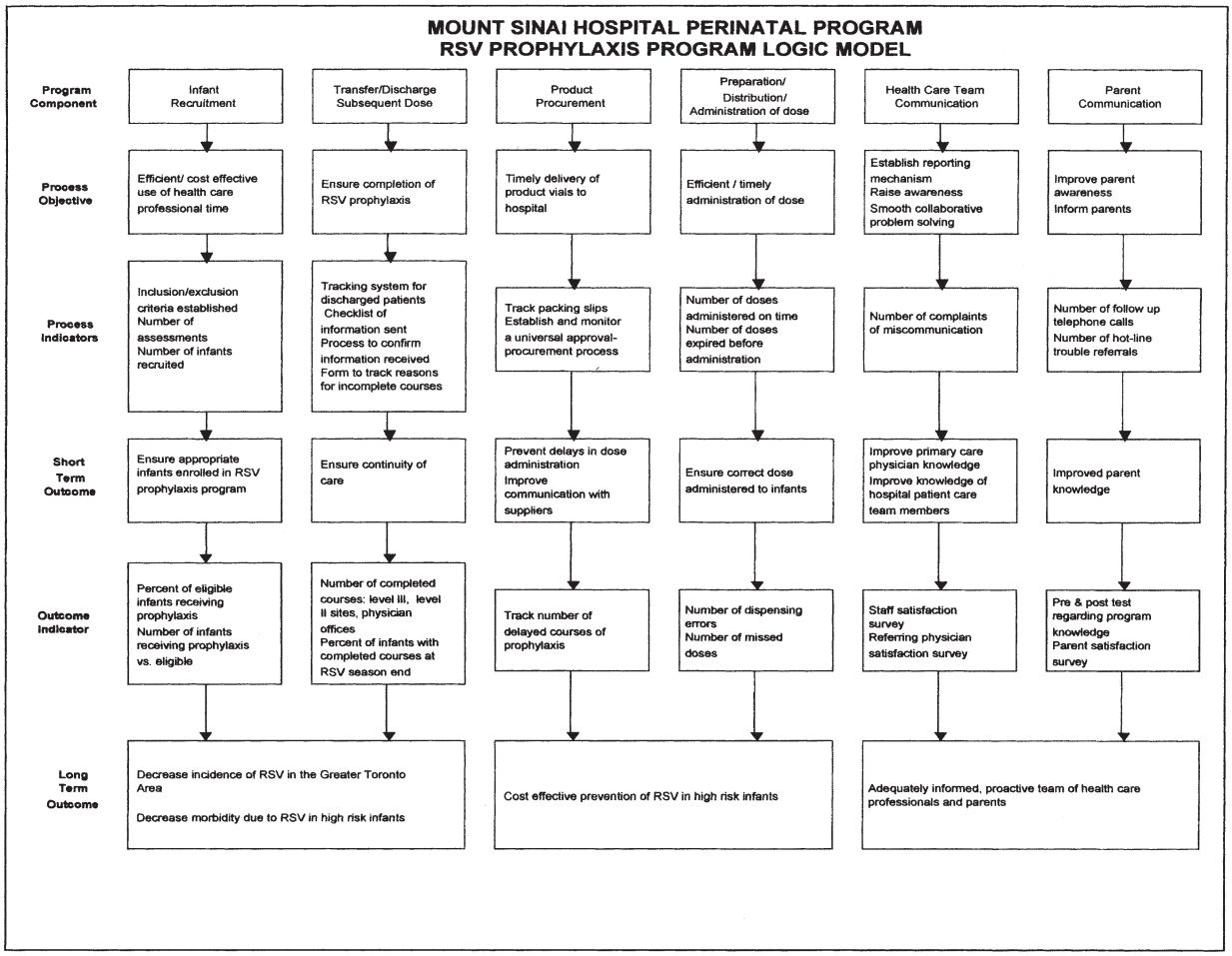

Figure 5. The RSVP program logic model was created by the multidisciplinary team to retrospectively evaluate the first year of the RSVP program.

identified process and program objectives and outcomes with ideal indicators. Once created, the indicators were reviewed to help identify and monitor the success of the program and determine if the measures already existed. If not, the identified areas for improvement were discussed and a plan developed to capture the data required.

Program Evaluation Results

During the 2000 to 2001 RSV season, 193 infants were enrolled in the RSVP program. A chart review identified that 162 discharged infants had received an average of 1.64 doses in the NICU. These parents were contacted by telephone at the end of the season to evaluate the success of the program; 159 infants (98%) had successfully completed their full course of RSVP. No infants required admission to the hospital for RSV disease.

Program Strengths and Areas in Need of Improvement

Further evaluation was conducted using the RSVP program logic model. In-hospital interdisciplinary communication and working relationships were noted as a program strength, in particular the relationship between pharmacy and nursing staff. This strength was attributed, in part, to interdisciplinary education and ongoing opportunity for dialogue. Consistent parent education and communication was identified as a second strength and evidence of the effectiveness of the outcome-based education initiative. Five areas in need of improvement were identified; these included infant recruitment, patient transfer/discharge, product procurement, product preparation/distribution/administration, and healthcare team communication.

Systematizing Infant Recruitment

Many infants eligible for prophylaxis each season had already been discharged home. The manual track-

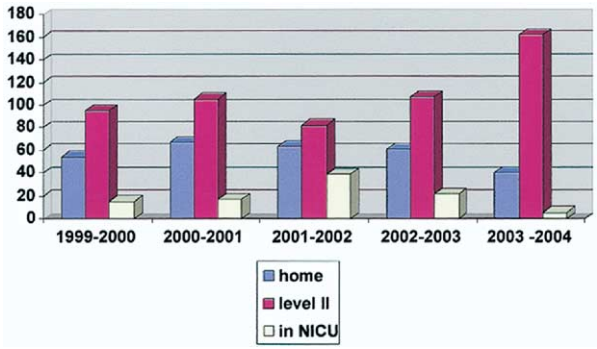

Figure 6. For 1999 to 2004: the number of infants at MSH who, throughout the RSV season, were transferred to another Level II center, discharged home, or were still in the NICU at the end of the RSV season. The trend toward an increase in the numbers of infants transferred reinforces the importance of collaboration between tertiary and Level II centers.

ing process, which was initially used, did not provide eligible infant and family information in a timely manner. The workload involved in identifying and contacting parents over such a short time period was not an efficient use of the nurse coordinator's time.

Using the RSVP program logic model, the team identified the importance of an ongoing and simplified process for identifying eligible infants. An RSVP computer database was subsequently developed to generate reports such as master lists of RSVP-eligible discharged infants and their addresses. This prospective planning facilitates the timely mailing of information to the families before the RSV season.

Throughout the RSV season, the database also generates weekly lists of patients requiring injections. Other information includes discharge destination, date of RSVP, oxygen requirement status, gestational age, and accepting healthcare provider. The database simplifies the calculation of program statistics, such as the percentage of eligible infants recruited, and allows for ongoing monitoring of vital program parameters.

Capturing Patients Who Are Transferred or Discharged

In the first year, transfer of information regarding RSVP and communication of an infant's RSVP status was a challenge due to the volume of infants discharged or retrotransferred. (Fig 6). Although discharge information packages were given to parents, some parents did not fully understand the steps in the prophylaxis process and delayed booking their follow-up appointment, or they booked the appointment but forgot to bring the information package. Others were unclear about the prophylaxis schedule of injections and, subsequently, doses were missed. In addition, for those infants transferred to Level II centers, there was no identified contact person at the referring hospital. As a result, follow-up communication was inconsistent and RSVP doses were missed or delayed.

A tracking system was essential in establishing the seamless transfer of information from the tertiary centers to the referring hospitals and local healthcare providers. Responding to this need and informal parent feedback, the RSVP program database was built, and is maintained, by our database administrator as a custom application in Microsoft Access (Microsoft, Redmond, Wash). This program facilitates the creation of a comprehensive summary of an infant's demographic data and RSVP course, including whether consent was obtained, dose dates, the infant's reference number, transfer hospital, and contact addresses and numbers. At discharge or transfer of an infant, this comprehensive database facilitates easy follow-up with the accepting Level II center or local healthcare provider. In addition, most Level II centers now have an RSVP nurse coordinator, further strengthening the continuity of care and family education. Ongoing discussions with parents prior to discharge ensures that they are also well-informed regarding the program. Improved labeling of the information package with brightly colored labels was also implemented and is used not only on the baby's information package, but also on the discharge summary and immunization card.

Streamlining Product Procurement

Problems were encountered with product procurement. In Canada, palivizumab is only available through Health Canada's Therapeutic Products Directorate Special Access Program (SAP) and distributed by Canadian Blood Services. An RSVP Case Application Request Form is filled out and faxed to the manufacturer where a reference number is assigned to each infant and used for ordering more product. Many infants are transferred from the NICU to a Level II center once medically stable. Occasionally, transfer occurred before prophylaxis was administered, although the dose had been requested and a reference number assigned. This necessitated cold packing the vials and shipping them to the transfer hospital. Similar problems occurred if an infant was discharged home.

The NICU and the manufacturer needed to establish a different process to ensure timely receipt of vials and infants' reference numbers. This resulted in 3 important changes. First, an immediate approval process for the infant's registration with Canadian Blood Services was established and a reference number is now generated within 24 hours. Second, the manufacturer now accepts more frequent orders and ships the vials in a timely fashion. Third, the pharmacist identifies potential infant transfers during patient rounds and generates a suggest order for the palivizumab dose, which

allows for more flexibility in dose preparation and administration.

Standardizing Product Preparation/Distribution/Administration

Product preparation and expiry proved to be a challenge for pharmacy and nursing staff due to the limited stability of the product. Originally, there was no specified dose preparation time; infants were at risk of receiving an expired product because nurses were often unsure of the exact expiration time of their dose. The preparation process was standardized to occur at the same time each RSVP day, which established a consistent expiration time for the dose. In addition, a bright orange sticker now alerts nurses to the exact expiration time.

Improving Healthcare Team Communication

Improved communication with our community partners was needed to facilitate the ongoing care of the infants. Feedback from Level II centers suggested that sharing written information, recent updates, and guidelines might help them to understand the tertiary sites' processes better and develop their own program within their hospitals. These challenges were consistent across the 3 tertiary centers.

The collaborative partners began to hold annual meetings and workshops to address specific issues, to provide ongoing education, and to enable networking among our community partners. During these meetings it became apparent that we needed to involve other community agencies, such as the Children's Aid Society and the Public Health department. Similarly, a need for an information telephone line for parents and healthcare providers was identified and a call system implemented. Responses to calls are the responsibility of the nurse coordinators. To further disseminate information, an end-of-season newsletter summarizes the past season's program activities, including information provided by our community partners. It is distributed as an electronic edition through the Greater Toronto Area (GTA) Child Health Network and also by direct e-mail to all healthcare professionals known to be involved in RSVP. An e-mail address list of nurses, doctors, and pharmacists involved in the RSVP program is maintained, updated, and shared.

Lessons Learned

The key to the in-house RSVP program's success has been:

- The 3 tertiary centers coming together early in the program development stage, thereby providing one voice to our community partners;
- The multidisciplinary nature of the leadership team and staff, who had both the ability and initiative to move forward with the program;
- The implementation of a database to track and coordinate efforts.

The implementation of a decentralized model for RSVP delivery across south central Ontario has been successful. This is a good example of knowledge translation. The CPS guidelines were translated into policy and procedure, effectively applied to practice, and evaluated.

The in-house RSVP program was evaluated and weaknesses were identified and addressed. Although a formal survey to evaluate parents' perceptions of the program has not been conducted, feedback from both the parents and the community partners is positive and is reflected in the high compliance rates. Other healthcare initiatives could be implemented in the community using this model—a model that provides leadership, yet allows for collaboration and circumferential growth of the program across both community and tertiary care centers.

A program limitation has been identified related to parent language barriers and/or educational limitations. Families may give consent but may not fully comprehend the RSVP program. Future initiatives include a parent questionnaire to evaluate this component as well as an evaluation of our parent written materials with the intention of having the family education pamphlet translated into other languages.

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Author Postscript

A recent publication entitled "Palivizumab Use in Very Premature Infants in the Neonatal Intensive Care Unit" by Wu et al in *Pediatrics* 2004;114(5):e554–556 adds to our understanding of the pharmakinetics of palivizumab in preterm infants. It illustrates the importance of tracking these patients and ensuring that they receive their palivizumab doses in a timely manner. This paper suggests that preterm infants may require a modification of the administration schedule of palivizumab. Further research is required to clarify the ideal dosing regimen. Parent and community education is paramount to the success of RSV prophylaxis.

Series Editor's Postscript

I commend the authors of this innovative program, launched in Ontario, Canada, that provides protection to premature infants against RSV-associated morbidity and mortality. Their comprehensive program is unique in that it provides immunoprophylaxis to infants in the NICU and also assures that those who are retrotransported to community hospitals or discharged home are enrolled and fully protected before leaving the NICU.

Although the Canadian and U.S. reimbursement system may differ, there are many applicable concepts that can be drawn from this article. Through the hard work of an interdisciplinary team; the development of strong collaborative links with parents and community healthcare providers; and innovation, persistence, and attention to continuous quality improvement, the authors give us a glimpse of how to conceive, implement, and evaluate a complex program. Their high rate of patient compliance and low rate of RSV-related hospital readmissions (0%) sets a high standard. We should be inspired to follow their lead and develop programs to ensure a high rate of RSV prophylaxis beyond the NICU walls in our regions.

Karin M. Gracey, RNC, MS, ARNP

Appendix
Supplementary On-Line Resources

Useful parent and provider education toolkits are available for adaptation at the *Advances in Neonatal Care* Web site (*www.advancesinneonatalcare.org*).

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